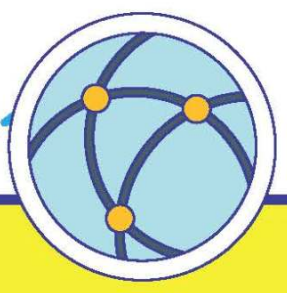
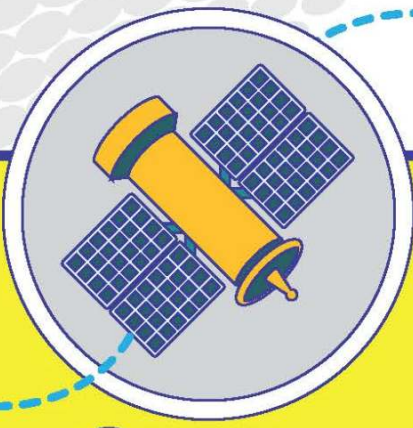


Information and Communication Technology

Textbook
for CLASS IX



Information and Communication Technology

Textbook for Class IX



977

विद्यया ऽ मृतमश्नुते



एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING

ISBN 978-93-5292-118-8

First Edition

February 2019 Magha 1940

PD 5T BS

© **National Council of Educational
Research and Training, 2019**

₹ 140.00

Printed on 80 GSM paper with NCERT
watermark

Published at the Publication Division
by the Secretary, National Council of
Educational Research and Training,
Sri Aurobindo Marg, New Delhi 110 016
and printed at Gita Offset Printers (P.)
Ltd., C-90 & C-86, Okhla Industrial
Area, Phase-I, New Delhi - 110020

ALL RIGHTS RESERVED

- ❑ No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or otherwise without the prior permission of the publisher.
- ❑ This book is sold subject to the condition that it shall not, by way of trade, be lent, re-sold, hired out or otherwise disposed off without the publisher's consent, in any form of binding or cover other than that in which it is published.
- ❑ The correct price of this publication is the price printed on this page. Any revised price indicated by a rubber stamp or by a sticker or by any other means is incorrect and should be unacceptable.

**OFFICES OF THE PUBLICATION
DIVISION, NCERT**

NCERT Campus
Sri Aurobindo Marg
New Delhi 110 016 Phone : 011-26562708

108, 100 Feet Road
Hosdakere Halli Extension
Banashankari III Stage
Bengaluru 560 085 Phone : 080-26725740

Navjivan Trust Building
P.O. Navjivan
Ahmedabad 380 014 Phone : 079-27541446

CWC Campus
Opp. Dhankal Bus Stop
Panihati
Kolkata 700 114 Phone : 033-25530454

CWC Complex
Maligaon
Guwahati 781 021 Phone : 0361-2674869

Publication Team

Head, Publication Division : *M. Siraj Anwar*
Chief Editor : *Shveta Uppal*
Chief Production Officer : *Arun Chitkara*
Chief Business Manager : *Abinash Kullu*
Editor : *Bijnan Sutar*
Production Assistant : *Rajesh Pippal*

Cover and Layout

Graphics Team, CIET

FOREWORD

Information and Communication Technology (ICT) has influenced our life in a great way. ICT has literally made inroads into almost all major disciplines across science, social sciences, languages, arts and medicine, etc. It has the potential to create newer avenues for employment, help us communicate and collaborate better, learn, and understand the nature and phenomena as well as improve our skills and standards of living. Policymakers across the globe today agree with the potential of ICT in the teaching-learning process and recommend ICT to be a part of school and teacher education curriculum.

Rapid advancements in Information and Communication Technology (ICT) have created unprecedented opportunities in the field of education and school education in particular. Mastering ICT skills and utilising ICT is of utmost importance for teachers and learners for creating a new learning culture.

ICT is stated to have motivational power. It enables students to enjoy learning as an active participant, such as by bringing the outside world into the classroom or by enhancing one-to-one, one-to-many and many-to-many interaction, among peers, teachers, experts and others. Furthermore, ICT has also helped the students in learning new skills, such as searching and locating appropriate information, making informed choices, learning to recognise the authenticity of sources and collaborating with other learners.

Today, we are living in an interconnected world where ICT-based applications influence the way we learn, communicate, commute or even socialise. Developments in the twenty-first century skills, such as communication, creative and critical thinking, problem solving, collaborative learning, etc., are essential at the school level. ICT plays a key role in developing these skills.

This book aims to introduce the world of ICT and its applications. It will help students to learn, prepare, present and communicate their thoughts, ideas and content through various digital formats, i.e., text, image, audio and video, etc.

The book will also help students to understand the potential of Internet as well as the safety and security issues related to it, and the ways in which one can safeguard themselves against malicious activities and incidents happening in the cyber world.

As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions from all the stakeholders, which will enable us to revise the content of the textbook.

HRUSHIKESH SENAPATY

Director

National Council of Educational
Research and Training

New Delhi
March, 2018

© NCERT
not to be republished

PREFACE

It is well accepted that Information and Communication Technology (ICT) has an immense potential to impact learning. Also understanding the basics of ICT and mastering the skills is essential and must be regarded as a core part of education, along with reading, writing and numeracy. The recent efforts of the Government of India (GoI) seeks to deepen the use of ICT in almost every sphere of life. The Digital India Campaign (2015) strives to transform India into a digitally empowered society and knowledge economy by focussing on three vision areas — Digital Infrastructure as Core Utility to Every Citizen, e-Governance and Service on Demand and Digital Literacy and Empowerment of Citizens. The three cardinal principals of the draft New National Education Policy (2016) viz., access, equity and quality could be served well by harnessing the huge potential of ICT. The National Curriculum Framework (2005) recommends to recognise that given the space, time and freedom, children generate new knowledge by engaging with the information passed on to them by adults. The curricula for ICT in education lays an emphasis on empowering the students in a way so that they may get an access to a variety of resources, learn to critically appraise information and resources, and make safe, productive, ethical and legal use of resources.

The Present Class IX Textbook of ICT takes into account goals of the New Education Policy, the recommendations of National Curriculum Framework (2005), the Curricula for ICT in Education and visions of Digital India Campaign (2015). This textbook is an attempt to foster creativity, problem solving and to introduce students to the world of Information and Communication Technology (ICT), which may also shape their future career pursuits.

The textbook contains eight chapters under four learning strands viz. 'Connecting with the World', 'Connecting with Each Other', 'Creating with ICT' and 'Interacting with ICT'. It has been carefully designed with meticulous efforts of the Textbook Development Team comprising School teachers, subject experts, academicians and technical experts from government, non-government and private entities. Some of the members worked at the advisory level while others contributed towards the actual development activity as core team members and members of the textbook development committee. It is hoped that the students will appreciate the immense potential of ICT and will be encouraged to explore and learn further. The textbook writing team has tried to bring a conceptual

coherence. The pedagogy and the use of easily understandable language are at the core of the efforts without sacrificing the technical aspects of the subject.

This book has some features which are earnestly expected to enhance its usefulness for the students and teachers. The book contains nine Quick Response (QR) codes linked to relevant digital resources (text, audio, video, and interactive content, etc.). The first QR code is to access the complete digital textbook. The subsequent QR codes will help to access the relevant digital resources linked to each chapter. There are some questions which require critical thinking which would make students think about real-time applications of ICT. The textbook also includes a large number of examples in order to clarify the concept and to relate these concepts to everyday real-life situations. The inside box in the chapters are introduced to highlight the special features of the concepts covered, which require additional attention of the students.

Completion this book has only been possible due to the continuous support of many professionals and experts. We express our gratitude to Director, NCERT, for entrusting us with the task of developing this textbook as part of a national effort for improving school education.

The draft received excellent academic inputs from students, experts and other practitioners who sincerely suggested improvement during the development of this book. We are thankful to all those who provided these inputs to CIET, NCERT. We are also thankful to the all the members of development and review workshops, language editors and to team DIKSHA for rendering technical support for developing QR codes.

We welcome suggestions and comments from our valued users, specially students and teachers. We wish our young readers of Class IX have an exciting and enjoyable engagement with the world of ICT.

AMARENDRA BEHERA

Joint Director

Central Institute of Educational Technology

TEXTBOOK DEVELOPMENT COMMITTEE

CHAIRPERSON, ADVISORY GROUP

A. P. Behera, *Professor and Joint Director*, Central Institute of Educational Technology, NCERT

MEMBERS

Aerum Khan, *Freelancer*, E-210, Shaheen Bagh, Jamia Nagar, New Delhi

Ajita, *Assistant Professor*, DICT&TD, CIET, NCERT

Angel Rathnabai, *Assistant Professor*, DICT&TD, CIET, NCERT

Anu Bhatia, *PGT*, Computer Science, Sadhu Vaswani International School for Girls, Shanti Niketan, New Delhi

Chetna Khanna, *Freelancer*, F-40, Mansarover Garden, New Delhi

Dharmender Singh, *PGT*, Computer Science, KVS, INA Colony, New Delhi

Indu Kumar, *Head*, DICT&TD, CIET, NCERT

Meetu Singhal, *PGT*, Computer Science, Kendriya Vidyalaya No.3, Agra cantt., Agra

Mohini Arora, *HOD*, Computer Science, Air Force Golden Jubilee Institute, Subroto Park, Delhi Cantt

Sangeeta Rawal, *PGT*, Computer Science, Delhi Public School, Vasant Kunj, New Delhi

Sangita Chadha, *Head*, Department of Computer Science, Ambience Public School, Safdarjung Enclave, New Delhi

Surbhi, *Assistant Professor*, DICT&TD, CIET, NCERT

Vineeta Garg, *PGT*, Computer Science, SRDAV Public School, Dayanand Vihar, New Delhi

MEMBER-COORDINATOR

Mohd. Mamur Ali, *Assistant Professor*, DICT&TD, CIET, NCERT

ACKNOWLEDGEMENTS

The National Council of Educational Research and Training (NCERT) gratefully acknowledges the valuable contribution of individuals and organisations involved in the development of the textbook *Information and Communication Technology (ICT)* for Class IX.

The Council expresses its gratitude to the syllabus developing team including Sridher Iyer, *Professor*, Department of Computer Science and Engineering, IIT Mumbai, I. L. Narasimha Rao, *Project Manager*, C-DAC, Hyderabad, Radhika B., *Academic Officer (ICT)*, National Institute of Open Schooling (NIOS), Noida, Ashish Kalsi, *India Outreach Lead, Trust & Safety*, Google India and Rejaul Karim Barbhuiya, *Assistant Professor*, DESM, NCERT.

The Council acknowledges the contribution of Gurumurthy Kasinathan, *Director*, IT for Change, Bengaluru, Devraj Goel, *Professor (ET)*, CIET, NCERT, Asha Jindal, *Professor (Retd)*, Kamlesh Mittal, *Professor (Retd)*, M. P. Goel and Ramya Shriram, *Teachers (Computer Science)*, Meridian School K.P.H.B., Hyderabad, Ramesh Prasad Badoni (ICT Awardee) *Lecturer*, Physics, Government Inter College, Dehradun, Monica Nagpal, *Assistant Professor*, CIET, NCERT, for going through the first draft of the textbook and making incisive comments on the manuscript.

The Council also acknowledges the reviewers — Anamika Gupta, *Assistant Professor*, Department of Computer Science, Shaheed Sukhdev College of Business Studies, Rohini, New Delhi, Harita Ahuja, *Assistant Professor*, Department of Computer Science Acharya, Narendra Dev College, Kalkaji, New Delhi, Gurpreet Kaur, *Head*, Department of Computer Science, G.D. Goenka Public School, Vasant Kunj, Delhi and A. K. Dash, *PGT*, Computer Science–Mother's International School, Adhchini, New Delhi, for evaluating and giving suggestions for the improvement of this book.

Silima Nanda, *Director (I/C)*, International Division, IGNOU, New Delhi and Anuja Krishan, *Language Editor (Freelancer)*, New Delhi are also duly acknowledged for editing this textbook.

The Council also acknowledges the contribution of the graphics artists Tarkeshwar Gupta, Chandramauli Shukla, Divya Talwar, Insha Humzad Afridi, Gaurav Gupta and project staff of DICT, Ruchi Sharma and Shobit Saxena in shaping this book. The Council acknowledges the copy editing of Shilpa Mohan, *Assistant Editor (Contractual)*. The efforts of Haridarshan Lodhi, *DTP Operator (Contractual)*, Publication Division, NCERT, are also acknowledged.

CONTENTS

<i>Foreword</i>	<i>iii</i>
<i>Preface</i>	<i>v</i>
Chapter 1: Introduction to ICT	01–13
Chapter 2: Creating Textual Communication	14–38
Chapter 3: Creating Visual Communication	39–56
Chapter 4: Creating Audio-Video Communication	57–69
Chapter 5: Presenting Ideas	70–77
Chapter 6: Getting Connected: Internet	78–92
Chapter 7: Safety and Security in the Cyber World	93–101
Chapter 8: Fun with Logic	102–122

THE CONSTITUTION OF INDIA

PREAMBLE

WE, THE PEOPLE OF INDIA, having solemnly resolved to constitute India into a ¹**[SOVEREIGN SOCIALIST SECULAR DEMOCRATIC REPUBLIC]** and to secure to all its citizens :

JUSTICE, social, economic and political;

LIBERTY of thought, expression, belief, faith and worship;

EQUALITY of status and of opportunity; and to promote among them all

FRATERNITY assuring the dignity of the individual and the ²[unity and integrity of the Nation];

IN OUR CONSTITUENT ASSEMBLY this twenty-sixth day of November, 1949 do **HEREBY ADOPT, ENACT AND GIVE TO OURSELVES THIS CONSTITUTION.**

1. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Sovereign Democratic Republic" (w.e.f. 3.1.1977)
2. Subs. by the Constitution (Forty-second Amendment) Act, 1976, Sec.2, for "Unity of the Nation" (w.e.f. 3.1.1977)

Chapter 1

Introduction to ICT



Muskan performed an experiment to find out the weight of a solid metallic ball in different media like air, water and mustard oil using spring balance. The weight of the ball in every medium was noted by Muskan in her notebook. The weight was found to be least in water and comparatively higher in air than in mustard oil. Muskan recorded the entire experiment as a video, explaining about the variation of weight in various medium.

Muskan shared this video with her classmates using a Messenger App. One of her friends suggested her to create a blog to share her experiences. Muskan created a blog and she regularly shares her learning experiences and reflections on this blog. She also uses web tools and technology that made her learning experience very engaging. Muskan is excited about the potential of technology used for learning.

This is only an example to describe how Information and Communication Technology (ICT) has started influencing the learning experiences. With the world becoming more and more digital with time, schools are also progressing in their use of ICT. In this chapter you will be introduced to the basic ideas of ICT and its uses in the learning process.

WHAT IS ICT?

ICT is the short form of three basic terms—Information, Communication and Technology. The representation



Figure 1.1: Coast Scene
Source: <https://goo.gl/ZsTCaq>

Technology refers to methods, systems and devices, which are a result of scientific knowledge, being used for practical purposes. For example, Muskan went to an excursion to Bhubaneswar and visited the State Museum. She saw various mineral ores in the mineral section of the museum. She decided to capture photographs to share with others who may not have seen the ores. She borrowed her teacher's mobile and clicked pictures of the rare collection. She shared all the pictures on her blog along with a description of the ores. Many viewers commented and appreciated Muskan for sharing those pictures and description.

Technology can be used for creation and communication of information. The term **Information and Communication Technology (ICT)** includes various forms of technologies that are used to create, display, store, process, transmit, share or exchange information by electronic means (UNESCO 2007). Such a discipline which deals in the creation and communication of information is called **ICT** (see Fig.1.2).

Radio, television, and print media (Newspaper, Books, Magazines, etc.) are the popular technologies used for communication. The digital revolution has transformed the way these traditional technologies function. For example, analog television has become



Figure 1.2: ICT around us
Source: <https://goo.gl/vytpr7>

digital television. In addition to printed newspapers now we also have their electronic versions. Along with traditional radio, we also have online radio.

Evolution of ICT

We cannot live in isolation. We need to interact and communicate with each other and with our surroundings. In the ancient times people used smoke signals, drum sounds, pigeons and messengers as modes of communication. These were relatively slow, unreliable and sometimes unsafe means of communication.

With the advent of new technologies, the modes and methods of communication are changing very fast. Radio, television, computers, telephones, smartphones, digital camera, laptop and interactive board have revolutionised the ways of communication. These are very fast and can link distant locations within no time.

We can easily send messages across the globe and learn about events all over the world in a blink of eye. Numerous technological tools have come up which help us not only to communicate but to create, store and manage information. The diverse set of technological tools and resources used to store, manage, manipulate, create and communicate digital information come under information and communication technologies (ICTs).

WHY ICT?

ICT facilitates communication anywhere, anytime and by anyone. It has become easier to communicate worldwide through the use of ICTs, for example, social media sites and apps, blogs, wikispace, etc. The use of ICT is time saving and cost effective in various ways.

ICT has revolutionised the world. There was a generation that did not have telephone; there was a time when radio and television were considered as the most advanced sources of information. However now the new generation lives in the world of Internet, wireless, augmented and virtual space. The world around has drastically changed. The dramatic change due to ICT has resulted in innovation in every field. These innovations have reduced the size of the technological tools and increased the speed with which they operate to process data and communicate information.

All these advancements and innovations give scope for betterment and effectiveness.

Muskan has a cousin Nishi who lives in Bengaluru and who is also of her age. She has same hobbies like her, such as dancing and gardening. Both of them are very fond of each other. They like to talk very often, they discuss about new things they do in gardening for hours together over phone. But making phone calls frequently was very costly and unaffordable for them.

Hence they always had to restrict their discussions on gardening. A friend of Muskan informed her about online video calling facility like Skype, Google Hangout, etc. which is more cost effective than making, phone calls. Muskan installed Skype on her laptop and her cousin also installed it on her Smartphone. They are now able to discuss on several topics without any restriction.

- **Access to instant data:** Access to instant data supports in predictions, decision making and also knowledge acquisition.

Muskan's family planned to go on a trip to Mount Abu. While packing, her mother was a little confused about carrying woollen clothes as she was unaware of the temperature in Mount Abu. Knowledge about ICT helped Muskan to help her mother. She checked the temperature in Mount Abu during the past few days from meteorological website. As the recorded temperature showed a higher temperature for past 15 days, she informed her mother to carry more semi woollen clothes. Instant access to data helped them to reduce the luggage and have a pleasant journey with required preparedness.

- **Creation of information for communication:** ICTs can be used to create communication pieces in various forms like text, image, audio, video, multimedia, etc. Once the information is in digital form it can be used for recreating resources out of the original. Digital information is also easy to modify and share.

Muskan's cousin Nishi visited a historical place 'Hampi' in Karnataka. When she saw the beauty of the architecture she thought of sharing it with Muskan.

Nishi decides to show Muskan the archeological site through skype, but her father suggested her to share it through Facebook live so that not only Muskan but her other friends can also see her exploration. As the mobile had a 4G network, the speed of the Internet supported online streaming.

This act of Nishi helped Muskan to have a virtual trip to Hampi. She thought for a while and found a solution to make a great resource about Hampi that can be shared with others. So she downloaded the video shared by Nishi. Using a video editor, she edited the unwanted content, added a background music and shared it with her schoolmates who never saw Hampi. The knowledge of ICT helped in capturing the events Muskan herself had never seen and sharing them through online streaming.

- **Store and organise:** ICT helps in organising information in various forms. This organisation of information helps in retrieving the required data. For example, in libraries, all the information about books are organised as database by using management software. When anyone wants to check

the availability of books, it is easy to search in the database and find the availability.

Muskan's grandfather had a great collection of postage stamps. He gifted his collection to Muskan on her birthday. She was thrilled to get this collection but she observed that the collection compiled in an album will perish over time. She decides to give the collection a lasting life by converting it into a digital collection. She along with her brother scanned all the stamps and added tags like country to which they belonged, date of release, event, personality, phenomenon depicted on the stamp, etc. This digital storing and organising helped her to retrieve any stamp whenever she require and also to easily maintain the record.

- **Scope for learning:** ICT provides a great opportunity to learn. One can learn anytime, anywhere and at his or her own pace. We can also create our own personal learning environment. Availability of online courses, e-tutorials have opened up avenues for continuous and life-long learning.

Muskan used to visit her grandmother's place for every summer vacation, but this summer her parents were busy with some work. She could not visit her grandmother. She was very sad and did not know what to do during her summer vacations. Hasmukh, a friend, suggested her to do an online course on Puppetry. He sent her information about this free course. When she further searched about the course she found it to be a Massive Open Online Course (MOOC). As she was not aware of MOOC, she searched for information about MOOC and learnt that MOOCs are free online courses that can be taken up by anyone at anytime from anywhere. Muskan joined the course immediately and started learning different puppet-making techniques as well as storytelling using puppets. She enjoyed the online course on puppetry and planned to do a puppet show in her class as a holiday project once the school reopens.

- **Plan and manage :** Use of ICT tools can help in time management by scheduling the works across devices and using various features like alerts, priorities,

highlights, etc. ICT tools can also be used in planning and managing the activities.

Muskan often forgets the deadlines of returning books issued from the library. To avoid paying fines, she sets the dates in her father's mobile using a calendar mobile app. Also she schedules her exam dates using a digital calendar.

Activity 2

Discuss with your friends, parents and other people in your surroundings about how ICT is essential in their daily life. Note down the main points emerged.

HOW ICT IS USEFUL?

ICT has wide range of applications for the society but the extent of its use depends on the user. ICT has its existence in all fields. Some of the fields are shown in Fig. 1.3.



Figure 1.3: Applications of ICT

1. Application of ICT in Everyday Life

ICTs have become a way of life in the present day world. We are using various ICTs in our day-to-day life for reading e-newspapers, e-magazines and e-books, online shopping, paying bills for food, using mobile apps, getting online appointments from doctors and so on.

Activity 3

Write a few observations on the uses of ICT at home.

2. Application of ICT in Education

a. Teaching, Learning and Assessment: ICT finds presence and expression in almost all the functions of the schools, such as admission, time table, classroom instruction, evaluation, laboratory management, learning resources management, examination and certification. It is also being used for office automation. E-resources like websites, e-books, e-newsletters, Open Educational Resources (OERs), etc., are used by most of the schools.

b. Inclusive Education: ICT is used for catering to the educational needs of every section of the society, including children with special needs. Various assistive devices and technologies are being developed which play an important role in fulfilling the specific needs of these children. For example, talking books, talk back feature of mobile phones, GPS inbuilt walking sticks, etc., are making substantial changes in people's lives.

3. Application of ICT in Art: Creative construction and connection are being done in various domains with the advent of ICT. Creative composition, compilation and communication can be done quickly by compatible ICTs. The role of ICT is vital in disseminating various art forms popular in one area to another. The appreciation of Art and Culture gained popularity through ICT. ICT has made it possible to showcase the creative works to the larger audience.

Activity 4

Write a few observations of ICT use in areas related to art and culture.

4. Application of ICT in Science and Technology

- a. Health:** The use of ICT in surgeries has made them less invasive, highly precise and automated. Due to this the recovery time has reduced many folds. Robotic technology has got a positive impact on present medical sciences. Now-a-days distance is not a constraint for any complicated medical intervention to be done jointly by doctors located at different places through networking.
- b. Telecommunication:** The field of Information Technology has seen a lot of advancement with the help of ICT. The satellite communication has advanced a lot and reached a number of people belonging to different setups. Low-cost smartphones and very cost-effective services have made the availability of these to almost everybody in the society. App based services available in different areas have made people's life easy.
- c. Agriculture and Natural Resources:** Frequent and almost accurate weather updates have revolutionised the agriculture sector. Early prediction of rains or other weather conditions by Metrological Department has equipped the farmers in getting better yield. The sustainable use of natural resources has become possible due to ICT integration; now it is possible to locate the oil wells, coal mines, etc., with the help of satellite technology.

Activity 5

Explore more areas of Science and Technology where ICT is applied.

5. Application of ICT in Business Transportation

ICT is used very effectively in the area of transportation. The GPS system is installed in vehicles, provide a lot of security and easy navigation to the commuters. Airplanes and trains use RADAR systems for their control and path finding. Application-based services have revolutionised the experience of transport system by their users. Online reservations of flights, trains, buses and other services have further made our lives easier.

- a. Marketing:** Online marketing through various websites and mobile applications is very popular in today's world. People find them useful and hassle free. They are cost effective and save a lot of time and effort of the people. The online sales and services have generated a new type of employment, which require very less investment at the source.
- b. Tourism:** Various online hotel booking systems have provided a great experience to the users. With the advancement of ICT even checking the overall scenario of a place before planning a visit has become feasible. Also online payment facilities have simplified the travel experience.

6. Application of ICT in Administration

- a. Public Safety and Security:** Deployment of ICT makes it possible for the police departments to collect, store and rapidly disseminate the information to enhance public safety. ICT can also be used for the identification of criminals by tracing their digital footprints.
- b. e-Governance and Public Administration:** e-Governance is generally understood as the use of Information and Communication Technology (ICT) at all the level of the Government in order to provide services to the citizens, interaction with business enterprises and communication and exchange of information between different agencies of the Government in a speedy, convenient efficient and transparent manner.

Activity 6

List your observations of ICT use in areas related to e-Governance.

Exercises

1. Which of the following are ICTs? Give reasons why it is or not an ICT.

Items	ICT Yes/No	Reason
Digital camera		
Refrigerator		
Smart TV		
Telephone		
DVD player		
Computer		
Headphone		
WIFI		
Radio		
Hard disk		

2. Discuss with various professionals like tailor, shopkeeper, milkman, doctor, engineer, nurse, etc., in your surroundings and write the ways in which each of them use ICT in their profession.

Profession	Ways of using ICT

3. My principal wants to make a short movie of this function for our school website, I will record the event and edit it using _____ video editor.
All the students are willing to present gifts for teachers. They selected the gifts from _____ and ordered them, so that they can reach us on time.

Chapter 2

Creating Textual Communication



Tanya and Rishi had gone to a book fair. They had a great time there. They wanted to share their experiences with others. So, they decided to record their experiences. Let us see how Tanya and Rishi recorded their experiences. Consider Fig. 2.1 given below and put




Fig. 2.1: Book fair

yourself in place of Tanya and Rishi and think what information may be shared with others about the book fair.

What information I would like to share with others?

- *How many stalls are there in the book fair?*
- *Which category of books did we like the most?*
 - *Who were the publishers of those books?*

Let us see in Figs. 2.2 and 2.3 how they presented their experiences.



Report
Visit to Book Fair



Recently I visited the World Book Fair, held from 8th-14th January, in Pragati Maidan. It was an extremely enjoyable experience for me along with my friends. The book lovers considered it a paradise and those who weren't so fond of books, found themselves pulled towards the endless varieties of books.

Stephen King famously said that "Books are a uniquely portable magic."

As the entire venue was overflowing with books of all kinds- comics, classics, pop-up books for children and many more, we could feel the magical essence of stories tempting us to flip through the pages of several novels.

The various genres that we came across include:

- Classics
- Crime and Murder
- Mystery
- Romance
- Adventure.

It is always fun to make new memories, capture them in photos and share them with everyone else. The students also found some books that intrigued them so much that they wanted the books to be a part of the school library collection.

It is rightly said that reading is dreaming with your eyes open! Our visit to the book fair simply reminded all of us, students and teachers alike, to never give up the habit of reading. We must always keep the magical essence of books, alive in our lives.

WE HAD LOT OF FUN!!!!!!

Fig. 2.2: Tanya's Report

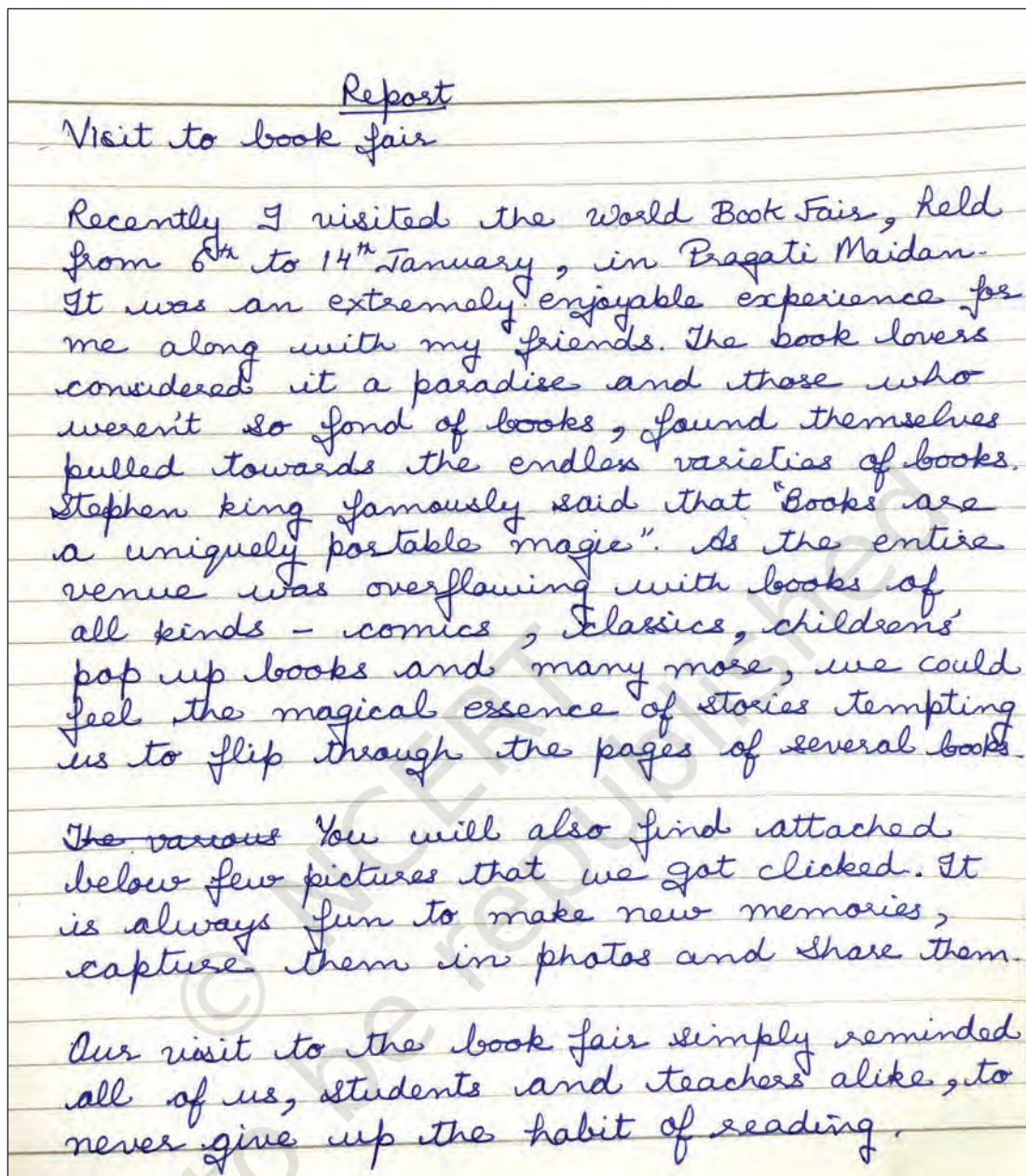


Fig. 2.3: Rishi's Report

Rishi was amazed to see Tanya's report. It contained text of varied colour, style and size. It also had a picture and certain symbols before each category of books. Tanya had communicated her ideas and thoughts in an organised, systematic, effective and presentable manner through her report. Rishi asked Tanya how could she communicate her thoughts so effectively?

Tanya: Rishi, you should know that there are digital tools which can be used to create effective and digital documents.

You can delete the errors and also take multiple copies of a digital document. My elder sister helped me to create this document using a word processor (LibreOffice Writer 5.1.6.2) on a computer (fig. 2.4).

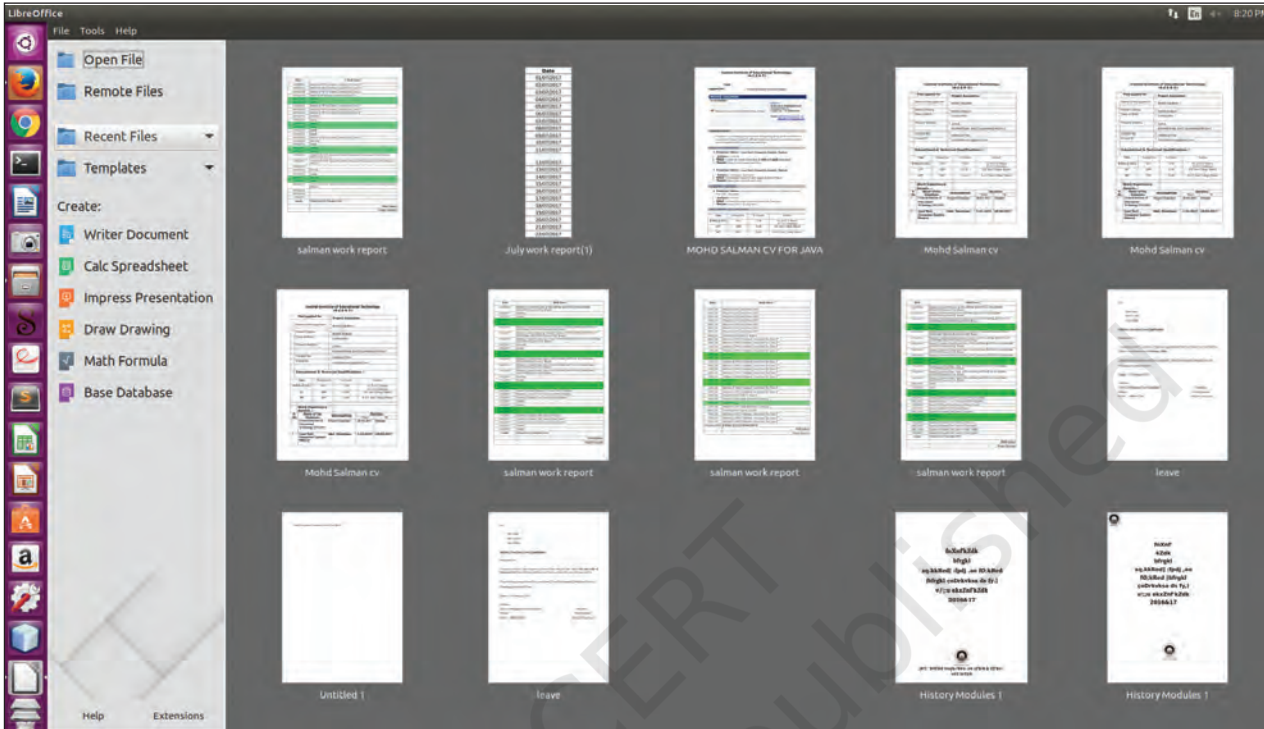


Fig. 2.4: LibreOffice

Rishi also wanted to prepare his report using word processor. So he asked Tanya to help him. After taking permission from their teacher, Rishi and Tanya went to the computer lab of their school. Tanya opened the text editor and asked Rishi to create a new document. Tanya explained him user of various keys on the keyboard (Fig. 2.5) for entering the text.



Fig. 2.5: Keyboard

Getting Familiar with a Keyboard

Enter key

- Press once to move to next line

Tab key

- Press once to move 5 spaces to the right of the cursor

Insert key

- Press once more to replace the old text with the currently typed text
- Press once again to activate the insert mode

Delete key

- Deletes the character to the right of the cursor

Backspace key

- Deletes the character to the left of the insertion point

Caps Lock key

- Press once to type the alphabets in uppercase
- Press once more to revert and type in lowercase

Shift key

- Press along with the alphabet key to type in uppercase if Caps Lock is OFF and in lowercase if Caps Lock is ON
- Press along with non-alphabet key to type the special character/symbol that is above the main character

Document: Any piece of information created using a text editor is called a document.

Cursor: A vertical blinking line in a text editor that indicates the place where anything that is typed will appear.

Tanya: Rishi, let's open the text editor by double clicking on the Writer icon on the desktop. Let us try to understand how we can work on the Text Editor. When we open text editor, a blank document as shown below (Fig 2.6) will appear. Tanya also demonstrated how to open a new file in the text editor. Rishi followed the steps demonstrated by Tanya for creating a new document.

The title bar of the new document contains the name of the document and the name of the application

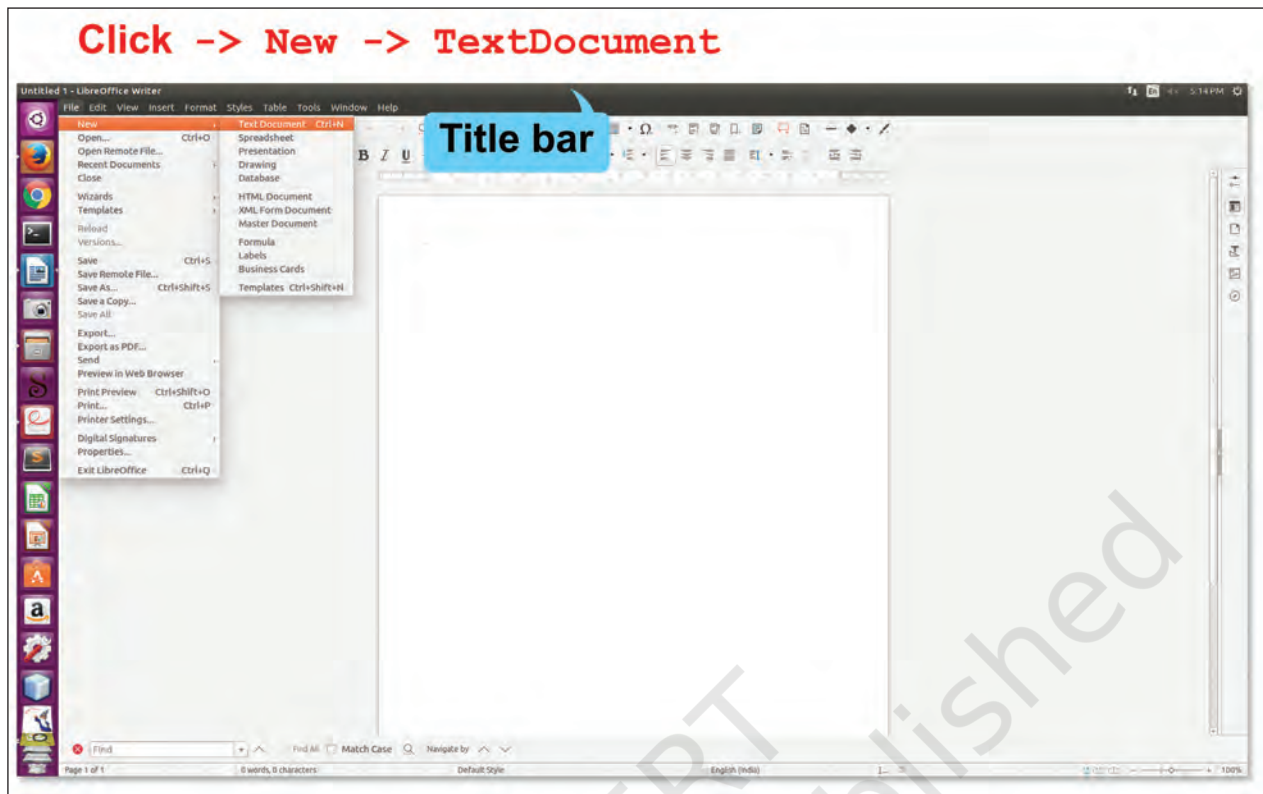


Fig. 2.6: Creating a New Document

(OpenOffice Writer). As Rishi had not given any name to his document, 'Untitled 1' is displayed on the title bar.

Tanya: First fix the setting of the document (Fig. 2.7) so that the page size, orientation, margins, and background colour can be fixed for the report.

Rishi: Why do we need to do that?

Tanya: Rishi, you must have noticed that the pages of your notebook are of the same size and contain margins too. This gives a consistent look to your notebook. Similarly if you set the margins and size of the document in the text editor, it will give a consistent look.

Rishi: What are the orientation types?

Tanya: If you want your document vertically elongated, select 'Portrait' orientation, if you want it to be horizontally elongated, select 'Landscape' orientation.

Rishi: OK, so I will select page size as A4, orientation as Portrait and 0.79 inch margin on all four sides of the page.

Tanya: Fine! And what about the background colour?

Rishi: My favourite colour is yellow ochre, so I will select that as the background for my document.

Rishi was happy to see the outcome of the page setting of his document and the coloured background of his page. He started typing the text in his report. After typing, his report looked as it is shown in Fig 2.8.

Rishi was happy to see the outcome of the page setting of his document and the coloured background of his page.

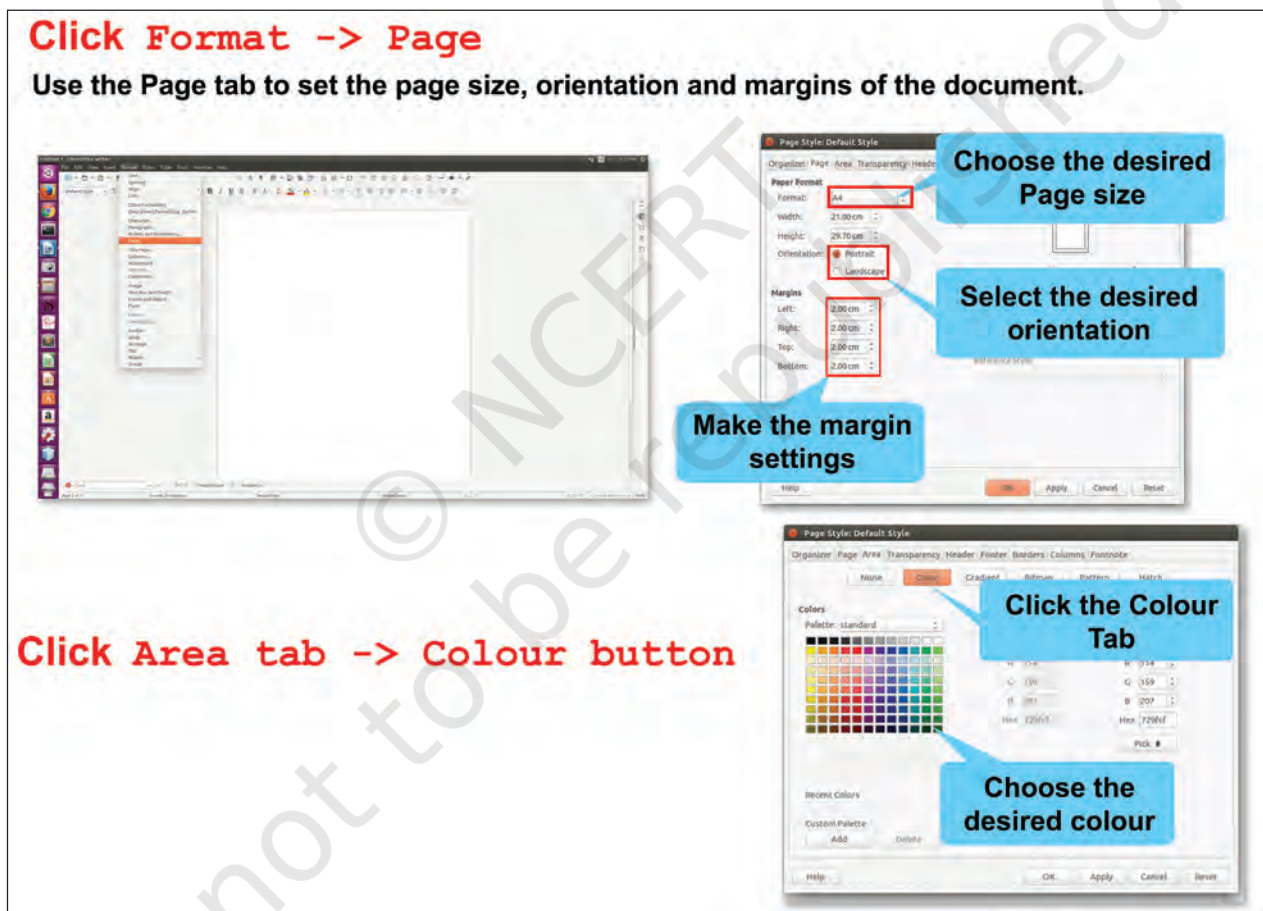


Fig. 2.7: Formatting the Page

He started typing the text in his report. After typing, his report looked as shown in Fig. 2.8.

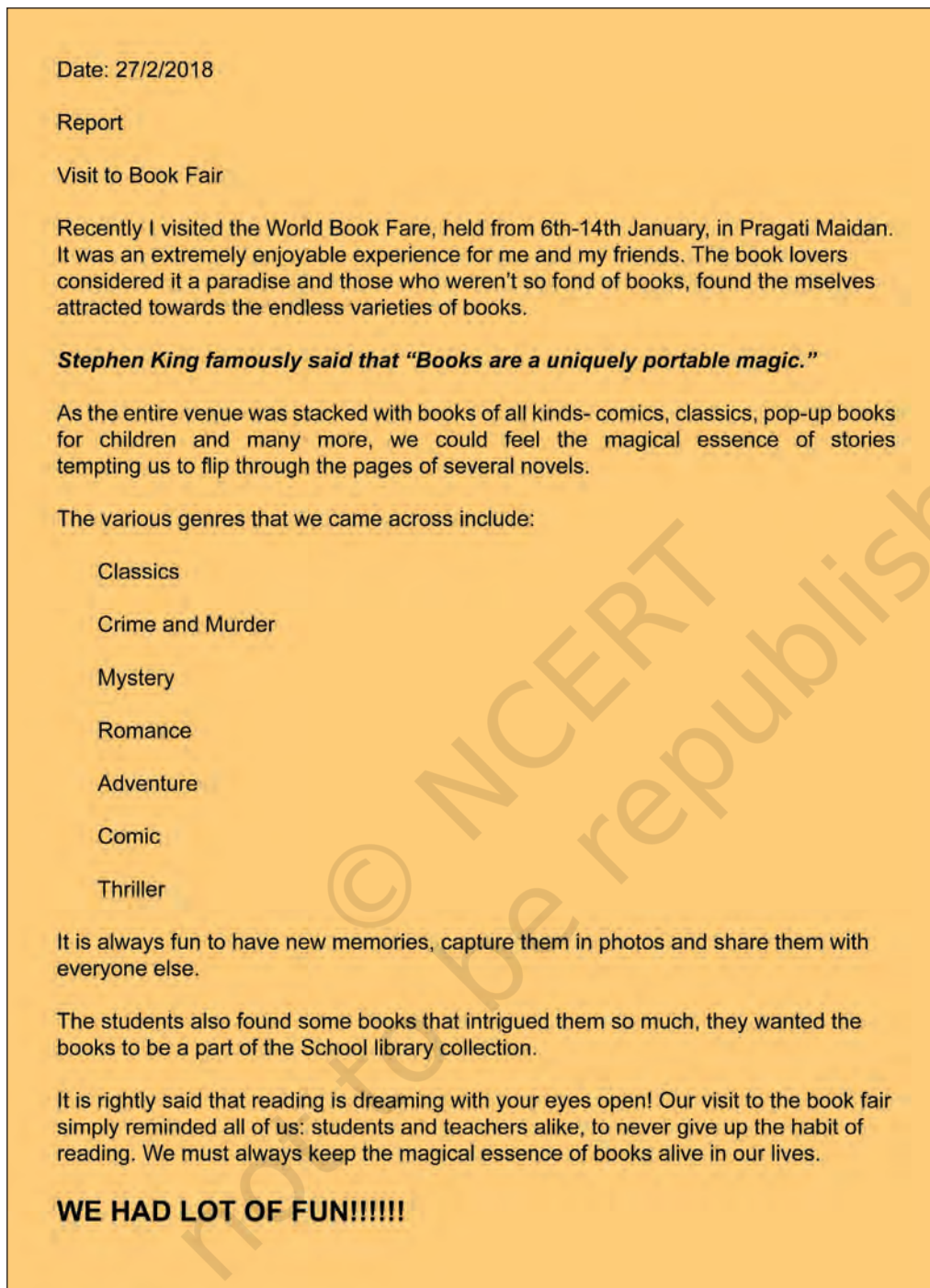



Fig. 2.8: Rishi's report

Activity 1

Create a text document on a topic of your choice. Choose A4 as page size and 'portrait' as page orientation. Now change the page orientation to 'landscape' and observe the change in the document.

Once the report was typed, Tanya suggested him to save the document as shown in Fig. 2.9 and then close it. It is only when the document is saved by a name, it can be opened again for viewing or editing. In fact, while creating a document it must be saved at regular intervals so that the changes made are permanently saved. To close the file click **File** → **Close** option. To close the word processor (Writer), you may click Close button  on the top-left corner of the screen.

Save the document by clicking **File** → **Save As**.

Give the name of the file, specify the location where it has to be saved and also the file format in which it should be saved. By default, the file will be saved in .odt format.

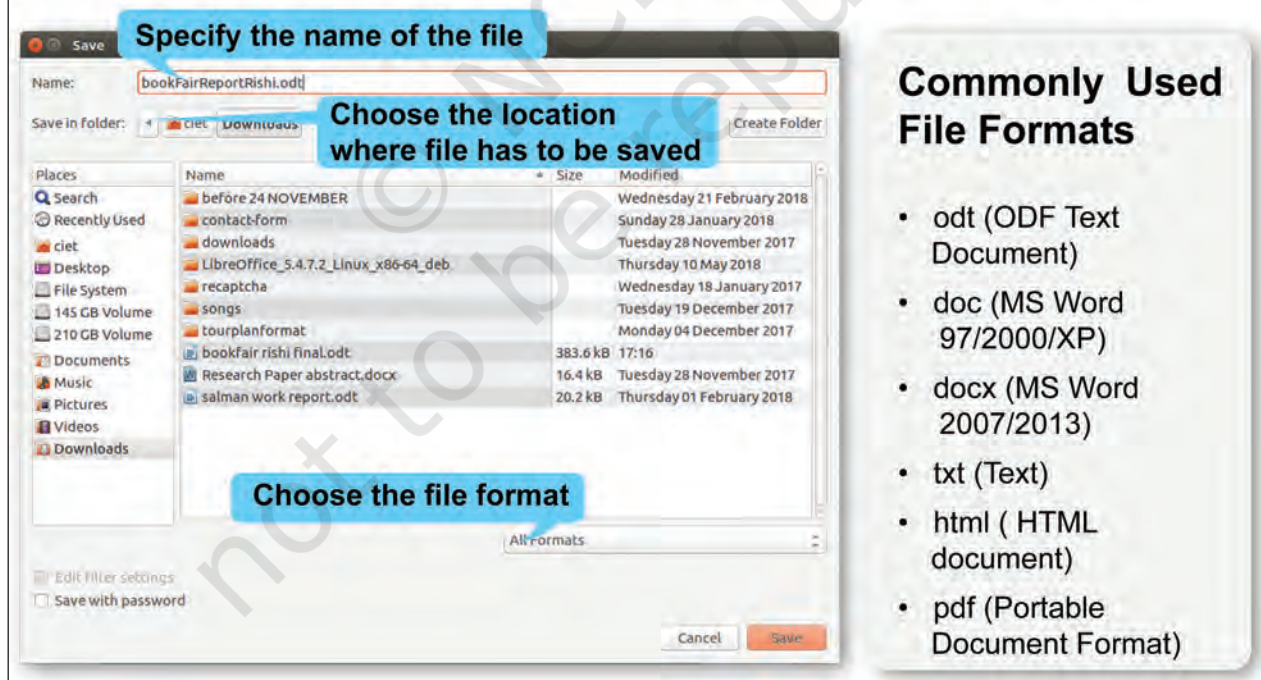


Fig. 2.9: Saving a File

Rishi saved the file by the name *bookFairReportRishi.odt* and then closed it by clicking on the Close button. Rishi wanted to learn more from Tanya, so he opened his file again.

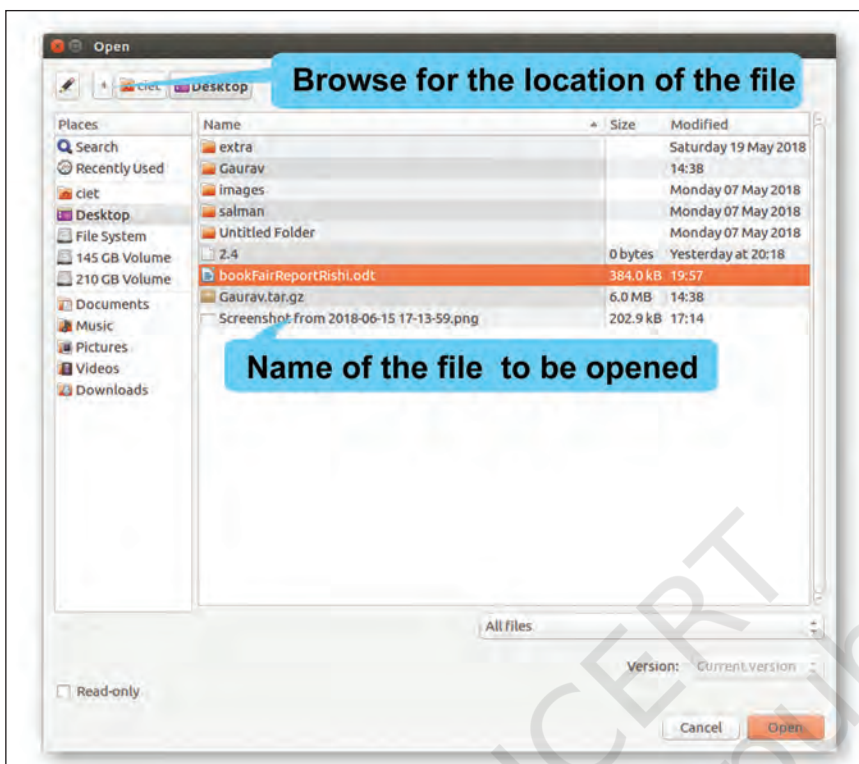


Fig. 2.10: Opening a Document

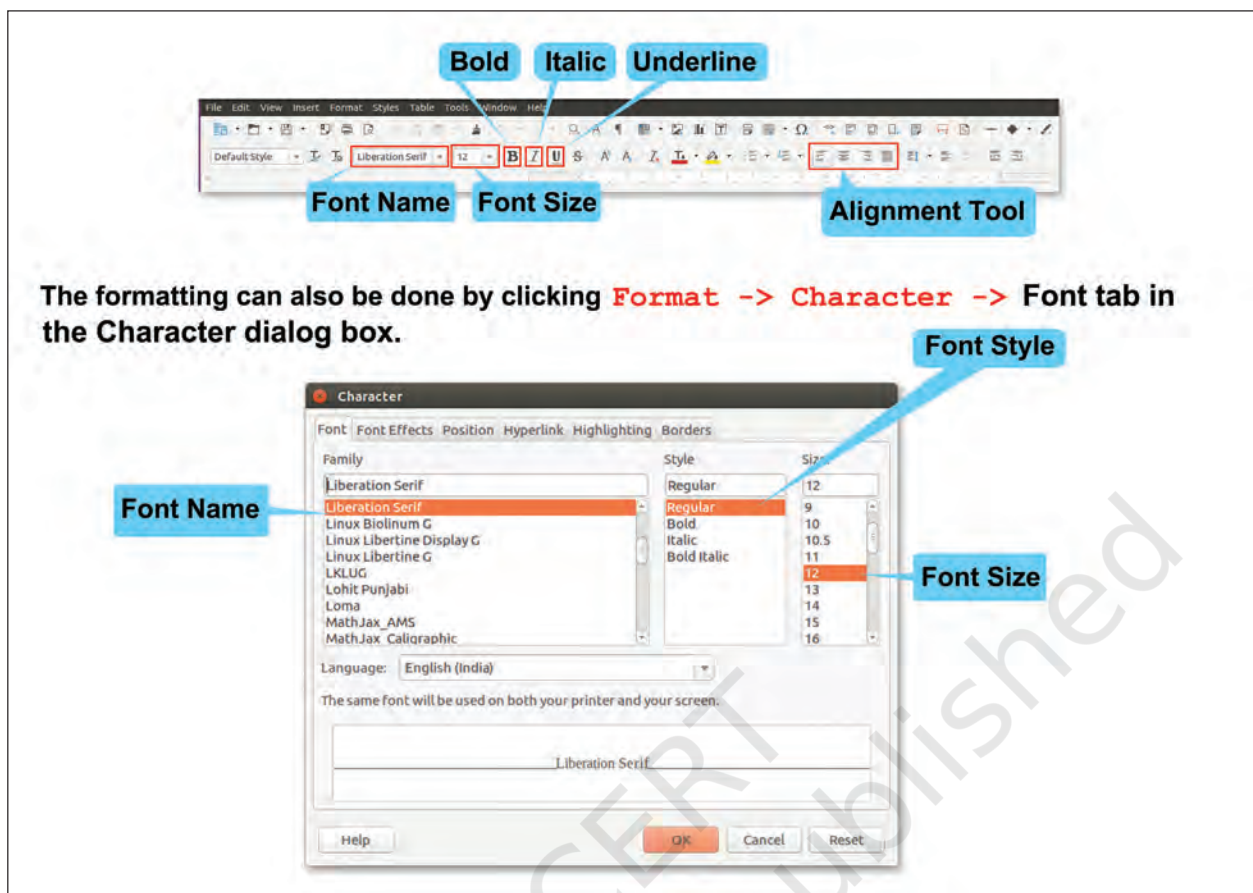
You can also perform a task using keys from the keyboard. These are called Shortcut keys. Some of the shortcut keys are listed below:

Opening a new document	Ctrl + N
Saving a document	Ctrl + S
Opening a document	Ctrl + O

Rishi was excited to see his report on the monitor but he wanted coloured text of different sizes in his report with a bold and underlined title. Tanya demonstrated the tools on the Formatting toolbar as shown in Fig. 2.11 that would help Rishi add these features to his report. He could choose the font name, size and style of his choice. Tanya also showed him some fonts names like Times New Roman, Courier New, Arial, Calibri, etc. She further mentioned tools to edit the font size and style—bold, italic or underlined.

- Choose **Save As** option when you are saving the file for the first time or you want to give a different name to an already saved file.
- Choose **Save** option when you want to simply save the changes made in an already existing file.

You should always save a file with a meaningful name. This helps you to easily identify the file when you want to open it later.



The formatting can also be done by clicking **Format** -> **Character** -> **Font** tab in the Character dialog box.

Fig. 2.11: Formatting text

Rishi formatted the text in his document by using the tools on the formatting toolbar, now he wanted the title in the centre of the page and date on the top-right corner. Tanya then introduced Rishi to various alignment tools:

- Align left: aligns the text to the left margin of the page
- Center horizontally: aligns the text to centre of the page
- Align right: aligns the text to right margin of the page
- Justified: aligns the text to both left and right margin of the page

Rishi felt that his report was looking congested. He wanted a little bit more spacing between the lines of the paragraph. Tanya then explained that the spacing can be set between the lines and also between the paragraphs as shown in Fig. 2.12. The former is called

line spacing and the latter is called paragraph spacing. Demarcating a new paragraph by adding few blank spaces in the beginning of the first line of the paragraph can also be done. This is called indentation.

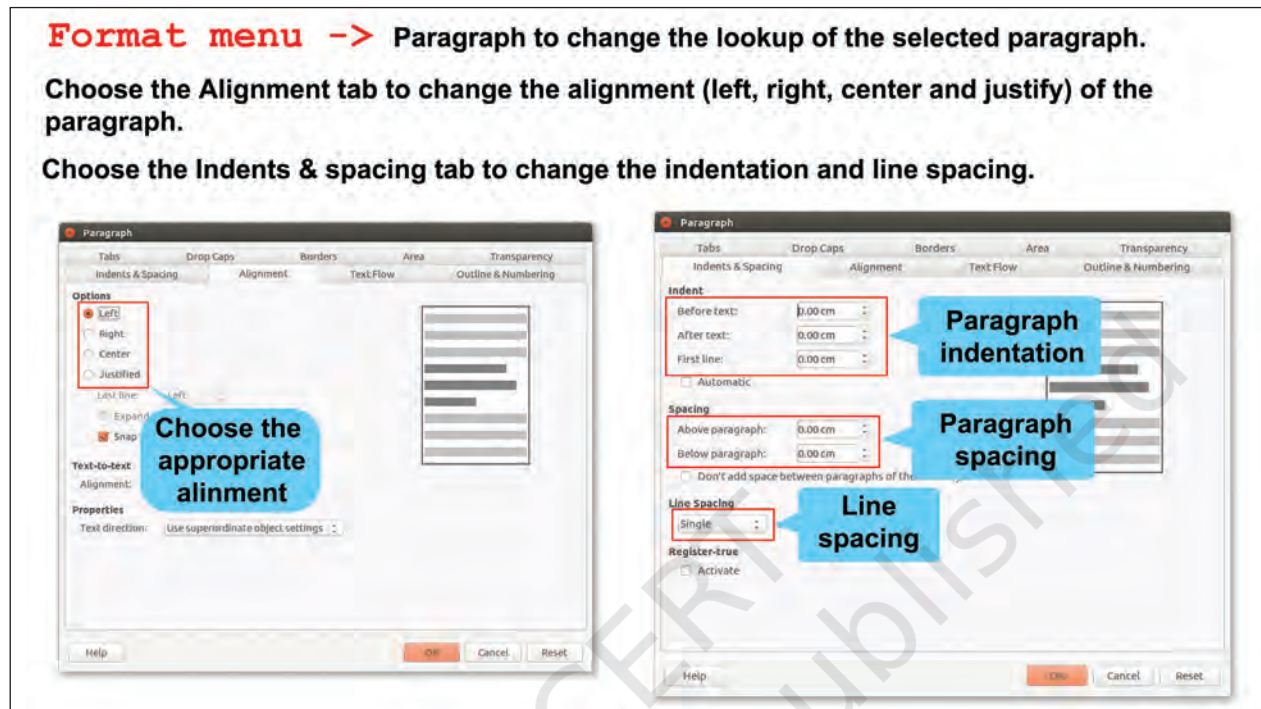


Fig. 2.12: Formatting a Paragraph

Rishi was happy to apply all the formatting effects to his document. Now his report, in Fig. 2.13 appeared more effective as compared to that shown in Fig. 2.8.

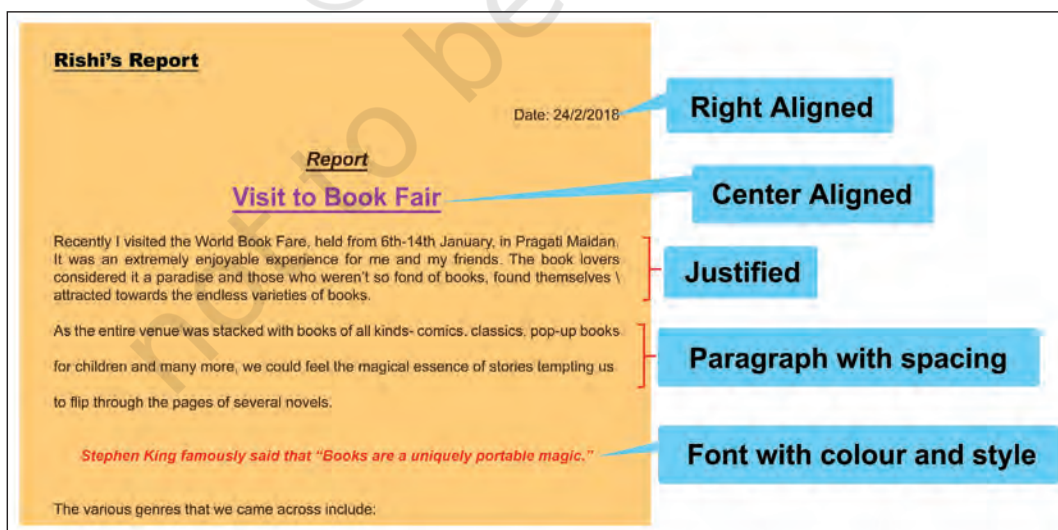


Fig 2.13: Rishi's Page with Formatting Effects

Activity 2

Shortcut keys

Bold Ctrl + B

Italic Ctrl + I

Underline Ctrl + U

Using a text editor, write a paragraph on 'My Favourite Festival' and apply various formatting effects listed below.

Also add a quote 'Festivals' in the beginning of the chapter. Mark a tick in front of the features that you were able to apply in your document.

- Title: Bold and Centre aligned
- Important points: Underlined, Bold
- Paragraph: Justified
- Background and Text: Coloured
- Font Style
- Indentation and Line Spacing

There were certain red and green wavy lines in Rishi's document. As Rishi asked her about the lines, Tanya told him that the red wavy line appears below a spelling mistake and the green wavy line appears below a grammatical error. Now, Rishi tried to correct the mistakes by placing the cursor at the appropriate position and retyping them. Tanya explained that instead of doing it manually, it can be done by using the **Spelling and Grammar** check feature of the word processor as shown in Fig. 2.14.

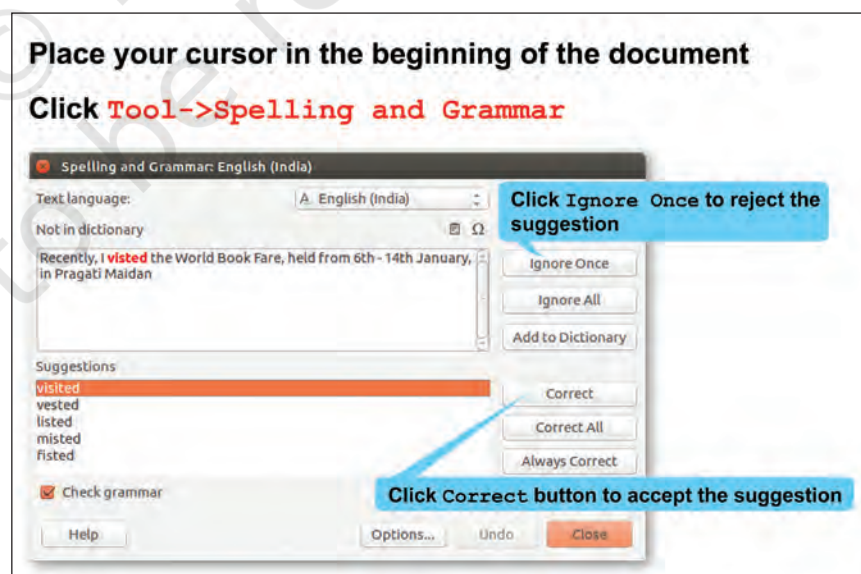


Fig. 2.14: Spelling and Grammar Check

Suddenly, Tanya noticed that the word ‘Pragati Maidan’ had a red wavy line below it although it was not a spelling mistake. On the other hand, Rishi had typed the word ‘fare’ instead of ‘fair’ in his document but it did not have a red wavy line below it, as shown in Fig. 2.15.

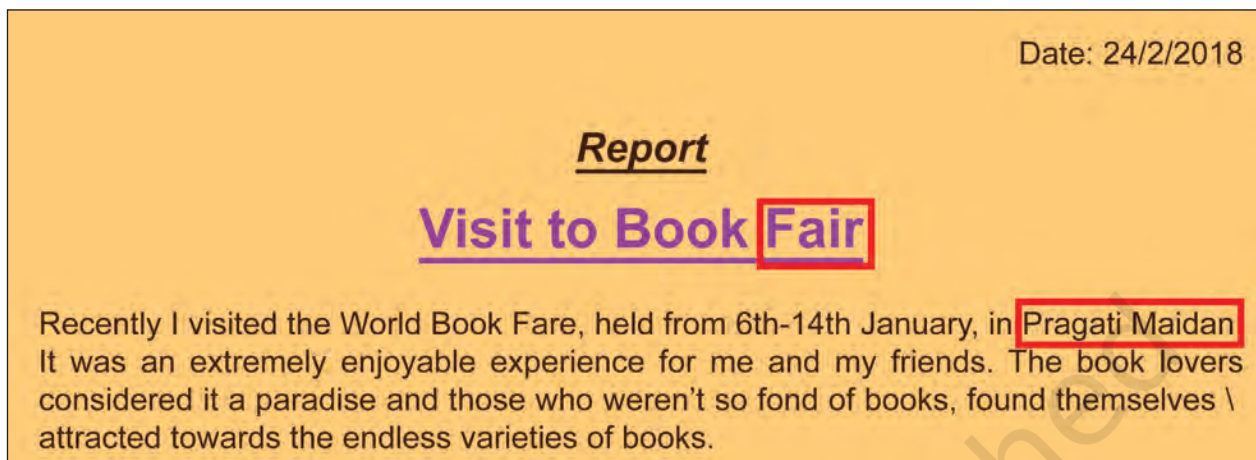


Fig. 2.15: Errors in Rishi's Report

Tanya again opened the Spelling and Grammar dialog box, selected the words ‘Pragati Maidan’ and clicked Add to Dictionary button. Since the words were now added to the dictionary of the text editor, the red wavy line no longer appeared below these words.

To delete the word ‘Fare’ and type ‘Fair’, Rishi placed his cursor before the word ‘Fare’. He had to repeat this process for all occurrences of the word ‘Fare’. This is how he learned to use the Find and Replace feature of the text editor, as shown in Fig. 2.16.

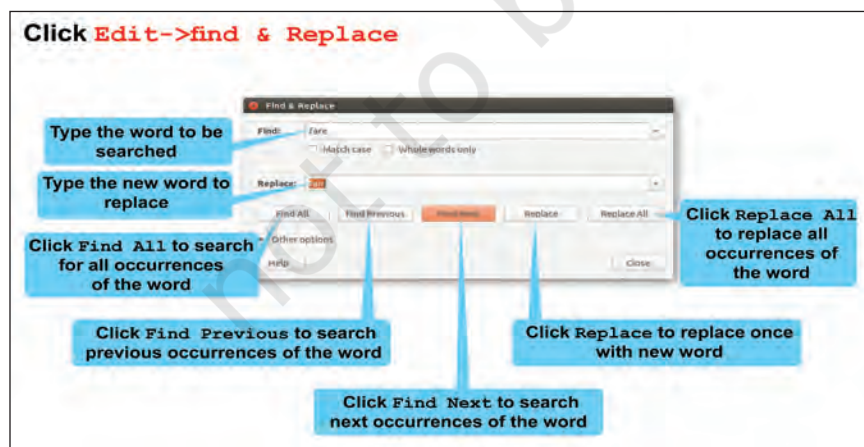


Fig. 2.16: Find and Replace

Shortcut keys

Cut Ctrl + X
Copy Ctrl + C
Paste Ctrl + V
Spelling & Grammar
F7
Find & Replace
Ctrl + H

Rishi wanted to change the position of the quote by Stephen Hawking. One method is to delete it from its present position and retype at the new position. The better way is to use the cut and paste commands, through which the text will be removed from the original position and pasted to the new position. If you want the text to be duplicated and pasted at the new position, then choose the Copy command instead of Cut command (Refer Fig. 2.17).

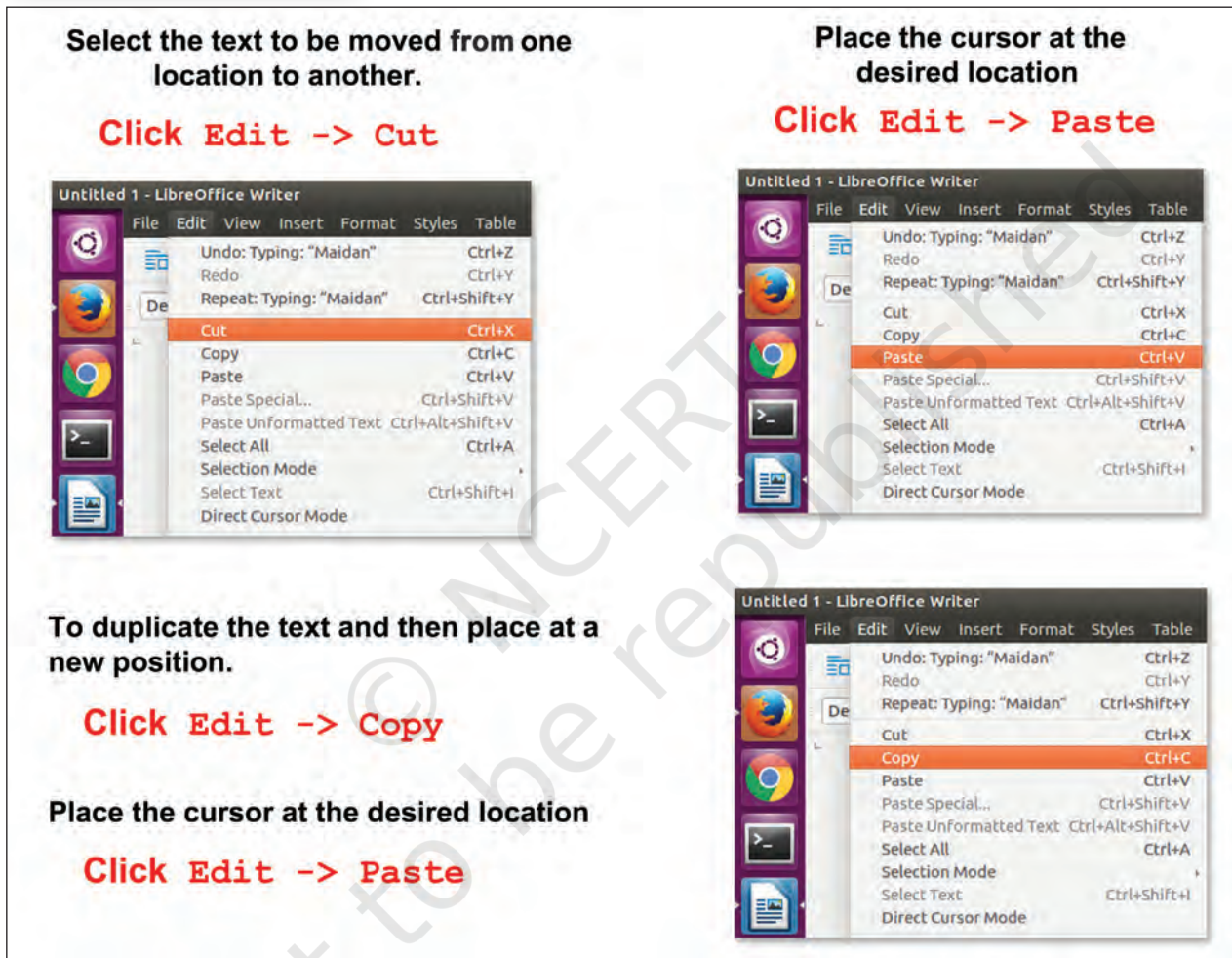


Fig. 2.17: Cut, Copy and Paste

Activity 3

Open the file that you created in Activity 2. Copy the quote and Paste it at the end of the document. Thereafter do it by Cut and Paste. What difference did you notice between Cut and Copy options?

In Tanya's report, Rishi had also seen certain symbols preceding the names of the genres of books. When Rishi asked her, Tanya explained that such a list can be created using the **Bullets and Numbering** feature of the text editor as shown in Fig. 2.18. Using Bullets feature, the list is preceded by certain symbols. For list items, shown by bullets ordering is not important, on the other hand, **Number and Alphabets** feature can be used when there is some order in the list.

Rishi used bullets as shown in Fig. 2.19 to list the different categories of books he had seen in the book fair.

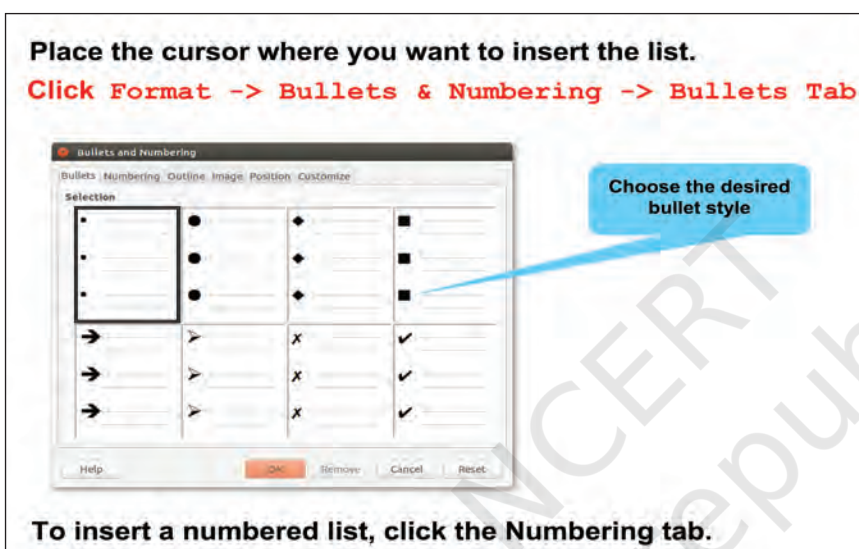


Fig. 2.18: Creating a Bulleted List

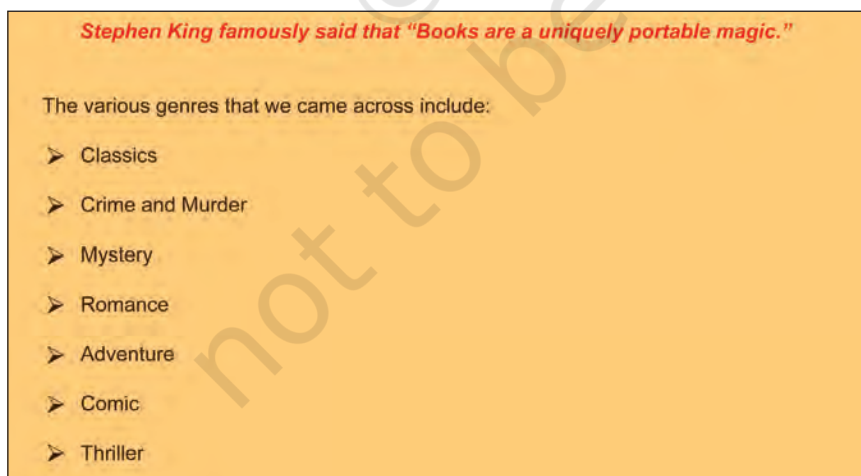


Fig. 2.19: Rishi's List with Bullets

Activity 4

Tick the appropriate options given in the bracket and create at least one bulleted and one numbered list using a word processor.

- List of fruits you like (Bullets/Numbering)
- List of fruits you like in order of preference (Bullets/Numbering)
- Steps to make a cup of tea (Bullets/Numbering)
- List of your favourite games (Bullets/Numbering)

During his visit to the book fair, Rishi had made a list of his favourite books and CDs in his diary. He wanted to create a table depicting Serial Number of the listed books and CDs, Title of the book and CD and Name of the Publisher. Tanya explained the table feature to help him complete the task. He inserted a table (as shown in Fig. 2.20) with three rows and four columns. Tanya also explained him how to insert more rows and columns in the table. He inserted two more rows at the bottom of the table (as shown in Fig. 2.21), since he needed to add 5 names.

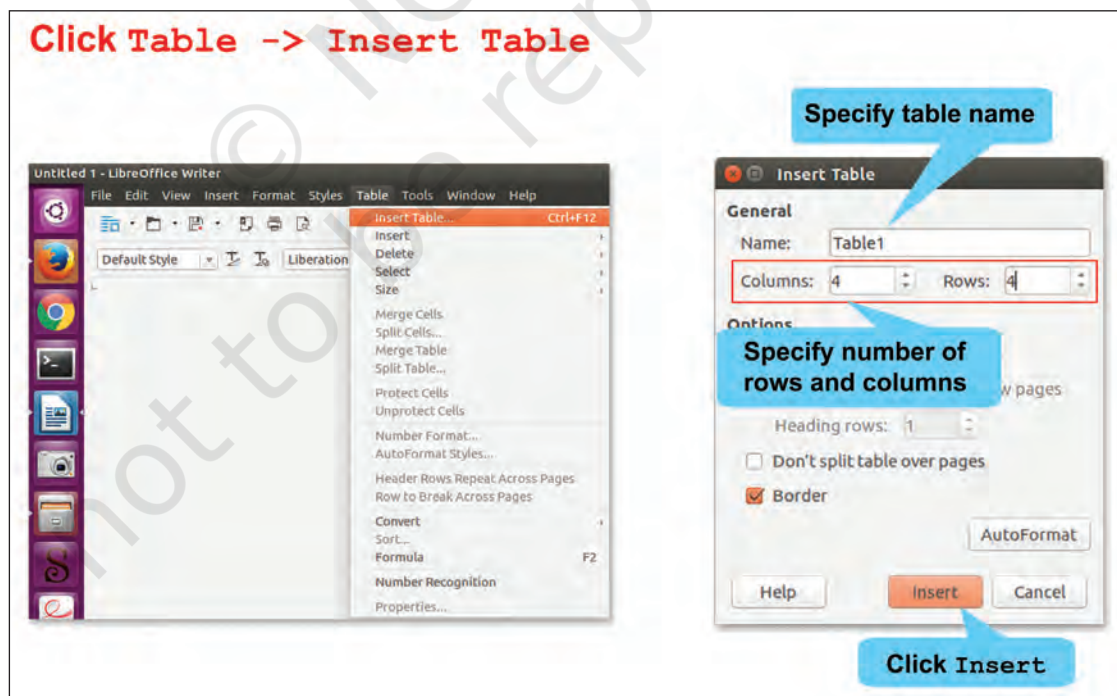


Fig. 2.20: Inserting a table

Click Table -> Insert -> Rows

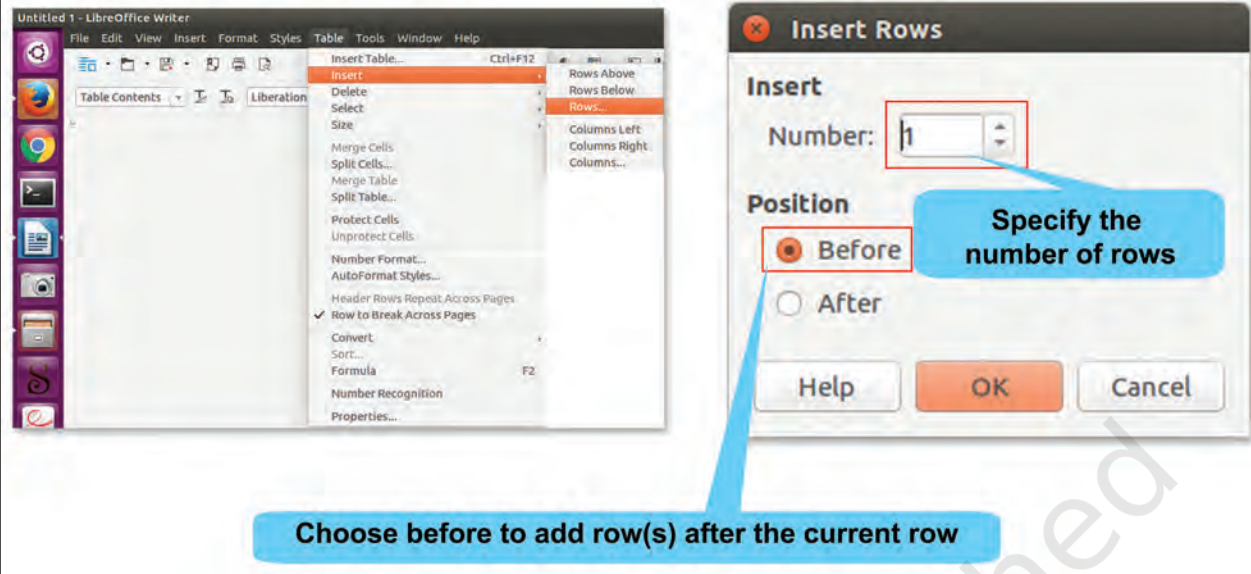


Fig 2.21: Inserting Rows in a Table

Rishi successfully inserted the table in his document. He also wanted to add a border to his table, so Tanya showed him how to format the table to add borders (Refer Fig. 2.22).

Click Table -> Properties -> Borders tab

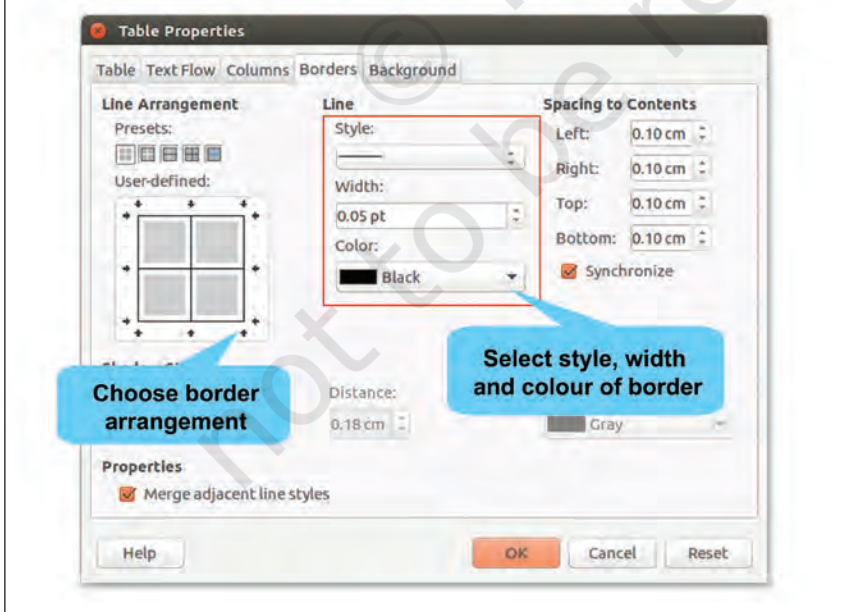


Fig. 2.22: Borders tab

Rishi was able to apply green borders to his table. He also gave headings to his table by using **Bold** tool on the formatting toolbar. That is how Rishi's table looks (Refer Fig. 2.23).

S. No.	Title of Book/CD	Category (Book/CD)	Name of the Publisher
1.	Science – Vigyan	Textbooks	NCERT
2.	Urdu – Gulzar-e-Urdu	Textbooks	NCERT
3.	Mathematics for Grade 6	Textbooks	NCERT
4.	Mind Map Your Brain	Audio /Video CDs	-----
5.	Encyclopedia	Audio /Video CDs	Britannica
6.	What on earth is energy?	Children's Book	NCERT
7.	Indian Education	Journals	NCERT
8.	Barkha – A Reading Series for All	Miscellaneous	NCERT

Fig 2.23: Table Inserted by Rishi

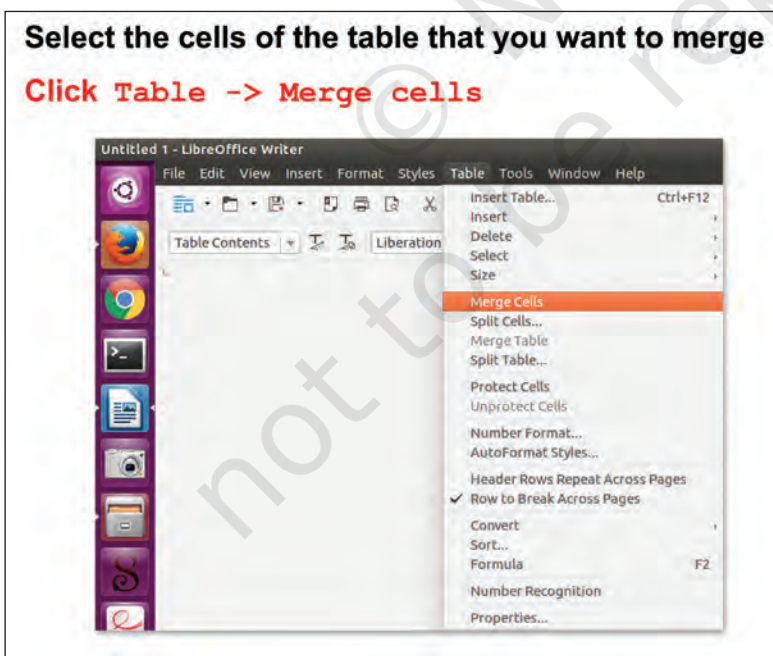


Fig. 2.24 : Merging Cells of a Table

He observed that the category 'Textbooks' was repeating in three rows. He wanted the word 'Textbooks' to appear in such a manner that it represents all the books under this category. Similarly he wanted 'Audio and Video CDs' to represent both type of CDs. This could be done using **Merge** feature of the text editor, as shown in Figs. 2.24 and 2.25.

S. No.	Title of Book/CD	Category (Book/CD)	Name of the Publisher
1.	Science – Vigyan	Textbooks	NCERT
2.	Urdu – Gulzar-e-Urdu		NCERT
3.	Mathematics for Grade 6		NCERT
4.	Mind Map Your Brain	Audio /Video CDs	-----
5.	Encyclopedia		Britannica
6.	What on earth is energy?	Children’s Book	NCERT
7.	Indian Education	Journals	NCERT
8.	Barkha – A Reading Series for All	Miscellaneous	NCERT

Fig. 2.25: Table with Merged Cells

Rishi had a very good photograph of book fair saved on the desktop. He wanted to insert that photograph in his report. Tanya helped Rishi to insert the photograph in his report (Refer Fig. 2.26).

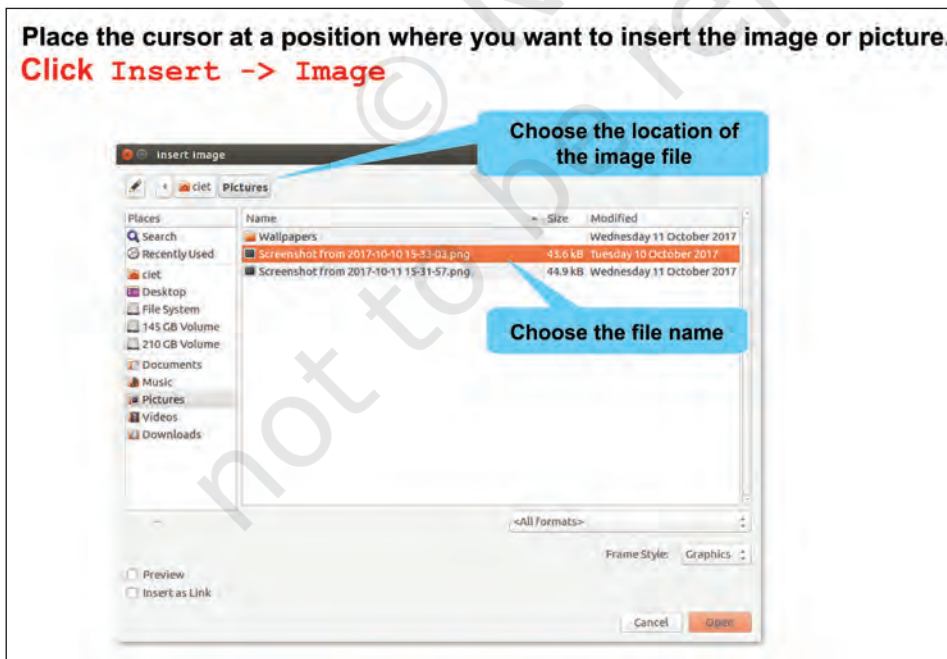


Fig. 2.26: Inserting a Picture

To further enhance the report, Tanya demonstrated how to insert headers and footers in the document as shown in Fig. 2.27. A header contains the text that will be displayed on the top of each page of the document while the text in footer will be displayed at the bottom of each page of the document. Rishi wanted to insert the text 'Rishi's Report' as the header and page number as the footer.

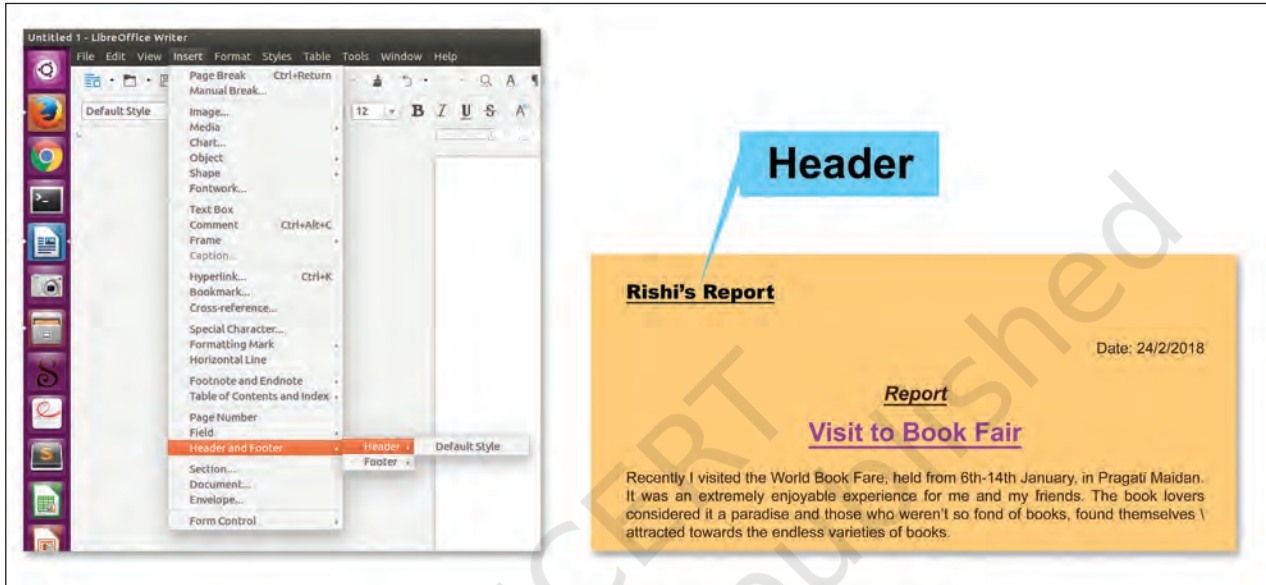


Fig. 2.27: Inserting a Header

Tanya explains him how to insert Header and Footer to document (Refer Fig. 2.28).

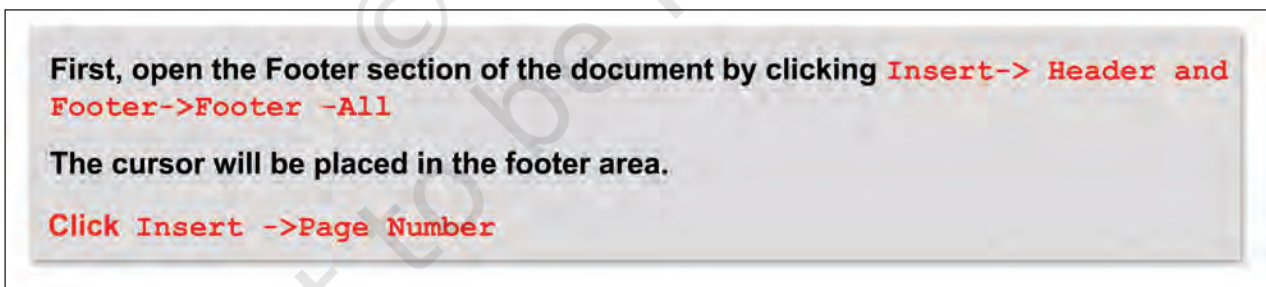


Fig. 2.28: Inserting Page Number

Take any textbook of Class IX and observe what has been placed as header and footer on the pages of that textbook.

Activity 5

In the document created in Activity 2, do the following:

- Insert the list of food items prepared during the festival
- Insert the 'Favourite Festival' in the header and page number in the footer
- Add a table describing atleast five activities that happens during festivals

Tick mark the features you have added to your document.

- Bulleted list/numbered list
- Tables with headings
- Merge rows/columns
- Header and footer
- Picture/photograph

Answer the following questions based on the above activity.

- In which menu option did you find the table option?
- Have you inserted a bullet list or a number list?
- How many rows and columns does your table have?
- What did you insert as a footer in your document?

Rishi was very happy to see his document now. He wanted to show it to his teacher and parents. So, he decided to take two printouts. Before giving the print command, Tanya clicked the File→Print Preview button

Keep saving your document at regular intervals.

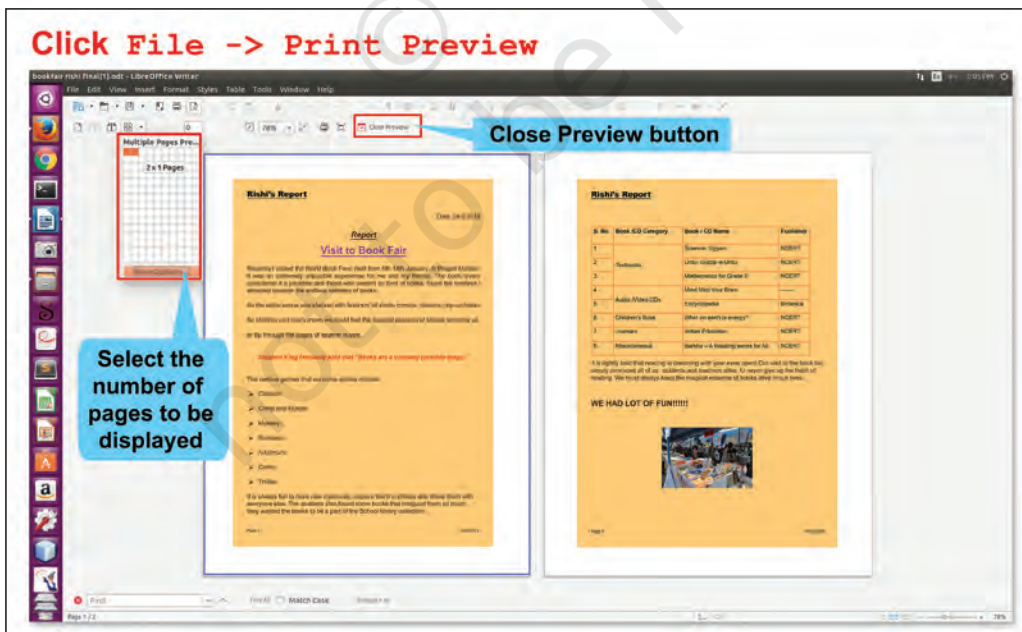


Fig. 2.29: Print Preview

to show Rishi how the document would appear on paper. By doing so both the pages of Rishi's report were displayed as shown in Fig. 2.29. Tanya told him how to set the number of pages that he wanted to see while previewing the document. Since Rishi was happy with his final report, he clicked Close Preview button to close the preview. Tanya again reminded him to save the document and Rishi clicked the Save command. Now it was time to print Rishi's report. He switched on the printer and made sure that the printer was connected to the computer. Then he opened the Print dialog box and selected '2' for the number of copies of the document to be printed as shown in Fig. 2.30.

Take a print out only if it is required. Avoid wasting paper and contribute your bit towards saving trees.

If the report is in digital form, either saved in some storage device or seen on the monitor, it is called a **soft copy**.

The report that is printed on the paper is called a **hard copy**.

It is not ethical to see or edit other people's documents and material without seeking permission.

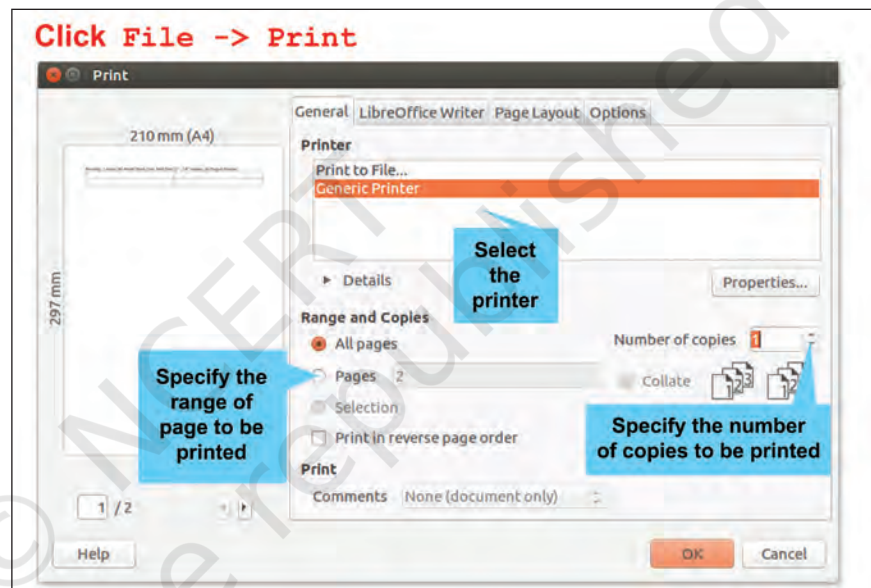


Fig. 2.30: Printing a document

Next day, Rishi and Tanya opened the document to show it to their friends in the computer lab of their school. On opening the file, they were surprised to see that the document was not the same one that they had saved a day before. Some student might have altered the report. Their teacher explained that their document had been saved in an editable format, so it could be modified or edited by anybody. If they wanted that their document should not be edited or modified in any manner, then they should convert and save their file in a non-editable format. One such format is a Portable Document Format (pdf). Once a document is saved in

this format (as shown in Fig. 2.31), it becomes non-editable. Their teacher then explained how to convert the final document into pdf format.

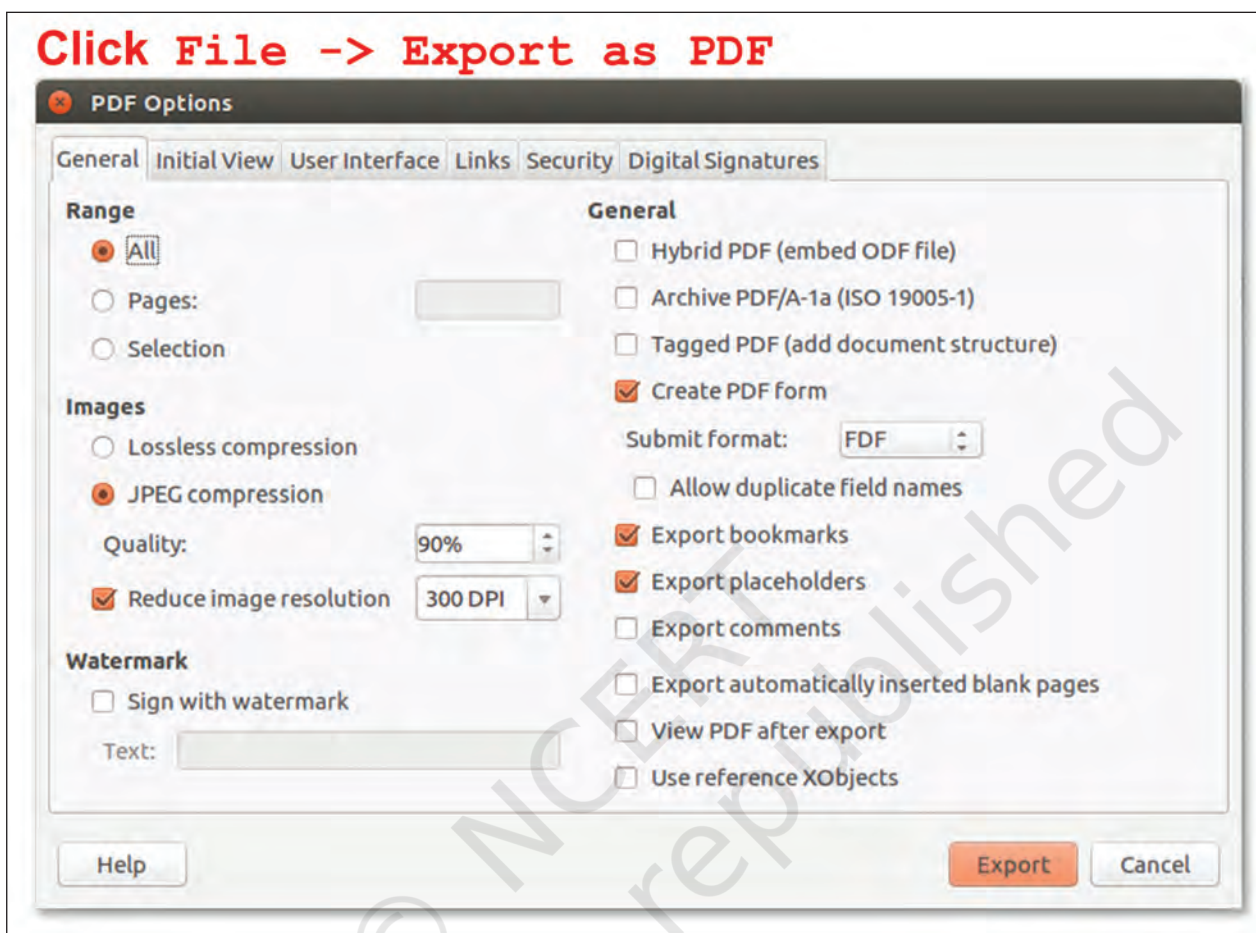


Fig. 2.31: Converting to PDF Format

Tanya and Rishi were delighted to show the report to their friends. They had learned to use the various features of a text editor. Their teacher was also very proud of them and encouraged other students to learn how to use a text editor. This will help them to create their own digital document.

Exercises

Do it Yourself

1. Identify whether the following statements are True or False
 - a. Spelling and Grammar check is a part of text editor.
 - b. Bullet listing and numbering can be done using Format option in a text editor.

- c. Copy feature is used to make copies of a picture.
 - d. Before taking a printout, check if its Print Preview is favourable.
2. In your school, Independence Day was celebrated. Prepare a detailed digital report using a text editor so that it could be printed in the school magazine.
 3. Using a text editor, create a document to express your thoughts on your favourite movie.
 4. You got a chance to view a cricket match in the stadium. Create a document to share the experiences with your friends.
 5. The Red Cross Society is organising a Cleanliness Drive in your locality. Create a document to summarise the welfare activities performed by them during that period.
 6. Collect the family details (5–6 families) of the people living in your locality and present that information in a tabular form. Format the table and check, if some rows or columns can be merged to simplify the table. After creating the document, save it and submit the printout to your teacher.

Chapter 3

Creating Visual Communication



Fig 3.1 : Village mela

Samayra and Shirom visited a fair organised in a village and wanted to write and send an article in a newspaper consisting of a writeup and a collage. They were very happy as Samayra was fond of photography and Shirom was good at writing articles. Samayra took pictures throughout the day and in the evening they both sat down to check those pictures. When they saw

the pictures they were not happy as the pictures were a little dull and not focussed properly.

Shirom: Samayra, don't get upset I am familiar with a graphics editor software which will help us in modifying and enhancing these images.

Samayra: Shirom, do you know editing can also be done with a smartphone.

Shirom: Yes Samayra, you are absolutely correct, but I know a Free and Open Source Graphics Editing Tool which can help us to enhance images we have.

GIMP is a multimedia tool suitable for a variety of image manipulation tasks, such as photo editing, collage creation and free from drawing. GIMP stores an image in .xcf format.

Check Yourself

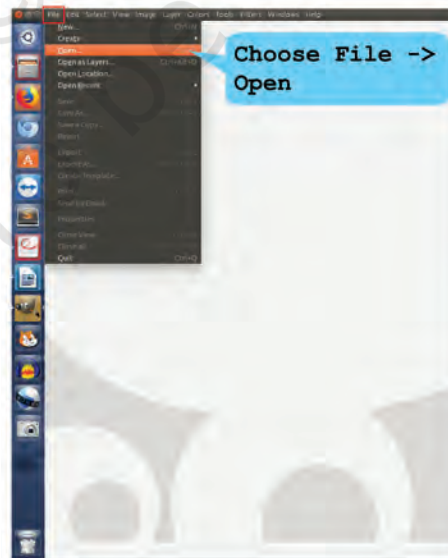
What needs to be checked for selecting a picture for an article?

- (a) Clarity of picture
- (b) Information in the picture
- (c) Size of the picture
- (d) Any other _____

Shirom: Samayra, now tell me what modifications you want in these images. I will demonstrate how we can use various features of the graphics editor for modifications in these images.

Shirom: Let's first open the image we want to modify. (Refer Fig. 3.2).

Canvas is the area where you insert and modify an image. A canvas can have many layers. A layer comprises one image. The New option of File menu also opens a new canvas where we can mention the size of the image. The size of an image is measured in pixels. A pixel is the smallest illuminated area on a screen.



The original image gets opened up in the canvas for modifications.

How to restore the original image if the modifications are not required???

Fig 3.2: Opening an image

Samayra: Shirom, see this image. It contains some unwanted areas which I don't want. Refer Fig. 3.3.



Fig. 3.3: Image showing unwanted area

Shirom: Don't worry Samayra let me tell you how you can remove the unwanted area of the picture. This is known as cropping as shown in Fig. 3.4.

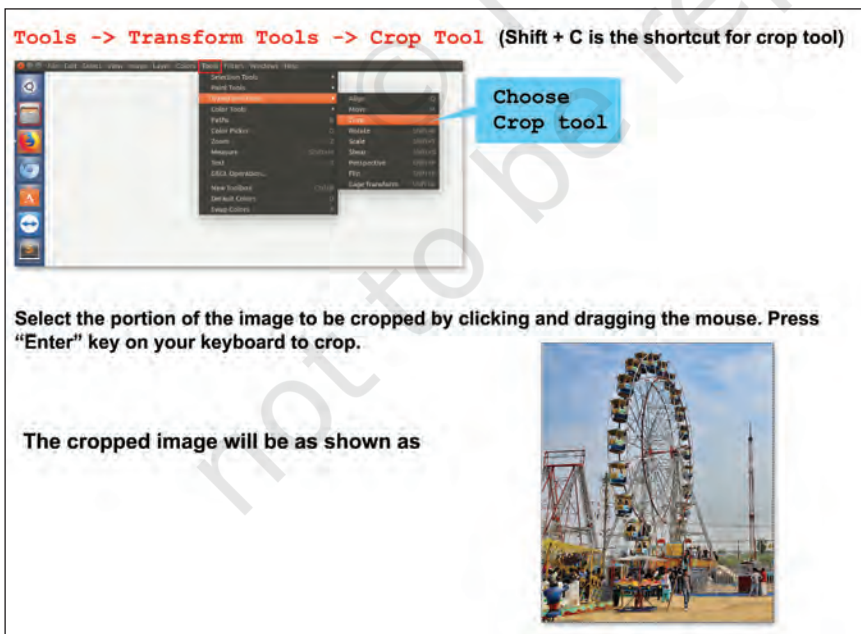


Fig. 3.4: Cropping an image

A Tool box is an area which contains tools to perform basic tasks. Tools can be added or removed as per our requirements. The toolbox is placed by default on the left side when you open GIMP interface. One can also select the portion to be cropped by using Tools → Selection Tools → Rectangle Select. Select and then select Image → Crop to Selection to crop an image.

Samayra: Yes Shirom, this is exactly what I wanted.

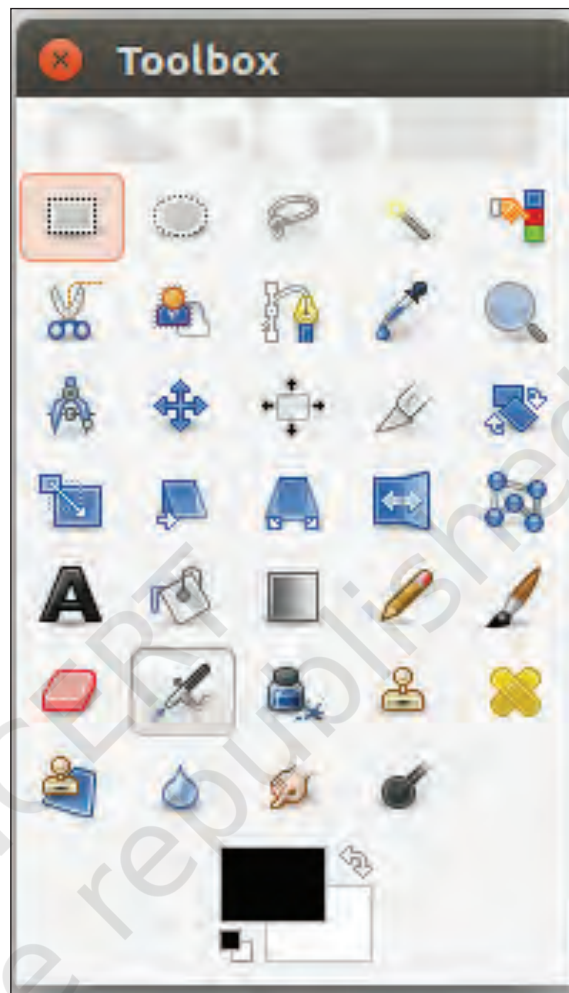


Fig. 3.5 : Tool Box

Moving the mouse pointer over the tool in the toolbox, as shown in Fig. 3.5 and letting it rest for a moment, usually displays a 'tooltip' that describes its usage. Short cut keys are also frequently shown in the tooltip. In many cases, you can hover the mouse over an item and press the F1 key to get help about the tool that is underneath the mouse.

Shirom: Samayra, let me now tell you how to create a copy of an image. For this we will have to create a new layer. Refer Fig. 3.6 to add a new layer.

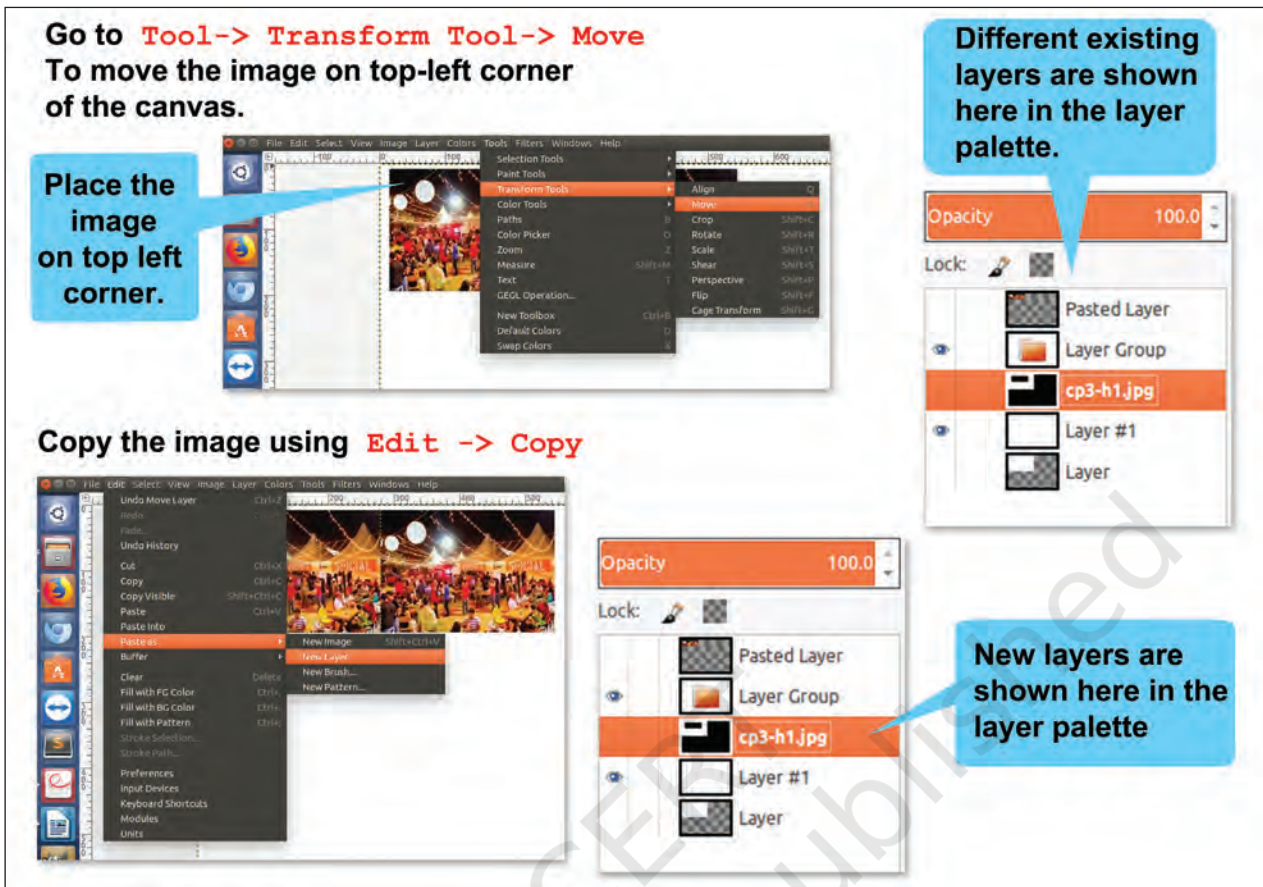


Fig. 3.6 : Layering an Image

Paste the copied image to new layer using Edit→Paste as→New Layer.

A new layer with the image is created on top of the previous layer. Click on the image and using the Move Tool to move the image to right side of the existing image.



Fig. 3.7 : Copied image

Samayra: Shirom, I was thinking of creating a replica of this image but in the opposite direction.

Before flipping should a copy of the image be kept?

Shirom: Oh, that's known as flipping an image.

To do that we first need a copy of the image you want to flip. Refer Fig. 3.8 to flip an image.

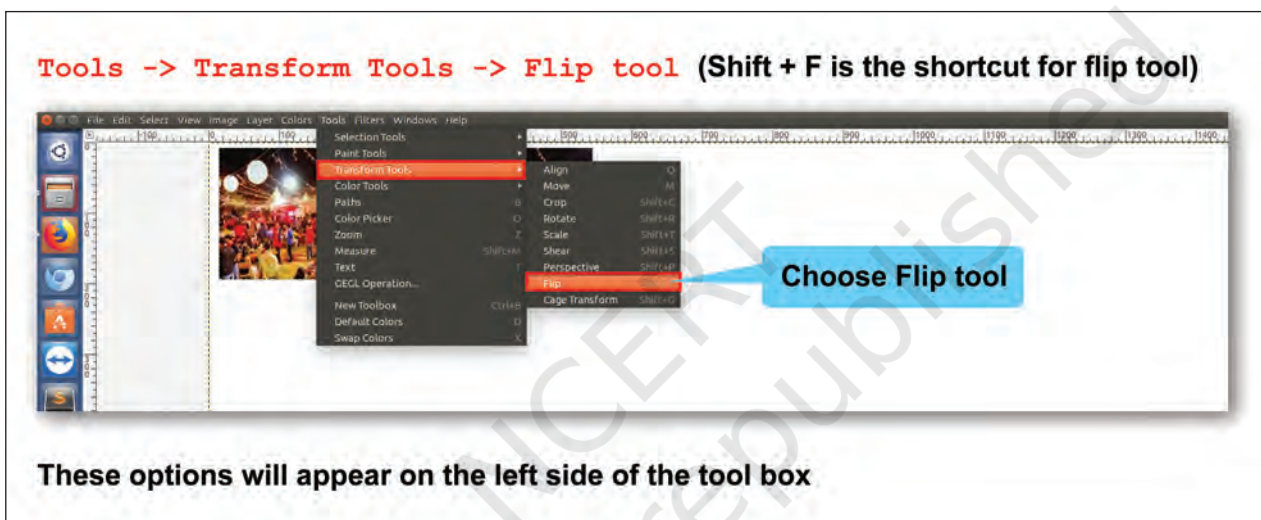


Fig. 3.8: Flipping an image



Fig. 3.9: Flipped image

Shirom: Samayra, just like flipping we can also rotate an image. Refer Fig. 3.10 to rotate an image.

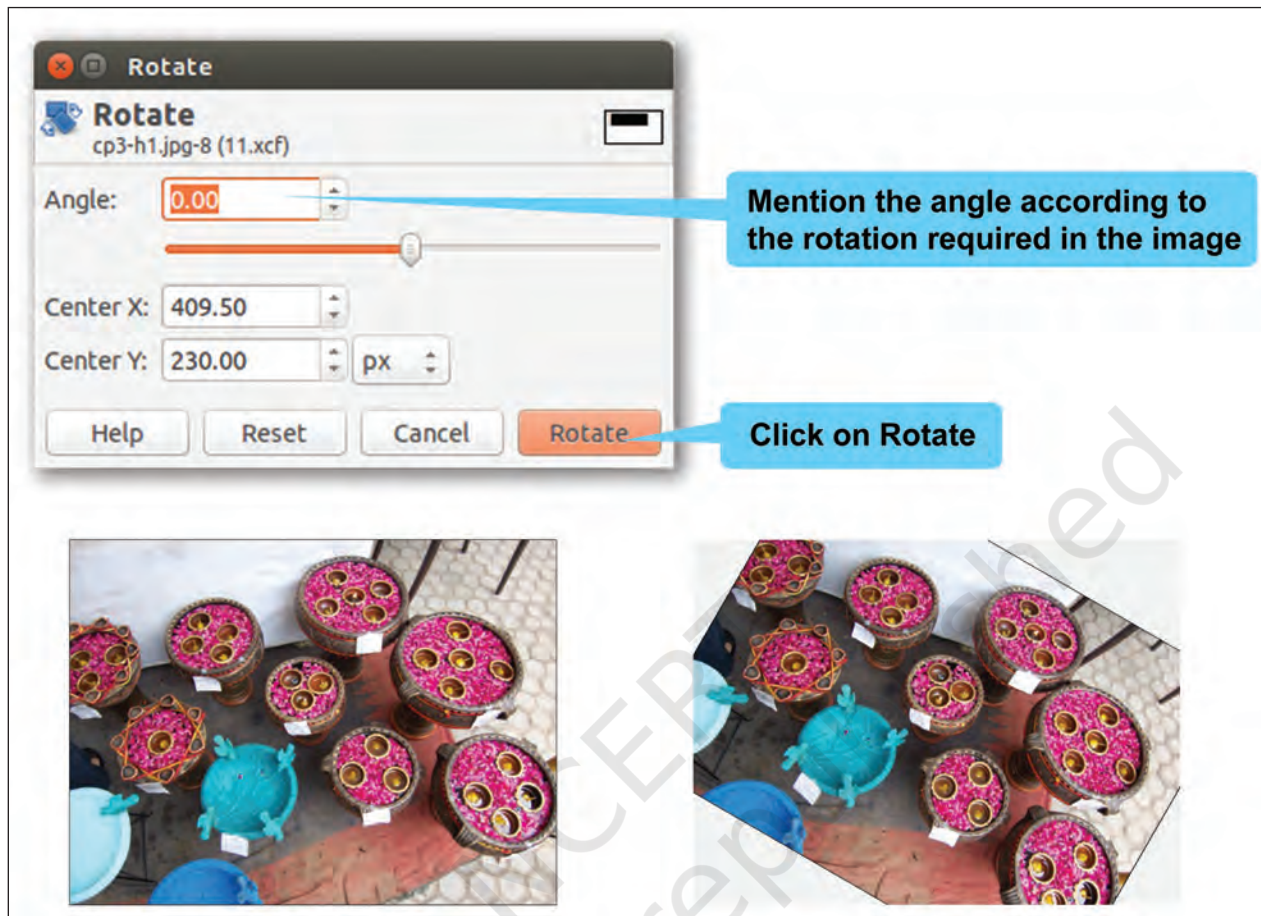


Fig. 3.10: Rotating an image

Check Yourself

Download an image of a flower.

1. Create a copy of this image.
2. Use the shortcut key to crop certain areas of this image which you think are not required.
3. Flip the cropped image vertically.
4. Rotate the flipped image by 90 degrees.

Shirom: Another important aspect is to reduce the size of an image so that it can be mailed or used for any other purpose. The solution for this is to scale the image. Scaling down is the process of reducing the size of an image. This will change the number of pixels it

contains and resize the canvas accordingly. An image can be scaled in two ways.

- Using Tools → Transform Tools. Refer Fig. 3.11(a)
- Using Image → Scale Image. Refer Fig. 3.11(b)

Tool → Transform Tool → Scale Tool (Shift + T is the shortcut for Scale tool)



Choose Scale Tool

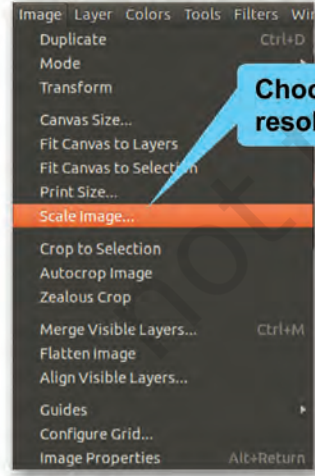
You can scale and see the effect on the image and give the values as per your need.



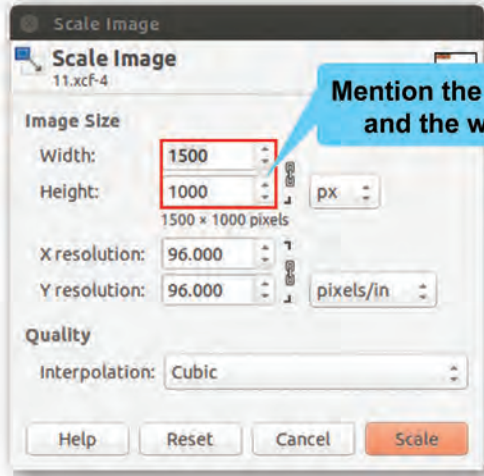
Mention the values here to scale the image

Here scale to width as 1500 and height as 1000. Click on scale to complete the steps.

Fig. 3.11(a): Scaling an image using Tools menu



Choose to change the resolution of an image



Mention the height and the width

Fig. 3.11(b): Scaling an image using Image menu

Shirom: So, now another important feature of GIMP is the brightness control tool which helps us in enhancing an image. Let me tell you about how to use this feature to make dull images bright. Refer Fig 3.12 to brighten an image.



Fig. 3.12: Brightening an image

Shirom: Samayra, let me now tell you another very interesting feature with the help of which I will create the reflection of an image.

Samayra: Oh that's great! Shirom, this will further help us to enhance our images.

Samayra: Shirom, I want you to reflect the given image (Refer Fig. 3.13).

DPI stands for Dots Per Inch which technically means Printer resolution. Today, it is a term often misused, usually to mean PPI, which stands for Pixels per Inch which is the display resolution. Higher the resolution better the printing quality.



Fig. 3.13: Image to be reflected

Shirom: Samayra, now I will describe the steps to reflect an image.

1. Create a new file (1080×760) with a transparent background. The transparent background can be given by choosing Transparency option in Fill with from Advanced Options while creating a new image. Refer Fig. 3.14.
2. Copy the image you want to reflect and drag it on top with the Move Tool and Scale to its half of the image canvas size in Height.
3. Duplicate the layer by right clicking on the layer of the image then choose—Duplicate Layer.
4. Flip vertically the copied image, using the Flip Tool. The duplicate layer with flipped image is added on top of the existing layer.
5. Drag the new flipped image just below the original image. (Refer Fig. 3.15).

Layer palette displays all the layers in the canvas and can be made visible by choosing Windows -> Dockable Dialogs -> Layers.

6. Right click on the new layer in the Layer palette and click on Add Layer Mask and choose White (for full opacity). Click on Add. (Refer Fig. 3.16).
7. Add a gradient with the Blend Tool and to be more precise, click on Ctrl key while using this.
8. In the Layer Window set the opacity of the new layer to 65% and right click on the layer to Merge it down (Refer Fig. 3.17).
9. Click on the vertical rule and drag mouse and add a perspective by choosing the Perspective tool.

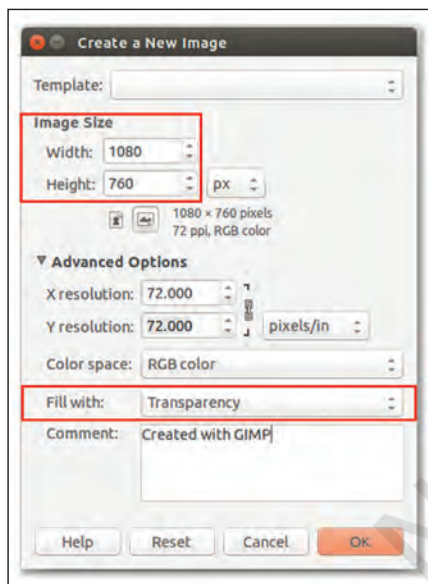


Fig. 3.14 Creating an image with transparency



Fig. 3.15: Flipped layer of an image

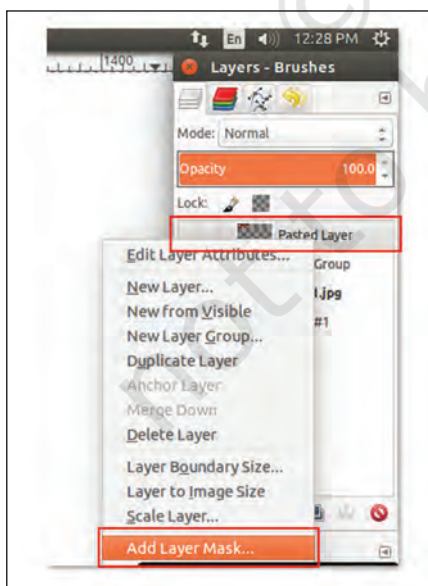


Fig. 3.16: Layer palette

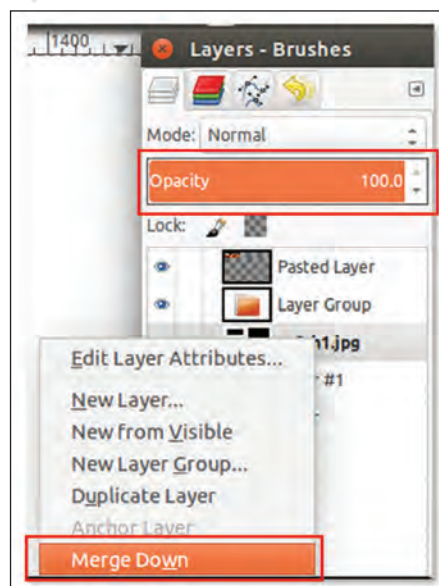


Fig. 3.17: Merging down a layer from layer palette



Fig. 3.18: Reflected image

Samayra: The reflected image looks so beautiful (Refer Fig. 3.18).

Shirom: Samayra, now I will tell you how to add text with effects as an image.

For adding text as an image follow the given steps:

1. Create a new image of appropriate size (256 x 128 for the logo/caption/heading/title).
2. Set the Background colour of the canvas to black by changing the RGB values to (0,0,0).


3. After setting the RGB values choose the Bucket Fill Tool,  to fill colour in the canvas.
4. Now choose the Text tool from the toolbox.
5. Next step is to change the foreground to white RGB (255, 255, 255) as on black canvas white coloured text will be visible clearly.
6. After setting the text boundary type in the required text. "A VILLAGE MELA". The text will be added as a new layer (Refer Fig. 3.19). The Layer palette will have two layers now. The newly added text layer and the background layer.
7. Now right click on the new canvas with text and choose New from Visible option. This again adds a third layer with the name "Visible" in the layer palette (Refer Fig. 3.20).
8. Give effects to text as per your requirement by choosing Filter→Blur. Here we are invoking the Gaussian Blur.
9. Now, I am going to add a new layer with plasma effect. To add plasma effect choose Filter→Render→Clouds Plasma effect. (Refer Fig. 3.21).
10. The next step is to generate a fake 3D shape on this plasma layer. The process is known as 'bump mapping'. To do this select Filter→Map→Bump Map.
11. Now, I will isolate our bump mapped text. For the same add a Layered Mask with White (Full Opacity) to the plasma layer: Layer → Mask → Add Layer Mask. (alternatively Right-Click on the plasma layer and choose "Add Layer Mask...").
12. Now, copy the 'Visible' layer and paste it into the layer mask for the plasma layer.
13. Make plasma layer active by Left-Clicking on it and Paste the "Visible" layer on it. Edit→Paste. This will now insert a Floating Selection (Pasted Layer) into your image.
14. The next step is to get this Floating Selection into the mask so we need to Anchor it by choosing Layer→Anchor Layer.



Fig. 3.19: Text as an image

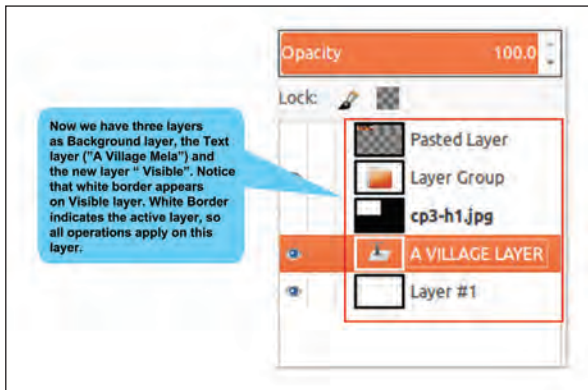


Fig. 3.20: Layer palette with three layers



Fig. 3.22: Text as an image

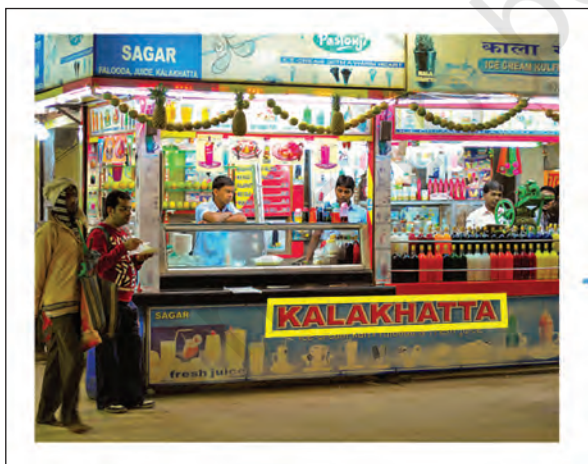


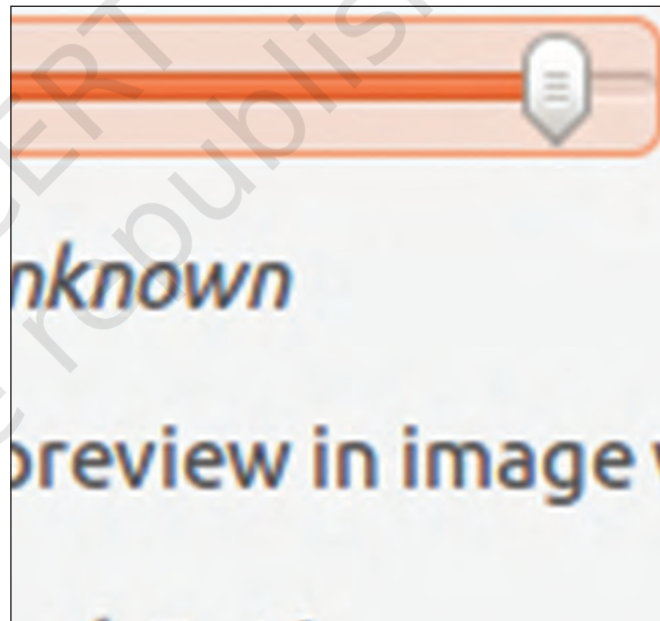
Fig. 3.23: Image with unwanted

Finally, save the file by clicking on the File Menu → Save As and then give the name of the file (for example, Myfair1). The final image can be seen in Fig. 3.22. By default the image is saved in .XCF Format. Close the image file once you finish working on it by clicking on File Menu → Close View or Close All.

Samayra: Shirom, I don't like the red color of the text on the board of the given image. (Refer Fig. 3.23).



Fig. 3.21: Layer with plasma effect




How to remove the text and merge it with the background?

Shirom: No problem Samayra. GIMP has a feature with which you can remove patches and merge it with the

background. The Clone tool is used to copy from an image or a pattern by using the current brush. It helps in repairing images having problem areas by ‘painting over’ them with pixel data from other areas. This works just like the ‘Format Painter tool’ of a text editor.

Follow the given steps to use the clone tool.

1. Insert the image which requires correction.
2. Select the Tools → Paint Tools → Clone or By clicking on the tool icon  in Toolbox. Adjust the opacity if it is less than 100, to make it look more natural. Adjust the scale and the brush size depending on what you are covering.
3. Hold down the Ctrl key on the keyboard while dragging the mouse. If required change the size the clone brush by moving the scale button. If Alignment is set to None, Aligned, or Fixed in tool options, then the point you click on becomes the origin for cloning. The image data at that point will be used when you first begin painting with the Clone tool. In source-selection mode, the cursor changes to a reticle cross symbol.
4. You can click on as many areas as you want to clone. The Ctrl key is used to select the source, if you are cloning from an image.

Refer Fig. 3.24 for the final image without text.



Fig. 3.24 Image without unwanted text

The default file format of GIMP is .xcf. These files are heavy and have low resolution. There are various other file formats into which these .xcf files can be exported.

JPEG: Accepted worldwide good quality compressed format.

PNG: Good quality bulky format which is supported by all browsers.

TIFF: Bulky but good quality format supported by all image processing software.

It is a good practice to modify your .xcf files and export it to a format like JPEG.

By clicking on File → Export, the ‘Export image JPEG’ window will open. Here the quality of the image can be changed.

Samayra: Now, how do we club all these images together in one canvas?

Shirom: That's not a difficult task Samayra. Let me show you how to do that. Refer Fig. 3.25 to club all images together to create a collage.

1. Create a new canvas (I am taking width 1080 and height 760).
2. Fill the background layer with color of your choice.
3. Click on Foreground and Background Color Tool in the Toolbox.
4. Add the image using **File-> Open as Layers...** and image is loaded on the canvas.
5. Resize the image using **Tools-> Transform Tool-> Scale.**



After resizing the image to fit into your grid location, we need to select the “move” icon in the toolbar to move the image to the desired location in the Canvas

6. Move the Image using **Tools-> Transform Tool-> Move.**



Apply the Effects on the image if required using different Filters tools under Filter menu

Fig. 3.25(a): Creating a collage

7. Similarly you can add more images through open as layer in the canvas.
8. Click on the layer to resize and move the image under layer panel. Resize and place the image using scale tool and move tool. Select the layer of Picture you want to work on. Now right click on the layer that has your picture, choose “scale layer”, resize the image to fit in the grid.



Fig. 3.25(b): Creating a collage

Exercises

1. Fill in the blanks

- a. GIMP is an acronym for _____ Image _____ Program.
- b. An image has some unwanted portion which should be removed by _____ tools.
- c. Crop tool is found under _____ Menu.

2. Identify whether the following statements are True or False

- a. Flip/Rotate tool is part of selection tool. (T/F).
- b. Flip tool can flip at any angle. (T/F).
- c. GIMP has a brightness control tool which helps in enhancing an image. (T/F)
- d. Scaling down is the process of reducing the size of an image. (T/F)

Do it yourself

1. You have taken a photograph in low light and it appears dull. Using different tools in GIMP, convert this dull photograph into a brighter one.

2. You have a photograph with your friends along with some unknown person in one corner of the photograph. Make an image that has only your friends and submit it to your teacher.
3. You celebrated a festival at home. Make a collage to show different scenes from the celebration.
4. You have an old photograph without any caption. Write a proper caption on the photograph.

Test yourself

1. While using the crop tool which area of the image is cropped? Darkened area or remaining area.
2. Brightness control tool is used for what purpose in GIMP?
3. For what purpose is an image scaled in GIMP?

Chapter 4

Creating Audio Video Communication



In the last chapter we learnt how to create still images and enhance them, now it will be interesting to see how to create audio and video resources.

The use of more than one medium of expression or communication is called multimedia. Multimedia uses a combination of text, audio, images, animation, videos and interactives. This is different from traditional forms of printed or hand produced material.

Content means something that can be expressed through some media like speech, writing or any other form of art.

Students in a class are discussing about the activity they have performed for purification of water.

Neer: Why is this activity necessary?

Nancy: What is the use of this activity?

Raima joins school after a long gap. She is surrounded by her friends, everyone is curious to know the reason of her long absence from the school.

Neer: Raima, you were always very regular in attending school, why were you absent for a week?

Raima: I was suffering from diarrhoea and fever.

Nancy: Oh! What did the doctor say?

Interactives mean a two-way communication where the user interacts with the content and gets feedback.

List of waterborne diseases

- Diarrhoea
- Dysentery
- Typhoid Fever
- Cholera
- Hepatitis A
- Jaundice etc

Raima: The doctor said it was due to drinking contaminated water. The doctor also told me that many people are dying because of water pollution and waterborne diseases every year.

Neer: Oh, it is a very serious issue.

Nancy: You know Raima, yesterday only, we did an activity on water purification.

Raima: Oh! It is good that you performed such a relevant activity. Can you explain me what you learnt.

Neer and Nancy explained all the activities they performed yesterday.

Raima: Had I performed the activity myself, I would have learnt better by performing the activity.

Neer: Let us do something, so that you may not miss out the learning.

Nancy: Specially this water purification activity is very useful for everyone.

Neer: We can create posters to generate awareness on the importance of water purification.

Raima: Let us make something which can be more impactful and interesting than a printed material.

Activity 1

Imagine yourself as a part of this activity, what media will you use to explain this?

Nancy: Can we record an audio?

Raima: It is similar to what you explained to me but I did not understand it. I think we need to demonstrate the process.

Neer: So, you want us to do the activity all over again.

Raima: Yes, and this time we will record it. We will also add posters, text, images, audios and may be some more materials and create a small video film.

Nancy: Yes, it will help us understand the concept better and we can also share it with others.

Neer: What all do we need to do for making this video film?

Raima: We already have a topic, the title of our video film will be 'Waterborne diseases and their prevention.'

Activity 2

Think about what content should be included to make a video film on Water Pollution.

Nancy: So we need to have information on water pollution, causes of water pollution, effects of water pollution, waterborne diseases and methods of purification of contaminated water.

Raima: So first of all, we had to collect all relevant information to make this video film, we also need to know sources of information.

Neer: We can use books in the library to collect information about Water Pollution and its effects and present it through images and audio narration.

Nancy: We can talk to a doctor to learn more about waterborne diseases and then present it through text and audio narration.

Raima: We will request our science teachers to help us in identifying more activities for water purification. We will record a video of water purifying techniques.

Nancy: So now we have to decide who will do what.

Raima: I can go to the doctor and collect more information on waterborne diseases.

Neer and Nancy: Raima can learn more water purifying techniques from the science teacher then we will record a video on the techniques of purifying water.

Nancy: I can search information from the library.

The students have collected all the information in the form of text and images. They have also recorded a video showing the techniques of water purification.

Neer: Now we have to write the audio script based on the information we have collected from various sources.

Raima: But how are we going to record an audio?

Neer: Let's record it in the evening through my mom's smartphone.

How to record an audio?

There are two types of recording devices: analog and digital.

It has its own merits and demerits and they may be used as per need of the task.

List of recording devices

- Mini Disc Recorder
- DAT Recorder
- Desktop and headphone
- Laptop Audio Interface
- Smartphone

List of audio tools

- Audacity
- Mixxx
- Ardour

Audacity

- Audacity is a free open source digital audio editor to record computer software application, available for Windows, macOS/OS X, Linux and other operating systems.
- Interestingly, you do not need sound mixer or any other

In the evening, they all gathered at Neer's house to record the narration. But while playing back they noticed some disturbance in the audio.

Nancy: How to remove this disturbance from the audio?

Raima: We can use software to edit the audio narration. So, let's first get familiar with the Audacity interface. (Refer Fig. 4.1).

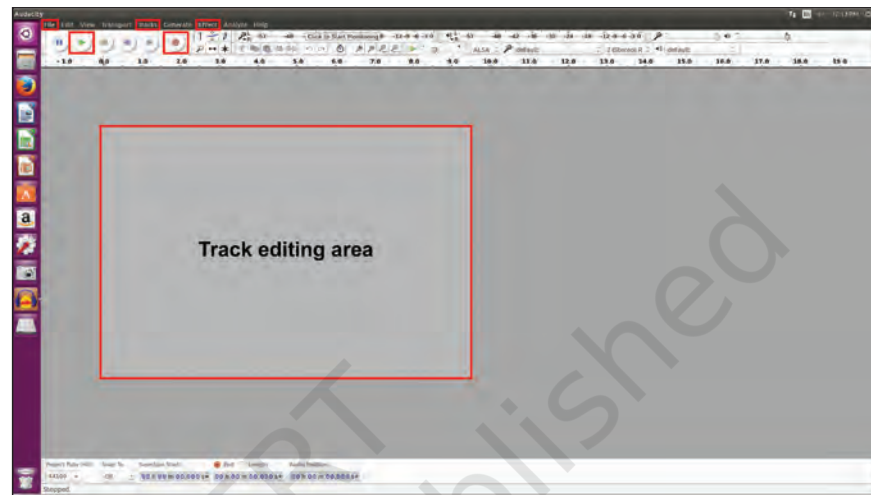


Fig. 4.1 : Audacity Interface

Let's begin with Audacity and Record Narration.

1. Go to file and click "New". A new window will appear (Refer Fig. 4.2).

Raima: Let us start creating our audio resource.

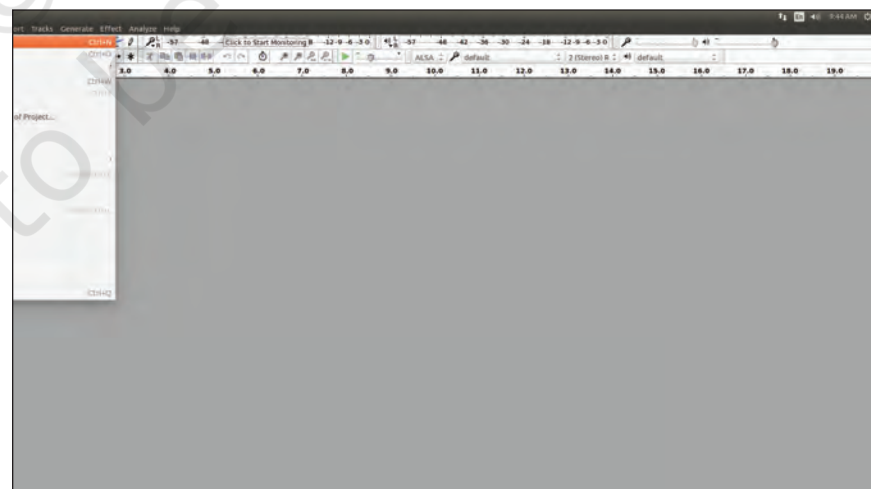


Fig. 4.2 : Getting started

Nancy: While recording, you have coughed a couple of times. How can it be removed?

Raima: After recording, editing can be done to remove unwanted sounds, such as fumble, repeated sentences, coughing, pops, etc. Using the selection tool we can select the portions to be deleted, as shown in Fig. 4.5.

Once selected, press **Delete** on your keyboard or delete using the **Edit** menu.

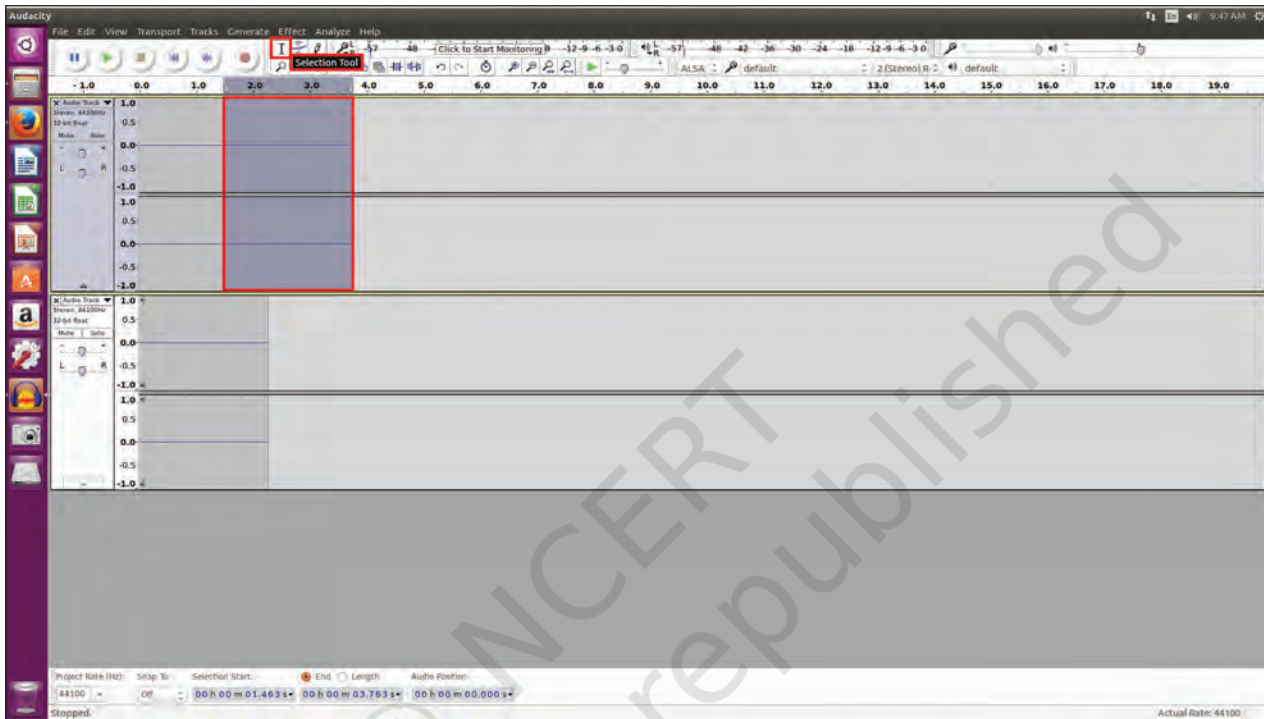


Fig. 4.5 Editing the track

Neer: Can we add music and sound effects?

Raima: Add a new Track to put Music or Sound effects. Make sure that you already have the required music file on your computer. Click on the File in the menu bar and choose the **Import** option. After clicking on the **Import** option, browse and select the audio file.

It will be imported on the new track.

Neer: How do we mix these tracks?

Raima: You can mix tracks using the **Tracks Menu** option.

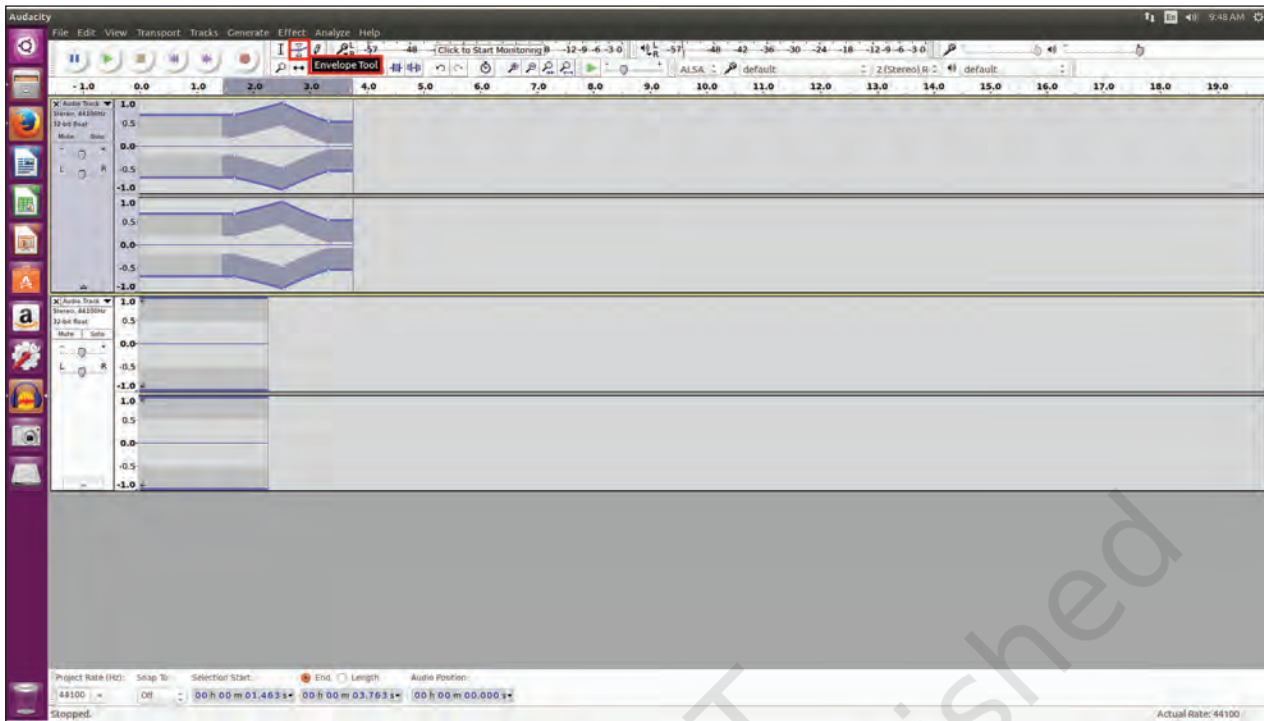


Fig. 4.6 Mixing of tracks

The software will mix your narration and other sound tracks effects, as shown in Fig. 4.6.

Raima: Before going further, lets save our file. The final track can be saved in the default .aup format (Audacity Project) which is an editable format.

Nancy: Is it possible to add this track in my presentation?

Raima: For this you have to convert it into a suitable format like .mp3 or .ogg using the Export option. Refer Fig. 4.7.

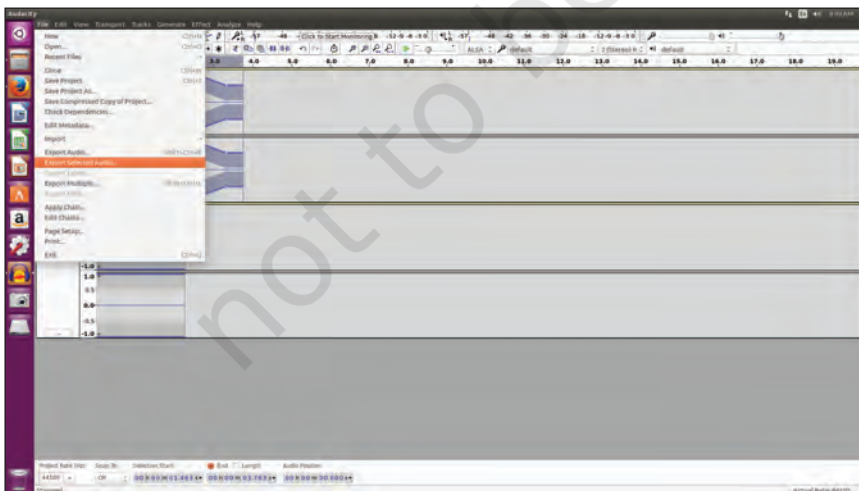


Fig. 4.7 Exporting the audio

Types of Video editing software

- Openshot video Editor
- Blender
- DScaler
- Pitivi shortcut
- Videolan movie creator
- Video Editor
- Avidemux, etc.

Nancy and Neer: Now we have learnt the creation and editing of audio file. Let's now learn about the Video editing tool.

Raima: I know an editing tool OpenShot video editor for editing videos, as shown in Fig. 4.8.

Nancy: Let's try and edit the video showing the techniques of water purification that we have recorded earlier.

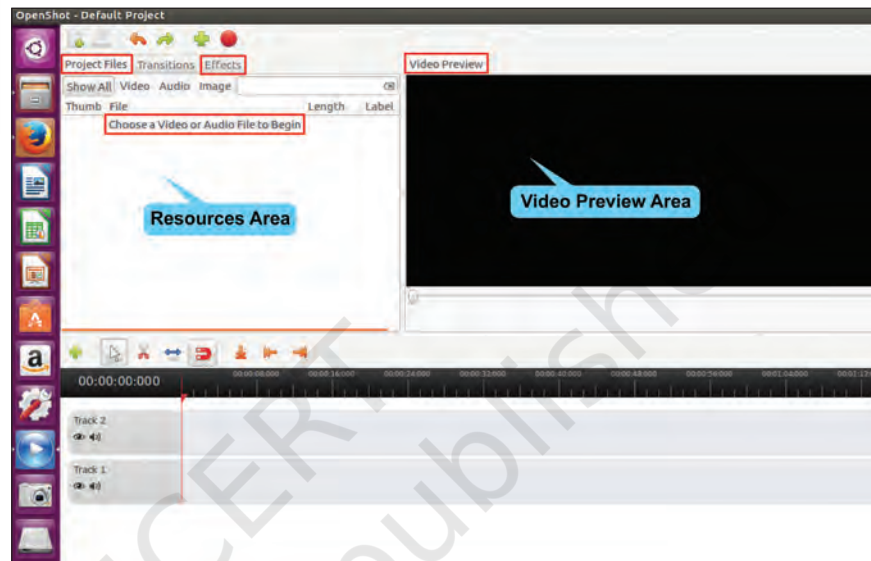


Fig. 4.8 Openshot Interface

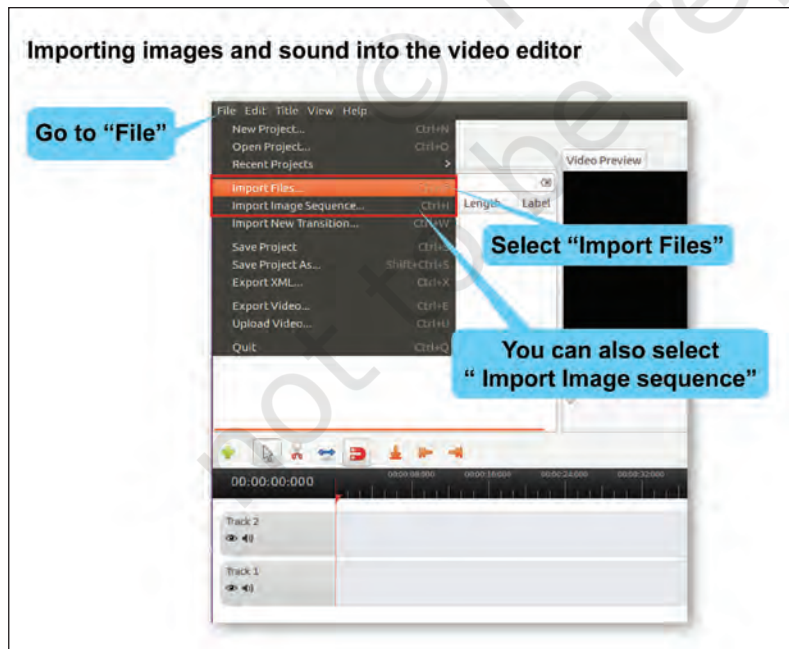


Fig. 4.9 (A) Importing files (Method 1)

Neer: I am sure the first step is to compile all the information and organise the video files and record audio narration in a folder.

Raima: You are very right Neer. Once, you complete organizing the information, you need to import all images and video files to the openshot video editor, as shown in Fig. 4.9(A) & Fig. 4.9(B).

Raima: Interestingly, there are two ways to add images on the timeline. One of them is to drag the three pictures one after the other to “Track 2”, as shown in Fig. 4.10. Remember that it is possible to change the sequence in which these images will appear in the slide show by dragging and re-arranging them in the timeline.



Fig 4.9 (B) : Importing files (Method 2)

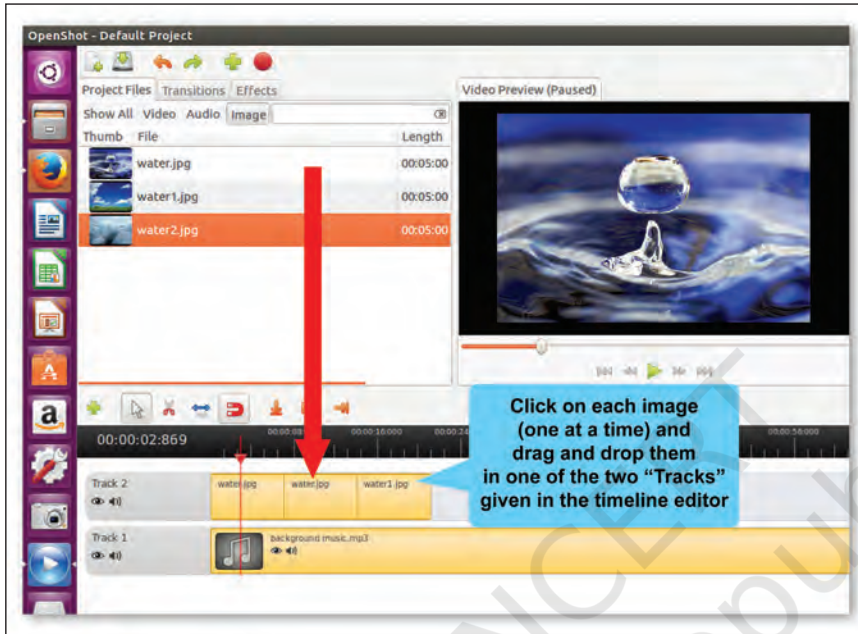


Fig. 4.10: Adding images on the timeline (Method 1)

Raima: The other way is to select one image at a time by using the Add to Timeline option, as shown in Fig. 4.11(A) and Fig. 4.11(B).

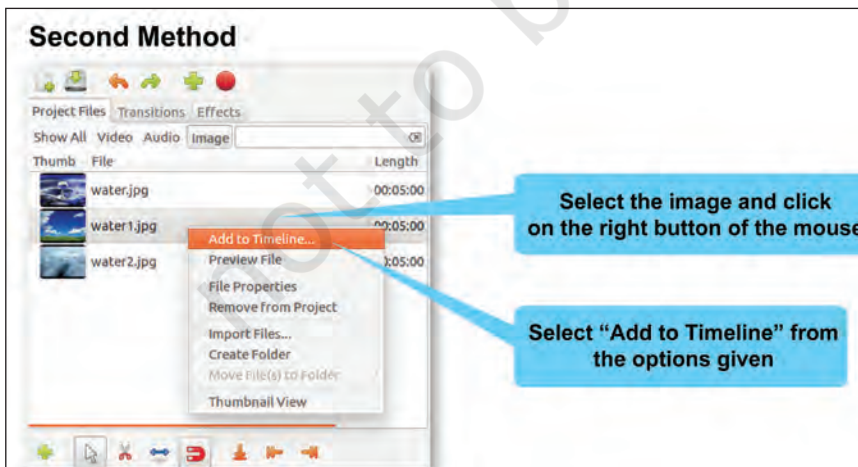


Fig 4.11 (A) : Adding images on the timeline (Method 2)

Image and sound files can also be imported using the shortcut key “Ctrl+F”.

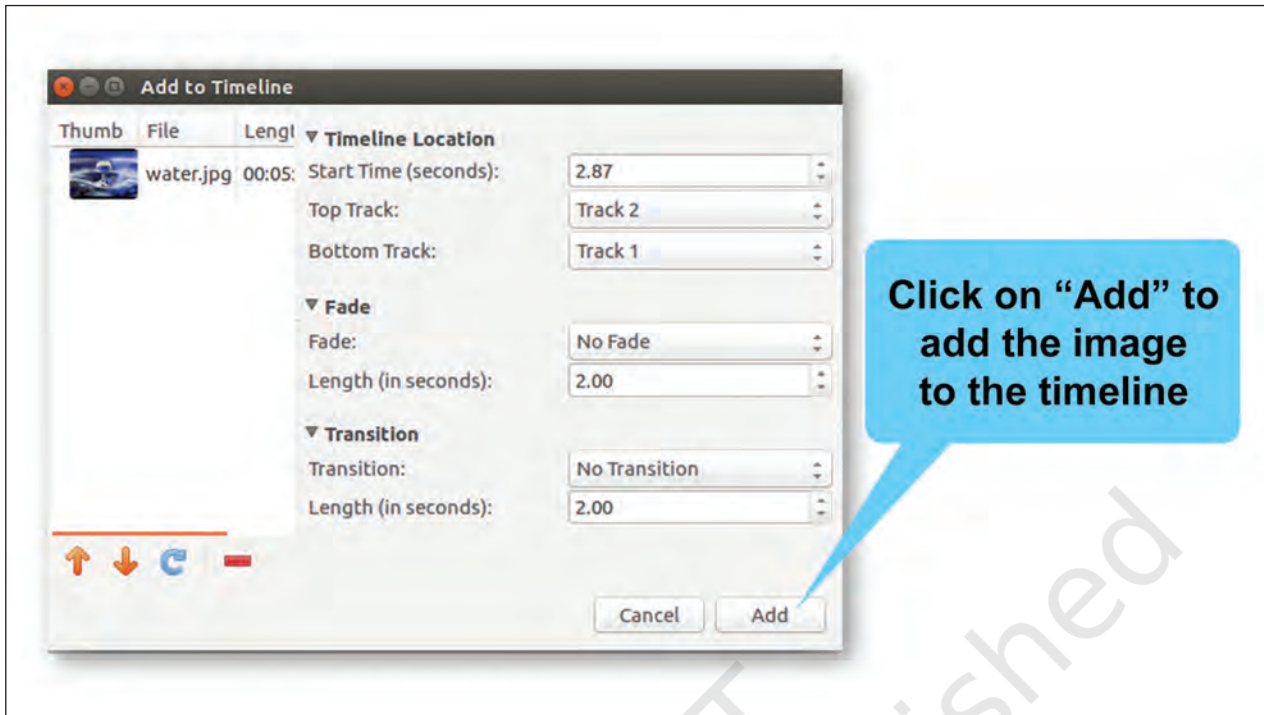


Fig. 4.11 (B): Adding images on the timeline (Method 2)

Neer: Can we add some background music to the slideshow to make it more interesting.

Raima: Yes. You can easily add an audio file by dragging it from “Project File” window and dropping it in “Track 1” of the timeline, as shown in Fig. 4.2.

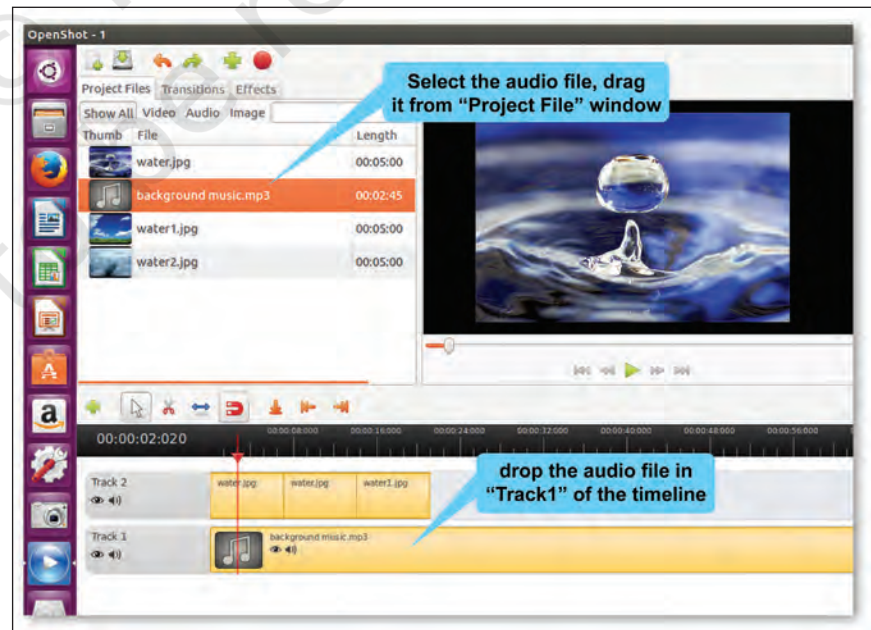


Fig. 4.12: Adding sound to the timeline

Nancy: Does this “🎵” mean that an audio has been added on Track 1?

Raima: Good observation Nancy.

Nancy: Can I now preview the project?

Raima: Yes. You can do that by clicking on the “Play” button in the preview window. Refer Fig. 4.13. Remember, if you need to re-arrange any clips, just drag and drop the clips to move them.

Neer: Can I use this video in my presentation?

Raima: First let’s save this video in the default .osp format (as shown in Fig. 4.14) which will allow us to edit it later. But to use this video in our presentation, we will have to export it in a suitable format like .mp4 or .ogg., as shown in Fig. 4.15.

Click on the save Icon in the toolbar or use shortcut key Ctrl+S to save your project.



Fig. 4.13: Project Preview

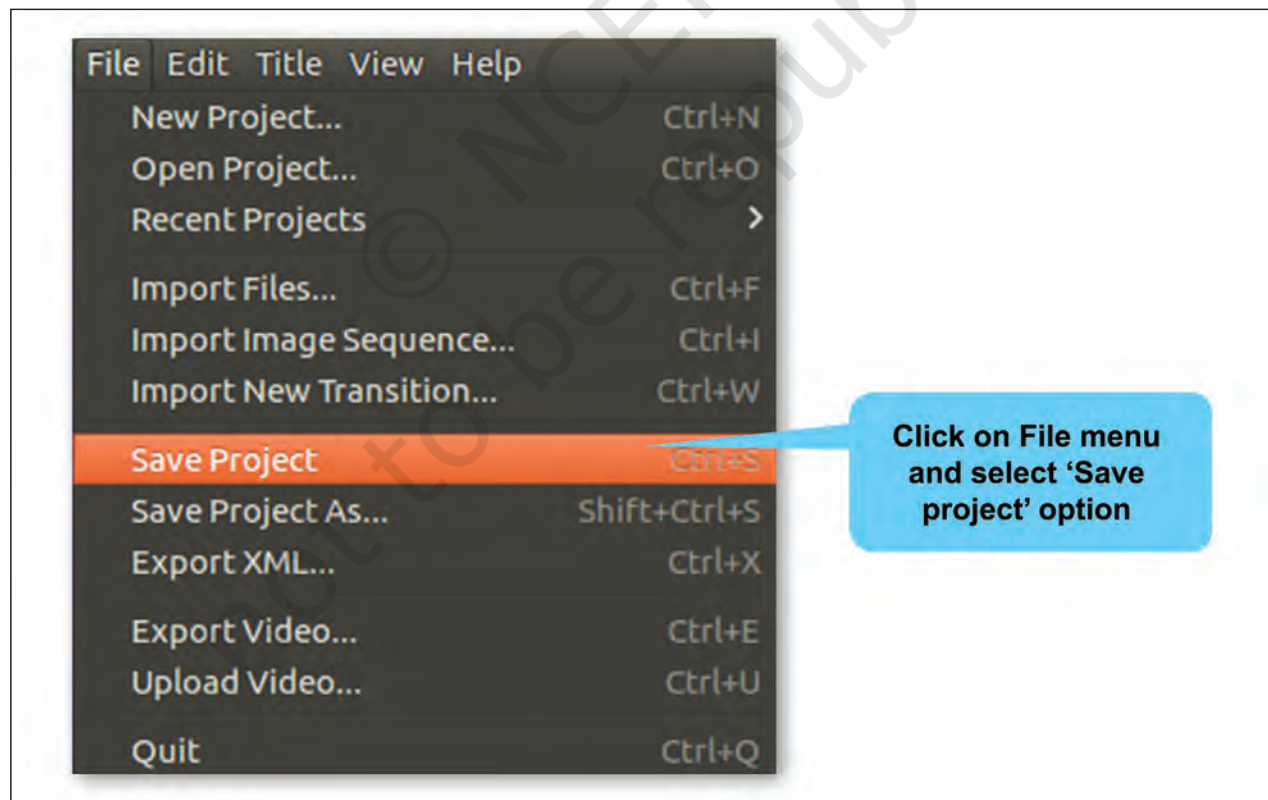


Fig. 4.14: Save the project

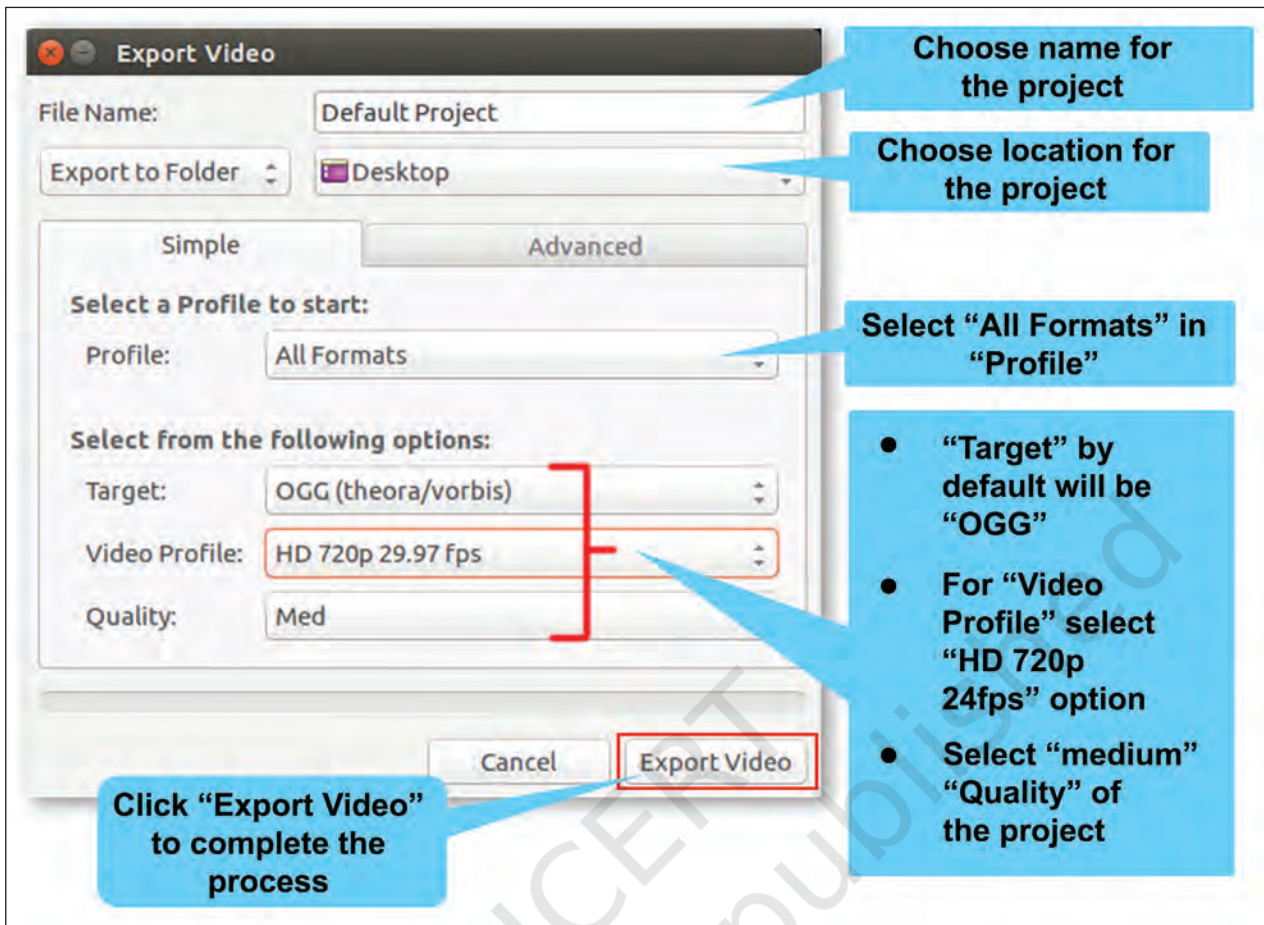


Fig. 4.15: Export the project

Exercises

1. Prepare a narrative on the following topics:

- A story you heard from your grandparents or parents
- Mimicry of different cartoons
- Collection of animal sounds

2. Prepare a video on the following topics:

- A tree speaking to our citizens to safeguard its life
- Different sources of water like river, sea, lake, groundwater, etc., speaking to each other on how various pollutants affect them.
- Advertisement for implementing rainwater harvesting at home and school

3. Test yourself

a. Match the following

Audacity	Recording Device
Smart Phone	Audio Tool
Open Shot	File Format
.osp	Video Editor
.aup	Audacity

b. Identify whether the following statements are True or False

- i. .MP3 is the format in which video files can be saved. (T/F)
- ii. Blender is a video editing software. (T/F)
- iii. Audacity is a free and open source digital audio editor. (T/F)
- iv. Open Shot is a software used for audio editing. (T/F)
- v. Music files can be imported in Audacity to prepare audio resource. (T/F)

Chapter 5

Presenting Ideas



During their recent school trip, Samayra and Shirom got the chance to explore the historical places of Delhi, the capital of India. Few of their classmates were not able to join them.

Samayra: I wish all our friends were here with us. They not only missed the fun but also the knowledge about our rich heritage.

Shirom: It does not matter. Let us do something so that they don't miss out on the learning.

Samayra: That would be nice. But how can we do it?

Shirom: Let us compile our experiences, highlighting the captured moments of the trip in a report.

Samayra: But this report will not give our friends the real picture of our experience and our interaction with the guide, etc.

Shirom: True. Then let's make a presentation.

Samayra: Shirom, what do you mean by a presentation?

Shirom: A presentation is used to present information using text, images, audio, video and animations. Do you know we can even add our narration to the slides ?

Samayra: Oh is it? This would be wonderful.

Shirom: Sure, let us do that.

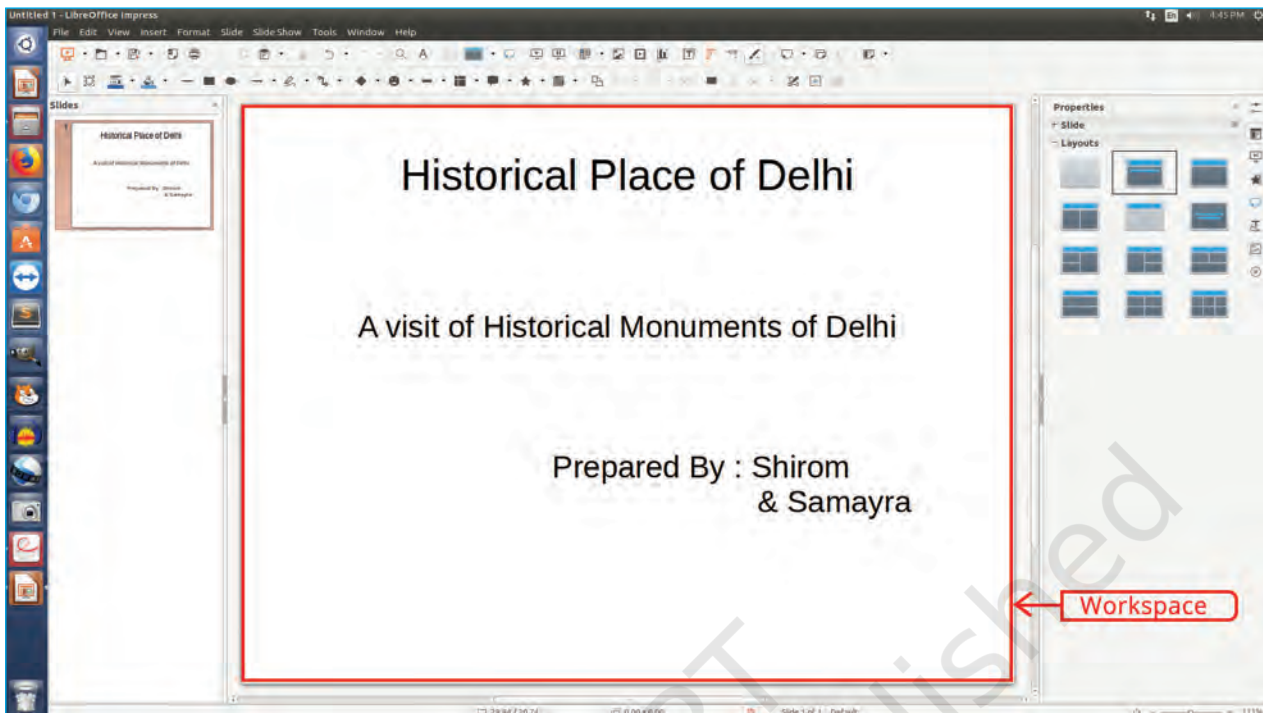


Fig. 5.3: The title slide

Layout helps to decide the placement of text or pictures on a slide.

Samayra: Can we add more content, such as text (as shown in Fig. 5.4), photographs or images, audio and videos, which we have collected during the visit.

Shirom: No. We will need more slides for that. Let us add more slides to our presentation.

Samaira: Great! Seems interesting. I hope our presentation will help them to get the feel of the trip.

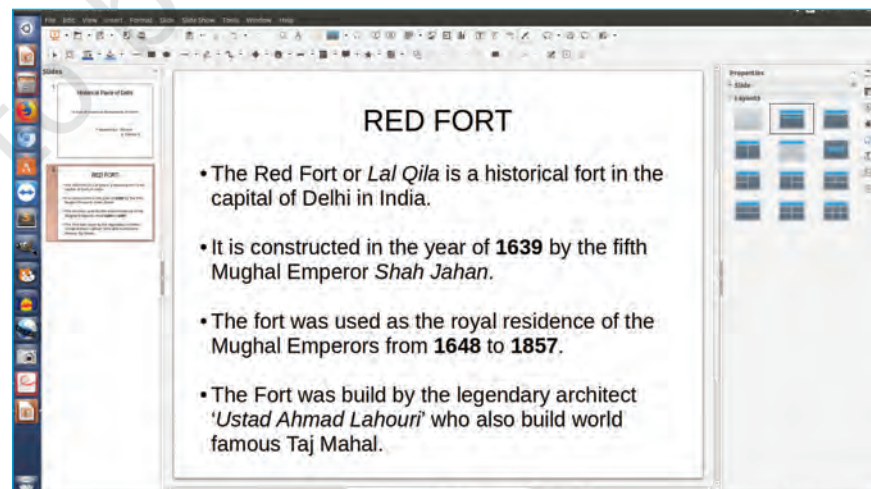


Fig. 5.4: Adding text content

Samayra: Shirom, can we add a picture of the Red Fort?

Shirom: Yes, we can do that by using the Insert Menu (Refer Fig. 5.5).

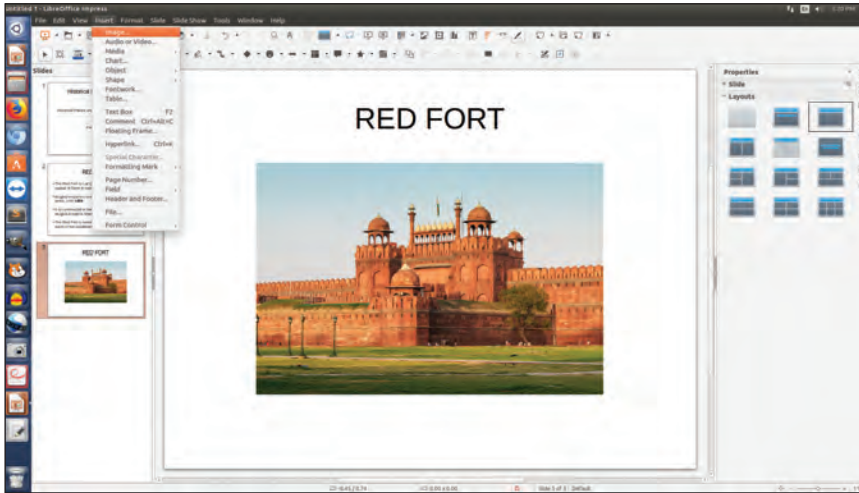


Fig. 5.5: Inserting an image

Samayra: Once, we have inserted the image, can we also add some special effects to our images and text to make our presentation more attractive and grab attention of the audience.

Shirom: Yes, indeed! Let us select the text or object to be animated and add some custom animation to it, as shown in Fig. 5.6.

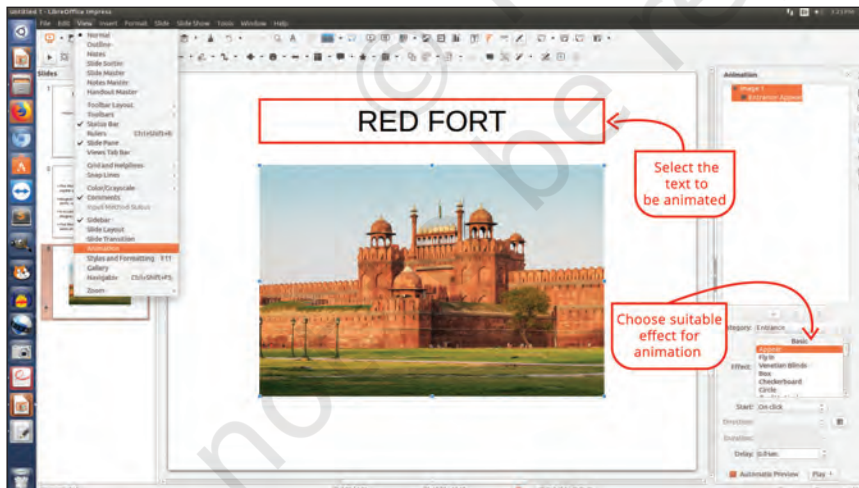


Fig 5.6 : Animating the image

For example, you may choose to apply various effects that may change the Font Size and apply special effects to the text, such as Blink and save that effect on the text.

Similarly, you can apply different effects in your slide to make your presentation interesting and attractive.

Samayra: Oh! Great but tell me how to check what we have done so far?

Shirom: For this we will preview our presentation using Slide show option, as shown in Fig. 5.7. To do, press F5 key or using the Slide Show menu. Let me now tell you one more interesting feature: **Slide Transition** which can be added from the view menu.

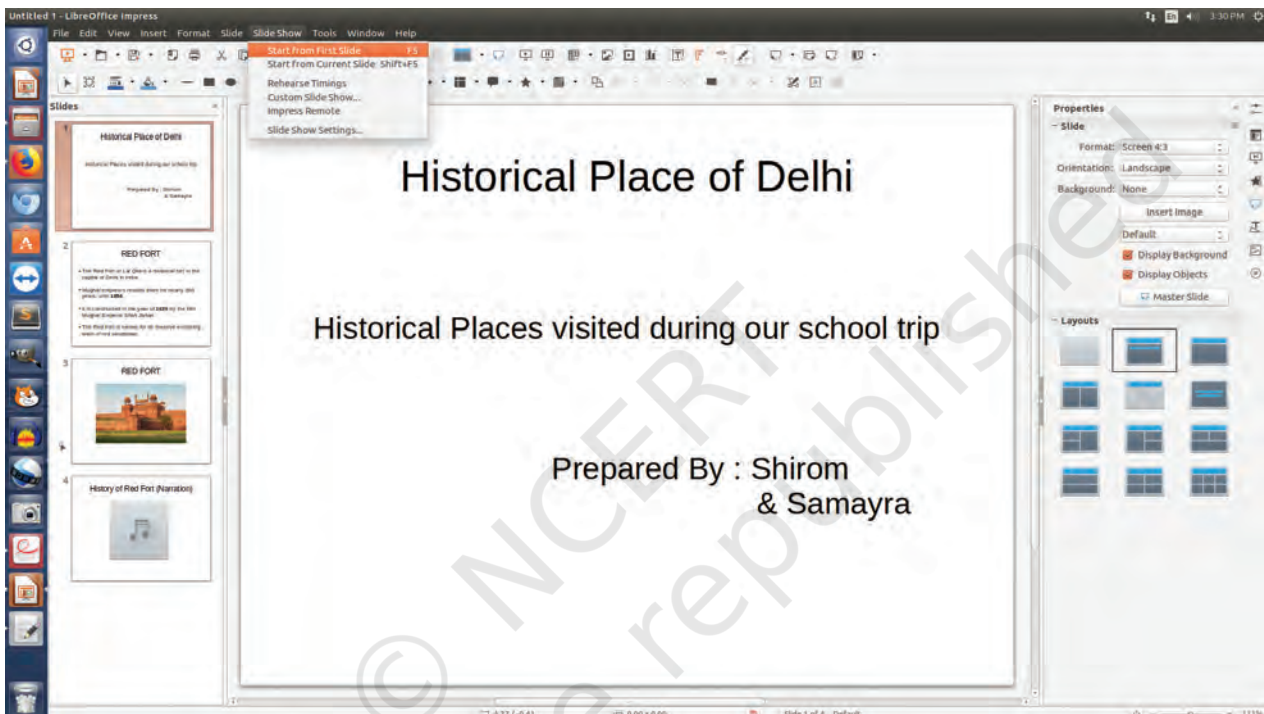


Fig. 5.7: Slide show

Samayra: I have taken a recording clip of the guide narrating the story. Also if we could insert the audio clip too! Moreover we have some video clips that also could be inserted in our presentation. It will make our presentation lively and more informative.

Shirom: Yes, let us do it using the **Audio or Video** option of the **Insert Menu**, as shown in Fig. 5.8.

Samayra: Tell me the steps how I should do it.

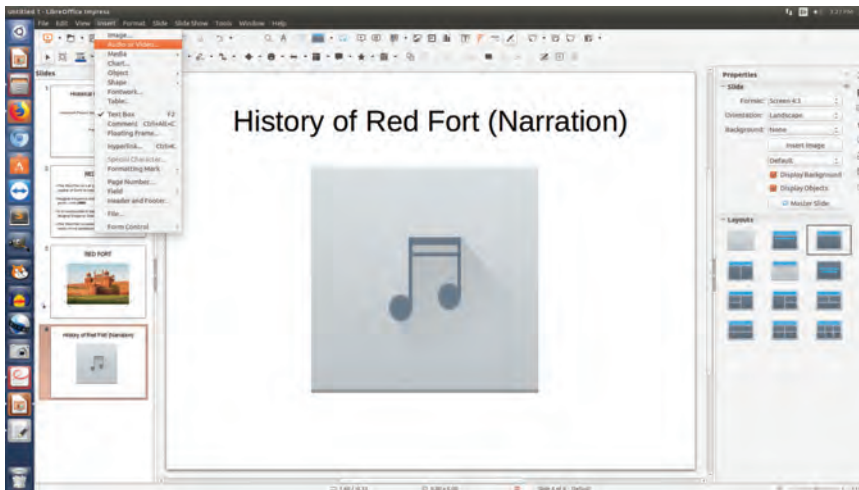


Fig. 5.8: Adding sound

Custom animation helps us to add emphasis on an object area on a screen.

Avoid adding too many animation effects on a slide as it reduces the focus on the main content.

Shirom: Now, if you wish, you can add more information in your presentation to enhance it with various colourful slides, animations, transitions effects and media and make it ready for the show. You can share your experiences of the trip with our classmates in the class with the help of projector and cherish the moments by viewing the slideshow. Once the show has started and in between if we would like to go to the next slide or previous one at a time, then Right-clicking anywhere on the screen brings up the floating menu that allows navigation of the slides as shown in Fig. 5.9.

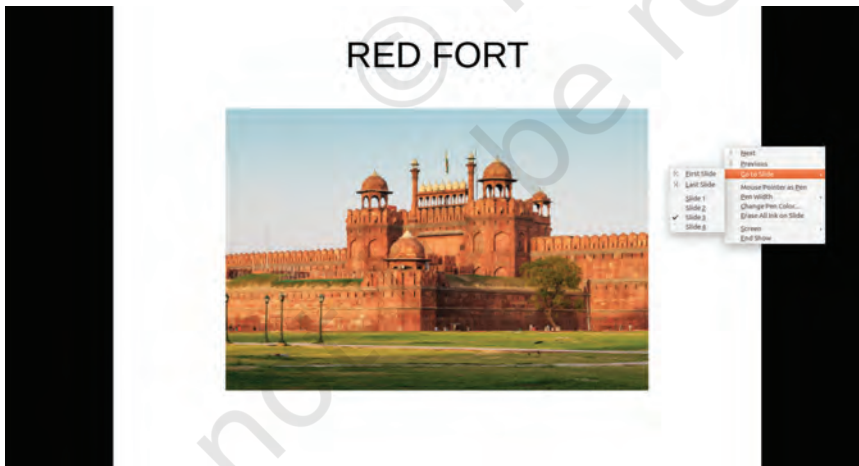


Fig. 5.9: Navigating in slide show

Samayra: Shirom, can we view the sequential arrangement of all the slides on a single screen?

Shirom: Yes, we can. The slide sorter view (as shown in Fig. 5.10) shows all the slides on the same screen which may help us re-arrange them if required.

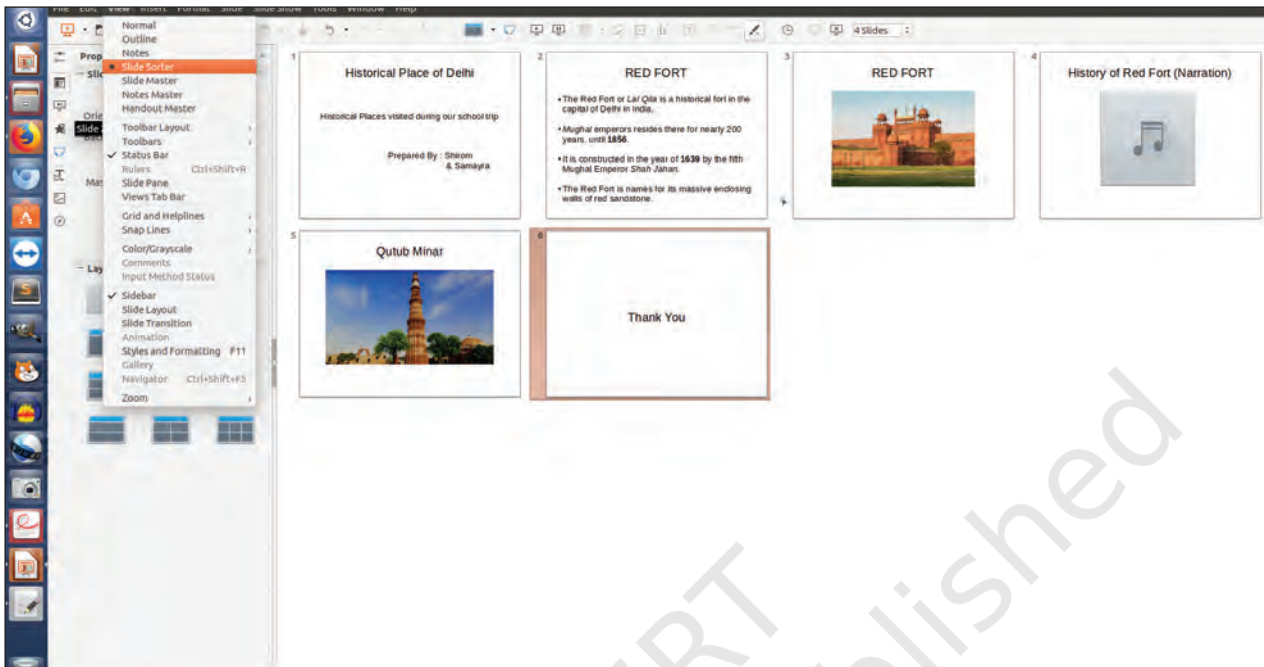


Fig. 5.10: Slide sorter view

Samayra: Now we are ready to share our presentation with all our classmates.

Shirom: No wait. To share the presentation we should convert it into Portable Document Format (PDF) (as shown in Fig. 5.11) which is an open standard file format for file viewing and sending it to someone.



Fig. 5.11: Exporting to PDF

Samayra: It was so interesting to learn how to make a presentation and share it with our friends.

No effects or animations can be seen in PDF.

Exercises

1. Prepare a presentation on the following topics:

- (i) Your personal experience of meeting people in orphanage, old age home, etc.
- (ii) Experience of summer vacation
- (iii) School's Annual day celebrations
- (iv) Biography of a scientist or a historian

2. Test yourself

- (a) Identify whether the following statements are True or False
 - (i) We can make changes in the PDF version of any file. (T/F)
 - (ii) We can insert video and audio clips in a presentation. (T/F)
 - (iii) The number of slides that can be added in a presentation has a limit. (T/F)
 - (iv) Impress is a free and open source presentation tool. (T/F)
 - (v) The background and design of the presentation cannot be changed once saved. (T/F)

Chapter 6

Getting Connected Internet



Recall the instances in previous chapters when

- Muskan shared video of her experiment with her classmate using a messenger app.
- she created a blog and shared the images she clicked when she visited the state museum of Bhubaneswar.
- she thought of placing the song on web which she sang in a school function.
- she started speaking to Hasmukh or Skype instead of telephone.
- she shared the digital album of her birthday with Hasmukh through email.
- she decided joining an online course on puppetry during her summer vacation.

Reflect how all this was possible.

Internet is used to search and gather resources to enhance knowledge and to complete your projects. In earlier times Library was the most sought after place for gathering information from books and encyclopaedias. But now-a-days Internet has made it possible to search and gather variety of multimedia resources for learning. Take example of a project on “Role of youth in the development of a nation”.

You can get resources on the above topic from the Internet. These days, almost all information and services are available on the Internet. For logging on to the Internet, you just need an electronic device (preferably computer/laptop/smartphone/tablet) with an Internet connection. You can access a large number of resources and information stored on the World Wide Web (WWW). In order to access the resources in WWW, we need a software called Web Browser. Web browsers are generally present in our computer system. A few popular web browsers have been shown in Fig. 6.1, fill in the blanks with any two other web browsers.

World Wide Web (WWW) is an information space on the Internet where documents and other resources are stored.

A Web browser is a software for accessing information and resources on the World Wide Web.



Fig. 6.1: Web browsers

When you click on the browser icon in your computer, the following window will be opened. On top of the browser window, there is an address bar as shown in Fig. 6.2.



Fig. 6.2: Layout of Mozilla Firefox browser

A Webpage is a collection of information in the form of multimedia resources.
The Website is a collection of Webpages.

The address bar lets you type the address of the resource which you want to access on the web. Every resource is available in a web page on the web. Once you type the URL in the address bar, the webpage will open from where you can access the resource.

A website contains many webpages. The first page that you see, when you open a website is the Home Page.

Activity 1

- Open the website by typing the address `creativecommons.org` in the address bar.
- Keeping in mind the title “Role of youth in the
- development of a nation”, explore resources related to your project.

While exploring the website, you might have noticed that when you hover the mouse over certain text/images, the cursor changes to <insert hand symbol>. This signifies that the text/image is a link to another webpage or resource which is known as Hyperlink.

Activity 2

- List and click on any of the three hyperlinks in the website: **`creativecommons.org`**

A Search Engine is a tool that allows to search for information on web.

Suppose you are not aware of the URL of the website from where you can access the resources or if you want to search the web for finding more information/resources, you can take help of the Search Engine.

Following are a few popular search engines:

Name	Address
Google	google.com
Bing	bing.com

Yahoo	yahoo.com
Ask	ask.com
DuckDuck	duckduckgo.com

Table 6.1: Popular search engines

To search information/resources using a search engine you need to use keyword in the Search Box as shown in Fig. 6.3.

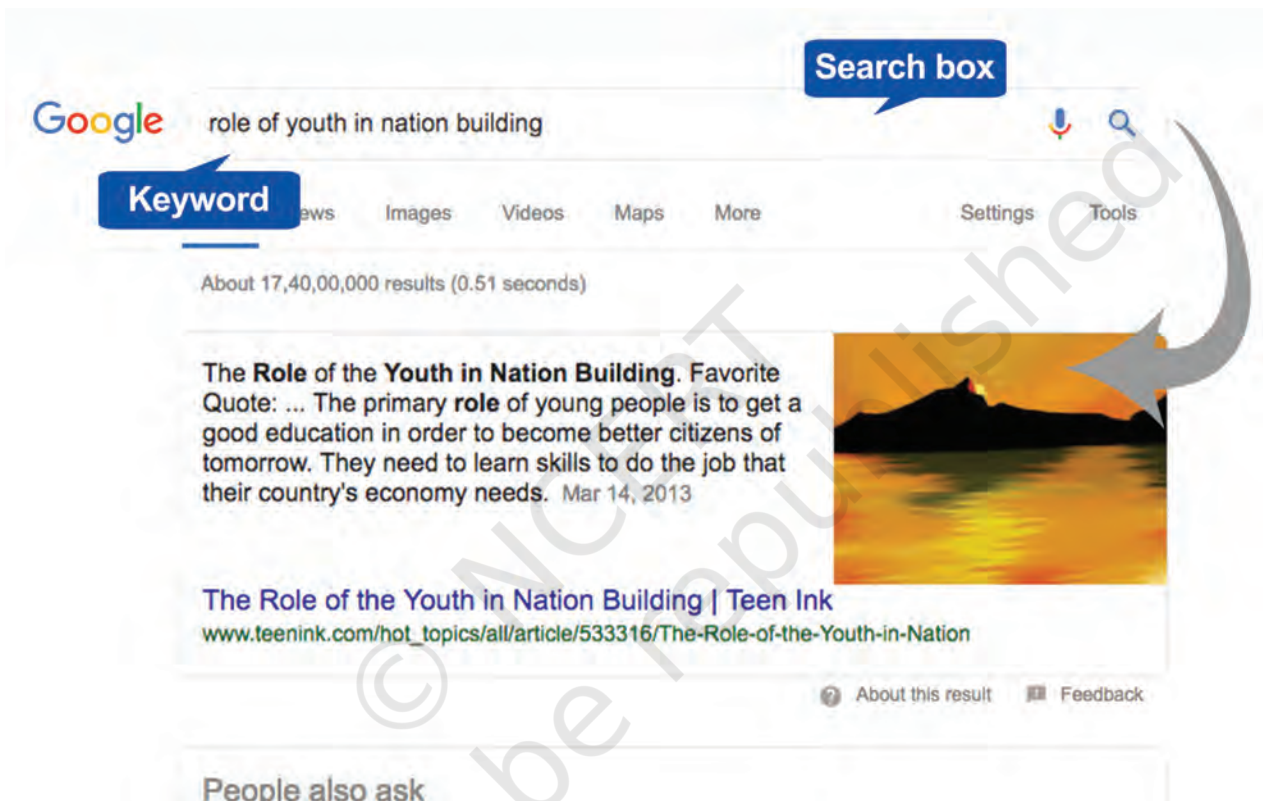


Fig. 6.3: Search Engine

While using search engines, a good plan can save your time. Before searching ask yourself the following questions like:

- What type of information am I seeking (ideas, facts, opinions, options)?
- What form will this information take (text, images, videos)?

According to the above questions, select the keywords. Use words related to the type of information you seek.

Word or phrase entered in the search box helps the search engines to list those webpages which contain that word or phrase. Now for your specific search the entered word or phrase becomes the keyword.

Select precise words and avoid common words, such as the, of, apply etc.

Activity 3

As per the project titled “Role of youth in the development of a nation”, you need to get the information and resources. So you can use the keyword “Role of youth in the development of a nation” in the search engine to search for resources. Explore the result page and answer the following questions:

- What types of multimedia resources you could see?
- Did you find any hyperlinks in the result page?
- How can you get a different result page for the same keyword?
- Were you able to find a result page for your search containing only images?

Did you get what you were looking for, by using the keyword which you had listed above? If not, reframe the keyword by answering the following questions:

- What exactly are you looking for?
- What words will describe your search best?
- What if you want only images related to your keyword?

If you are sure about the type of multimedia resource you are looking for, then the search engine helps you filter the resources based on your requirement. If you notice in the result page, by default the results are displayed under the heading ‘All’ but there are other headings that help you to categorise the search result on the result page as shown below.



Fig. 6.4: Heading in search engine

In order to get a result page containing only images, you can click on the Images heading or if you are looking for only videos, you can click on the Videos heading. This helps to categorise the search based on particular type of resources.

Sometimes while accessing multimedia resources you might come across a prompt asking you to install a 'plug-in' by clicking on the link mentioned in the prompt. Go ahead and click on the link to install plug-in and access the resources.

A plug-in is a software which provides additional functionality to the browser allowing it to display the content.

Activity 4

Use the keywords written in the above graphic organiser to search only for images in search engine.

Note: Whenever you use the resources taken from the web, you should cite reference to the source from where you have taken it. It ensures that you are giving credit to the owner who actually created it.

To plan further for your event and to collect resources according to your requirement, you need to identify the keywords for the programme items. Fill in the graphic organiser depicted in Fig. 6.5 with appropriate keywords for the listed programme items and write programme items of your choice along with keywords for searching resources for these programme items using the search engine.

Documentary	Speech		
<ul style="list-style-type: none"> • Text • Keywords <ul style="list-style-type: none"> • Youth bravery awards • Youth spreading awareness • Videos • Keywords <ul style="list-style-type: none"> • Youth in action • Youth in freedom struggle 	<ul style="list-style-type: none"> • Text • Keywords <ul style="list-style-type: none"> • Youth creating job • Youth responsibility to elders • _____ • _____ 	<ul style="list-style-type: none"> • _____ • Keywords <ul style="list-style-type: none"> • _____ • _____ • _____ • _____ 	<ul style="list-style-type: none"> • _____ • Keywords <ul style="list-style-type: none"> • _____ • _____ • _____ • _____

Fig. 6.5: Identifying keywords

Now you must be comfortable using simple keywords in search engines to collect resources for your event. But if you want to search information/resources very specific to your requirement, then you can do advanced search using search operators like **AND, OR, “ ”**, ... as

mentioned in the table given below. These operators help the search engine to narrow down the focus of search (Refer Table 6.2).

Table 6.2: Search operators

Operator	Example	Purpose
AND	youth AND nation	The result shown will include pages having all the keywords.
OR	youth OR nation	The result shown will include pages having at least one of the keywords.
“ ”	“Role of youth in the development of nation”	The result shown will include pages having the entire keywords.
...	“Role of youth” 1990...2018	The result shown will include pages having the specified number range.

The process of saving the URL of the webpage for future reference is known as **Bookmarking**.

While searching for resources, you might come across certain web pages which you wish to refer to later. You can take a print out of the web page but that would lead to paper wastage. So instead you can bookmark the web page to enable quick access to the webpage in future. To bookmark the webpage or website, click on the Bookmark icon (which looks like a star) in the address bar as shown in Fig. 6.6.

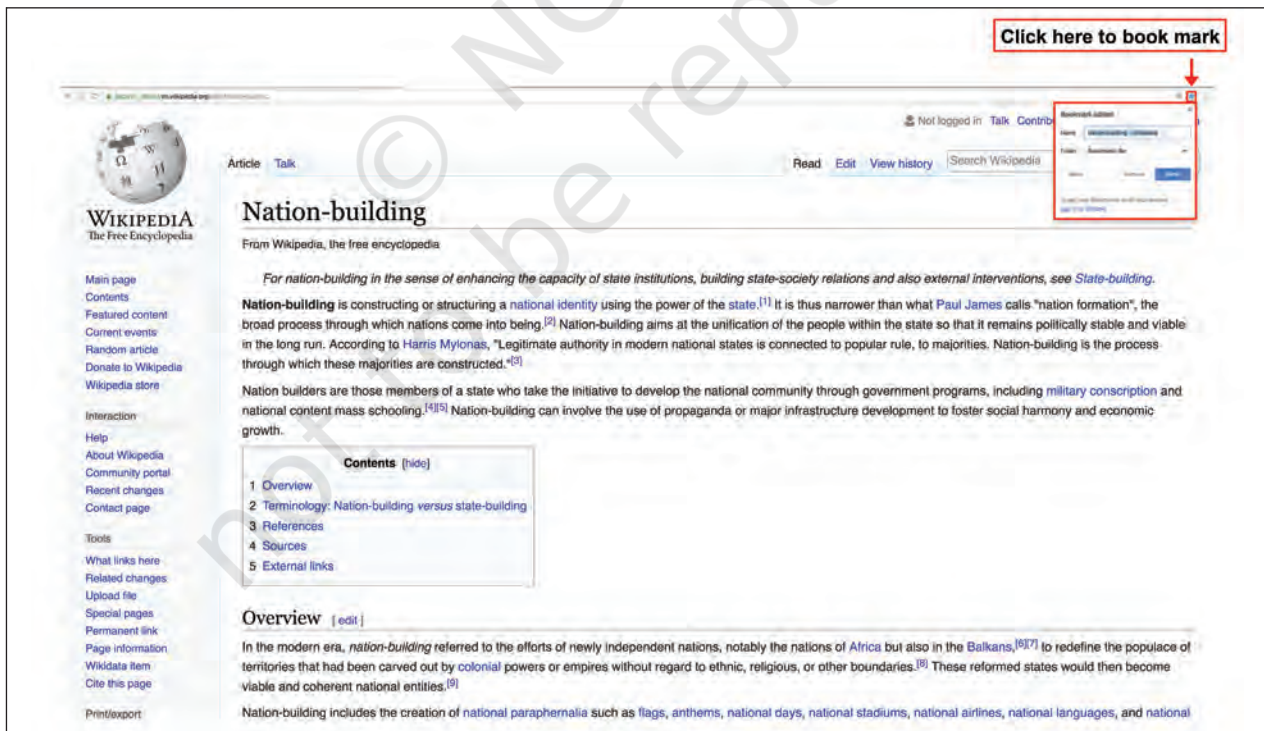


Fig. 6.6: Bookmarking

Evaluation of the Resources

You must have gathered lot of information from the Internet for your event by now. But you should remember that all the information available on the Internet cannot be guaranteed for quality or accuracy. So it is important to evaluate the resource or information. Keep in mind that anyone can publish anything they wish on the Web. It is often difficult to determine the ownership of the Web resources. So it is your responsibility to evaluate the resources effectively based on the following criteria:

- Who has made the website and how to contact the website owner?
- What is the website about? Is it commercial, educational, etc.?
- Is the website for teachers or for students or for both?
- Is the information reliable on the website? Always cross check the given information from other websites and other authentic sources like books, experts, etc.
- Check whether the website offers free information or paid information?

After gathering resources, it is time to make use of them for your event. You might have downloaded text, images, audio, videos related to your programme items. Use your creativity by customising the resources gathered from the web using the ICT tools. You should identify the right ICT tools to prepare the programme using the resources you have gathered.

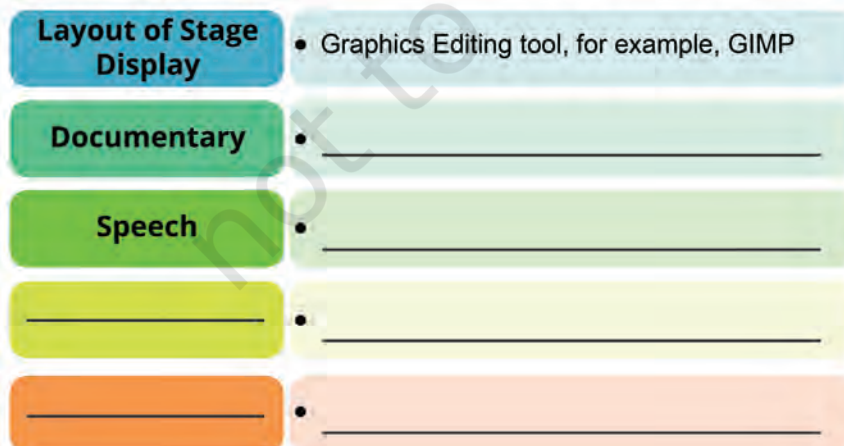


Fig. 6.7: ICT tools in identification

Safe Practices while Searching

- While searching information for your event on the internet, few questions might have struck your mind like
 - Is the Internet safe for me?
 - How can I differentiate between a real and a fake website?
 - What do I have to do to be a safe user of Internet?

All computer users ask these questions to themselves every day. The Internet offers so many opportunities to explore. But it is important to keep yourself safe and secure, so that you can make the most of it. The tips given below will help you to search the web safely and securely.

- It is always advisable to access resources from websites which have “https” in the URL as it indicates that it is a secured website.
- Make sure the “Safe Search” Setting of the web browser is ON.
- Think twice before clicking the links as it might lead to websites not appropriate for your age.
- Most of the interaction with the Web is through the browser. So the choice of the Web browser should be of utmost priority.

Now you are ready to present a great show with a variety of multimedia resources created by you for the event. Ensure the required hardware resources like projector, speaker, etc., are available to use these multimedia resources during the event. Such remarkable effort will lead to an exceptional result but it is advisable to take feedback and remedial measures to ensure an effective event execution.

You have taken the first step of showcasing a remarkable event that was appreciated by the audience who were present there. With the appreciations you received, you are motivated to share your experience, the photographs and videos taken during the event to your friends.

Activity 5

Can you think of various ways through which you can share your experience with your friends?

You have effectively acquired the skills of searching information using a search engine. Besides searching you can also communicate and share information with the people using Internet. There are many ways of communicating and sharing information on the Internet, one of them is Electronic mail (Email). Emails can be sent from anywhere, anytime through the Internet-enabled devices, such as like PC, laptop, smartphone, etc. To send and receive emails you need to create an account with any of the email service providers some of which are mentioned in Table 6.3.

Table 6.3: Email service providers

Email Service Providers	URL
Gmail	gmail.com
Yahoo mail	login.yahoo.com
mail	mail.com
Outlook	outlook.com

To create an email account on the email service provider you need to follow the below given steps.

- Type the URL of any of the email service provider in the browser and click Create account/Sign Up/Register.
- Specify a unique username. (The email service provider prompts in case the username is already chosen).
- Choose a strong password consisting of uppercase, lowercase letters, numbers and special symbol(s). Passwords are case sensitive.

- Fill in the mandatory personal information like first name, last name, date of birth, gender, etc.
- Carefully go through the Terms and Conditions before clicking on Agree button.

The account created will be in the format `username@ email-service-provider` like `shiksha@gmail.com` or `shiksha@yahoo.co.in`



Checklist for a strong password

Did you

- use combinations of letters (uppercase and lowercase), numbers and symbols?
- use at least six to eight characters?
- set a unique password for each of your important accounts?

Example: 13Hlt@8L

Note: Don't forget to change password frequently.

After creating an email ID you can now use it to share experiences and resources that you have created for the event with your friends who are staying in different cities. To do so, you need to do the following as shown in Fig. 6.8:

- Login to your account
- Click Compose/Write
- Enter your friend's email ID in "To" box
- Write the subject of your email
- Write the content of the message
- Attach your document(s) if needed as shown in Fig. 6.9.


Components of email message

To–Mail ID of the person to whom we want to send the mail.

Subject–It is a description of the topic of the message

Cc (Carbon copy)–Mail ID of the person to whom we want to send the copy of the mail

Bcc (Blind Carbon Copy)–Mail ID of the person to whom we want to send the copy of the mail but these mail IDs will not be visible in the email.

–Attachment icon to insert documents in the mail.

Send–A button which sends the mail when clicked.

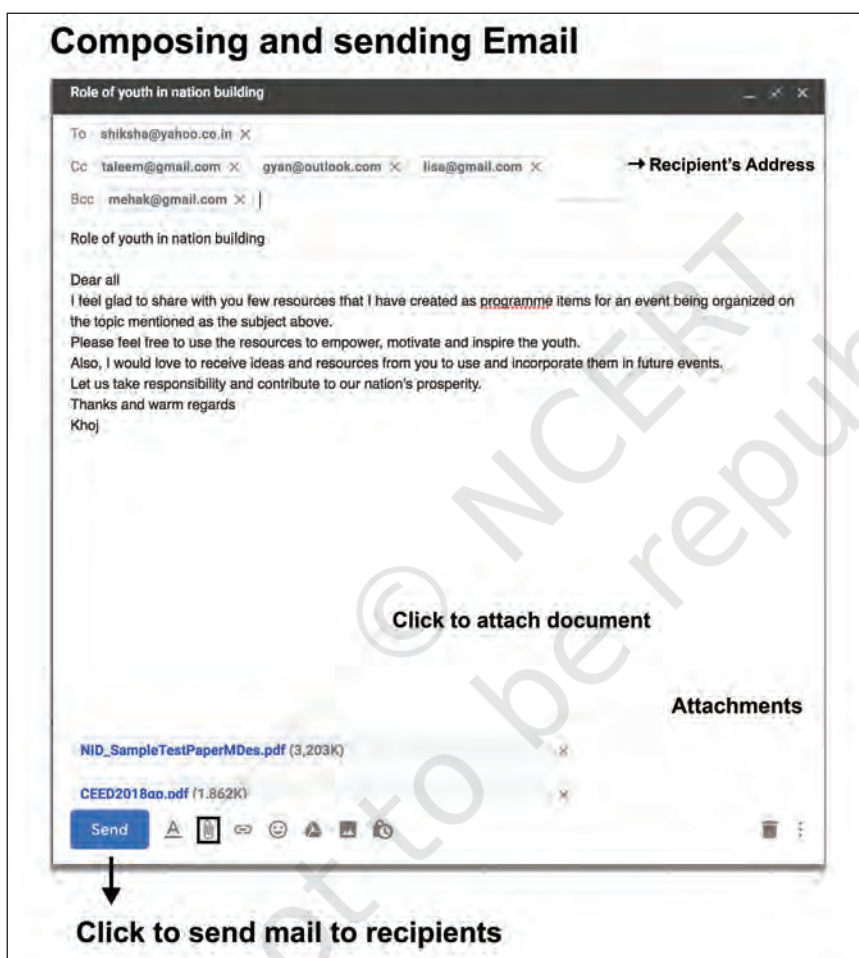


Fig. 6.8: Compose/write an email

Attaching a document to your email is also known as uploading.

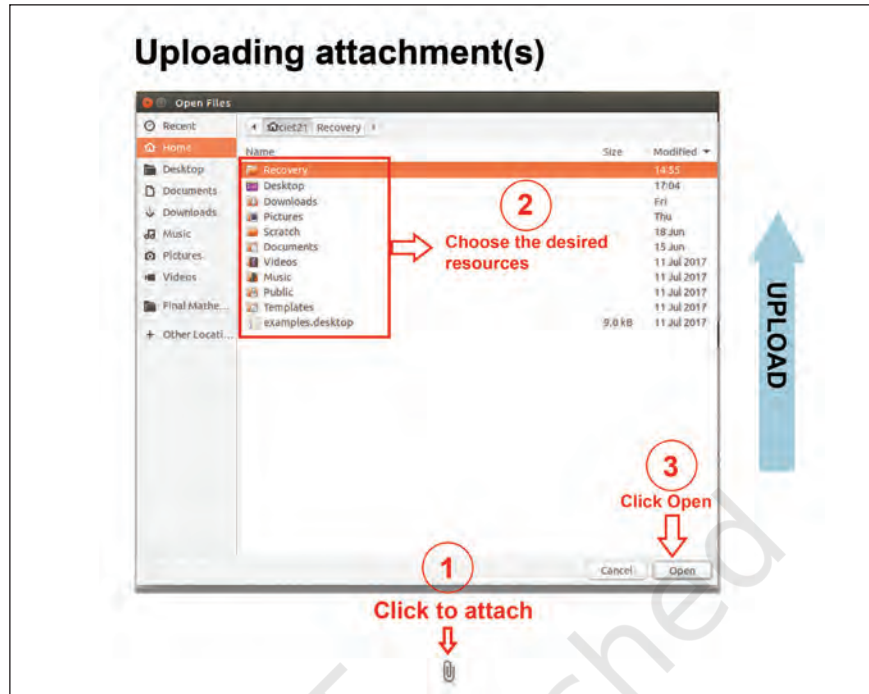


Fig. 6.9: Attaching a document

You have successfully sent the mail to your friends about your event experience with some documents as attachments.

Inbox is an electronic folder in the email account where all the received mails are stored.

One of your friends, Taleem who received your email also shared the script written by him for a similar event that he has planned and is asking for your opinion. You can see his mail in the inbox. You can click on the email to read its content as shown in Fig. 6.10.

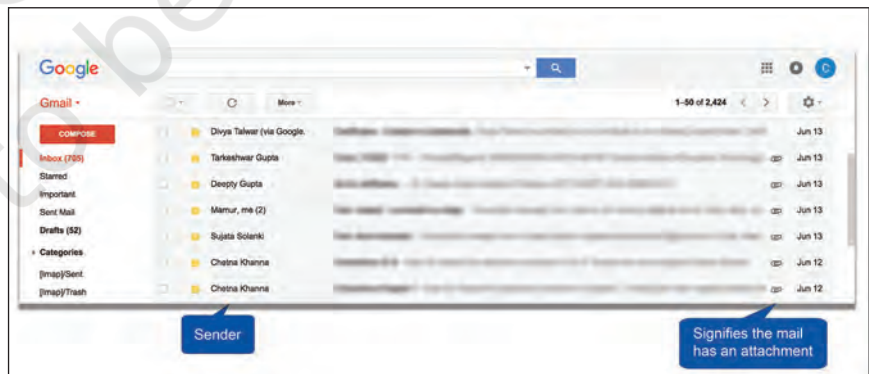


Fig. 6.10: Inbox

If there is any attachment in the mail then you need to be careful and question yourself before downloading the attachment as there is a chance that the attachment is infected with virus.

Checklist for Downloading

Always be alert. An attachment can be a malware, such as virus which are harmful to the computer and its user. So check for the following before proceeding.

- Is it from a trusted source?
- Is it in a known format?
- Did you perform anti-virus scan?

Once you get answers for the above questions positively, and then follow the steps shown in the Fig. 6.11.



Fig. 6.11: Inbox

We learnt how to access the Internet and communicate using email. You must have also heard about the various security concerns in this Internet-based world known as cyber world. The threats associated with technology are largely due to inappropriate use of technology and to expect that all the users will exhibit ideal behaviour is unreal. Hence, it becomes our primary responsibility to exercise caution and at the same time behave responsibly like we do in the real world by setting an example for others. We will learn about safe internet practices in Chapter 7.

A virus is a harmful program which when enters the computer, affects the performance of the computer and destroys its data.

Anti-virus programmes are used to detect and destroy computer virus. Examples of Anti-virus programs are Norton, Kaspersky, McAfee, etc.

Transferring documents/files from Internet to the computer is called downloading.

Exercises

1. Open the websites given below and identify the purpose for which they can be accessed.

Website Address	Purpose
mygov.in	

swayam.gov.in	
ndl.iitkgp.ac.in	
farmer.gov.in	
ors.gov.in	

2. Using a search engine try to find the website address of the following and enter it in the Table given below:

- Indian railways website
- Tourism website
- NCERT website

Searched for	Website Address
Indian railways	
Delhi tourism	
NCERT	

3. Identify keywords and the type of resources required and create multimedia resources (presentation video) on the following topics:

- Technology—the latest trends
- Plastic—A friendly foe

4. Identify the invalid email ID and specify the reason.

- i. Aayush. gmail.com
- ii. School_yahoo.com
- iii. Suhana@rediffmail.com

5. Download your syllabus from the NCERT website. Save it on your device and email it to your friends. Also, send the same syllabus file to your parents.

6. My teacher has asked me to write an essay on 'Green Revolution', and also I need to prepare a list of 'Keywords' for searching information on the topic. I have prepared a list, help me to identify which of the key words are not much useful among the following:

- Agriculture
- Norman Borlaug
- M.S. Swaminathan
- Wheat farming
- Dairy farming
- Fish farming
- Crop yield
- Genetically modified crops
- Biotechnology

Chapter 7

Safety and Security in the Cyber World



Since childhood our parents and elders have been guiding and suggesting us to take care of our eating habits, practice hygiene, be wary of strangers, communicate effectively and so on to ensure that we develop into confident, strong and positive individuals who are able to cope up with the competition and complexities of the real world. With the advent of



Fig. 7.1: Cyber World

Digital footprint is the information about a particular person that exists on the Internet as a result of their online activity even after its deletion.

Internet, all of us have also become a part of a cyber world wherein we share and access resources, connect and interact with many people. Just like real world we need to be cautious and alert while working in this cyber world as well.

We all use email to send and receive information and messages but one needs to be careful while using email as many a times one may find emails which are from unknown source saying that you are a lucky winner or asking you to provide personal information. These mails will tempt you to follow the instructions written in the contents of the mail. Such emails are called spam mails and are sent with malicious intent to get you into trouble.

Let's look at some of the examples of spam mails.

The image shows a sample email with several annotations. The email header includes: From: "London 2012 Olympic" <no_reply@national-lotteryuk.org>, Date: 7 September 2010 19:20:09 GMT+01:00, To: undisclosed-recipients;, Subject: London 2012 Olympics Update, Reply-To: <no_reply@national-lotteryuk.org>. The body contains a congratulatory message about winning a lottery, a list of required personal information (ticket number, full names, full address, date of birth), and contact details for claiming the prize. Annotations on the right side of the email point to these elements: 'Sent to a large number of recipients' points to the 'To' field; 'Don't fall for logos that look genuine' points to the logo; 'Never sign up for this service' points to the congratulatory text; and 'Asking for personal information' points to the list of required details.

Fig. 7.2 : Sample email-1

In the Fig. 7.2 given above, you can find some common signals that you would usually find in a spam email.

Assume there is another email in your inbox asking you to download a popular game for free which otherwise costs ₹3,500/- as shown in Fig. 7.3.

From: game_download@fiffa.com → Check for incorrect spelling

Subject: Congratulation! Download Fifa game worth Rs. 3500 for Free!!

Hi,

Congratulation, you are one of the few lucky recipients of a free download of the popular Fifa 2018 game which costs Rs. 3500 in the market. → Don't fall for attractive offers

Click on the download attachment or the link below to download the game for FREE.

winner.fifa-download.org/free_game → Don't click on links or attachment from unknown senders

Please note that this offer is valid only for the next 48 hours after which you will not be able to access the email. HURRY!!! → Don't make hasty decision

Regards,
Chairman,
FIFA Team
London

Fig. 7.3: Sample email-2

Activity 1

In the Fig. 7.3 given above, which one of the following proves that it is a fake email? Choose the option from the list given below.

- The offer is valid only for the next 48 hours.
- Incorrect spelling of FIFA in the email ID in 'From' Box.
- The cost of the game mentioned in the mail is not correct.

Assume there is another email in your inbox which contains links asking you to provide account details for verification purpose. If you click on such links or download any attachments, they may lead you to a phishing website or install harmful malware (malicious software) on your device, as shown in Fig. 7.4.

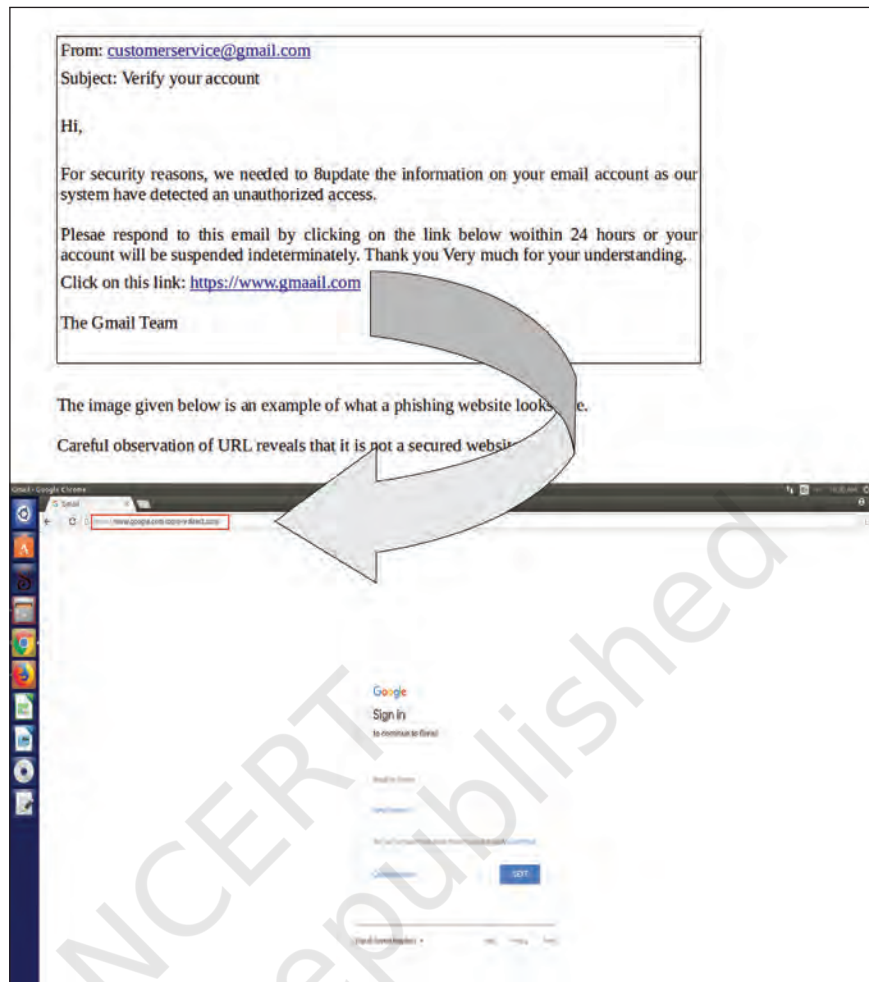


Fig. 7.4: Sample email-3

Phishing is an attempt to obtain sensitive information such as username, password and credit card details etc. for malicious reasons, by posing as a trustworthy source in email.

Activity 2

Identify the URL(s) which are indicative of a fake website?

- http://www.uiidai.gov.in/
- http://www.incometakindiaefilling.gov.in/
- https://onlinesbi.com

The above scenarios are examples of fraudulent emails. You need to be cautious before proceeding with any of the instructions given in the email.

Protection from email fraud

- Do not reply to emails from unknown senders even if it looks like a genuine email.
- Do not provide personal information like name, date of birth, school name, address, parent's names or any other information.
- Do not fall for lucrative offers/discounts as they might be coming from unknown source and it may not be reliable. Ignore/delete those mails.
- Do not open attachments or click on links from unknown senders, since they may contain malicious files that might affect your device. Only click the links and downloads from websites that you trust.
- Beware of phishing websites—check the URL to confirm if the website is secure.
- Do not forward spam or suspicious emails to others.
- Do not send excessive forwards as it might be distracting to the receiver.

You have learnt how to use email for sharing information and what safety precautions to be taken while using email. Through email you can reach out to people only if you have their email ID.

Activity 3

Can you think of ways to share your event with a larger audience?

The Internet allows us to exchange and share information, connect with people online across the world and create our own networks through social networking sites.

In order to create an account on a social networking site you need to use your email ID as username.

Activity 4

Search and write the names of any three social networking sites

1. _____
2. _____
3. _____

Social networking

site is an online platform to connect and network with people around the world. One can also send and exchange messages and share photos, videos, etc., through such platforms.

Check your privacy settings Make sure you know what information is being shared publicly.

Though social networking is very interesting as it gives you a chance to get connected with people around the world you should make sure you follow all safety precautions while using social networking as it is extremely difficult to judge and recognise a person here. We only know them by the identity they choose to present.

While creating an account on social networking sites, you need to take care of the following:

- Avoid revealing too much of your personal information like your age, address, contact details, school name, etc., as this can lead to identity theft
- Do your privacy settings very carefully on social networking sites

Anyone on social networking, needs to take care of the following:

- Never reveal your password to anyone other than your parent or guardian
- Change your password frequently
- Communicate and collaborate only with people known to you
- Do not post anything which hurts others feelings
- Always be careful while posting photographs, videos and any other sensitive information on social networking sites as they leave digital footprints which stay online forever
- Do not post your friends' information on social networking sites, which may possibly put them at risk. Protect your friends' privacy by not posting the group photos, school names, locations, age, etc.

- Avoid posting your plans and activities on networking sites
- Do not create fake profiles for yourself on any social networking sites
- If you suspect that your social networking account details have been compromised or stolen, report immediately to the support team of networking site
- Do not forward anything that you read on social media without verifying it from a trusted source.
- Always avoid opening links and attachment through social networking sites
- Never leave your account unattended after login, log out immediately when you are not using it

The photographs and the resources you share might get you positive feedback and comments. However, at times you might face instances of cyber bullying. Cyber bullying includes:

- nasty comments on your posts or posts about you.
- someone creating a fake profile in your name and trying to defame you.
- threatening or abusive messages online or on the mobile phone.
- being excluded from online groups and forums.
- embarrassing photographs put online without your permission.
- rumors and lies about you on a site.
- stealing your account password and sending unwanted/inappropriate messages from your account.
- offensive chat.
- fake online profiles created with an intent to defame you.

If you become a Victim of Cyberbullying, do the following:

- **Do not Respond**

If someone is cyber bullying you, do not respond or retaliate by doing the same thing back. Responding or retaliating to cyber bullying may make matters worse or even get you into trouble.

Identity theft is the deliberate use of someone else's identity to obtain credit and benefits in the name of another person or to sometimes even defame that person. It is one of the most common cyber crimes. It poses a severe threat to a person's reputation, unlike the real world the cyber world has a far larger reach, hence it is essential that we exercise the following precautions to prevent any such incident:

- Never share password with anyone
- Keep strong passwords
- Do not divulge your personal information

Cyber bullying includes sending, posting or sharing negative, harmful, false or mean information and content about someone. It is a serious offence which is punishable under Cyber Law.

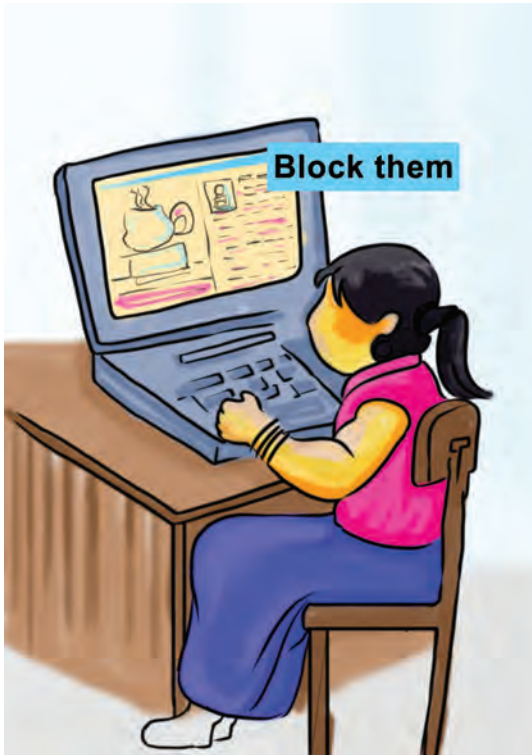


Fig. 7.5: Block

- **Screenshot**

Take a screenshot of anything that you think could be cyber bullying and keep a record of it.

- **Block and Report**

Most online platforms have this feature, if someone bothers you, make sure you block and report the offender to the social media platform.

- **Talk About It**

Cyber bullying may affect you in many different ways. Don't feel that you are alone. Let your parents and teachers know what is going on. Never keep it to yourself.



Fig. 7.6: Talk about it

- **Be Private**

Keep your social media privacy settings high and do not connect with anybody who you do not know offline. You would not talk to random people on the street, so why do it online?

- **Be Aware**

Remain updated with all the preventive and security measures in the cyber world.

Exercises

1. Fill in the blanks

- _____ often directs users to a fake website whose look and feel are almost identical to the actual website.

- b. Undesired or illegal email messages are often known as _____.
- c. The protection of internet connected systems including hardware, software and data from cyber attacks is termed as _____.
- d. A _____ is a form of malicious software program which can corrupt or destroy systems or data.

2. Match the following

- | | |
|-------------|------------------|
| 1 Malware | a. Email |
| 2 Spamming | b. Virus |
| 3 Cyber law | c. Stealing data |
| 4 Phishing | d. Cyber crime |

3. Identity whether the following statements are True or False

- a. Hacking is a cybercrime.
- b. Phishing is a type of attack which is capable of stealing your password or credit card number.
- c. Social networking sites are used to share passwords and other secret information.
- d. When you are receiving harmful messages on your computer, you may block or delete them.

Chapter 8

Fun with Logic



Jason is the sports captain of his school. He was thrilled to receive the Chief Minister's scholarship for his outstanding performance in sports. But his scholarship amount has to be credited to his bank account and Jason does not have a savings bank account. He does not even know how to open a bank account. So he approaches a bank in his locality and the bank employee at the helpdesk gives him instructions to complete the task as given below.

1. Take the account opening form from the counter.
2. Fill the details in the form carefully.
3. Put your signature at the designated place on the form.
4. Attach a copy of the photo identity card.
5. Submit the form at the counter with a minimum deposit.

After understanding the process to open a bank account, Jason gets on to work. When he went to complete the final step, which was to submit the form, the clerk informed him that his account could not be opened. What would have gone wrong? What reasons can you think of?

Once again Jason checked the steps to open the bank account. It was then that he realized that he had missed Step no 3 which was to put signature at the designated place on the form and that was why the task of opening the bank account could not be completed. Thereafter, he put his signature and submitted his form again. His account was finally successfully opened.

Have you ever faced such a problem while completing a particular task? What happens if you do not follow the correct sequence of steps? Will you get the desired result?

Activity 1

On the eve of the Independence day, you want to listen to the Prime Minister's address on the radio. Write the steps to complete the task.

Now ask your friend to follow the steps written by you. Are you able to tune in to listen to the Prime Minister's address? What happens if you interchange any of the steps? Are you still able to get the desired result?

By now, you must have understood the importance of instructions and the sequence of instructions to complete a particular task. To accomplish a task and to get the desired output, you have to mention each instruction clearly, sequentially and logically, as shown in Fig. 8.1. So to achieve a task, the steps are listed below.

1. Clearly identify the output that you want.
2. Analyse the instructions required to find a solution to get the desired output.
3. Finalise and give instructions in the proper sequence.
4. Verify whether the output produced is as desired by you in Step 1.

Identify the Output	<ul style="list-style-type: none"> Do you clearly know what output has to be produced?
Analyse	<ul style="list-style-type: none"> Do you have multiple solutions? Which is the best possible option? Have you identified the correct sequence of instructions?
Finalise Instructions	<ul style="list-style-type: none"> Give the instructions in logical sequence.
Verify the Output	<ul style="list-style-type: none"> Is the output same as you had identified in Step 1?

Fig. 8.1: Steps to complete a task

By now, you must have understood the importance of instructions and the sequence of instructions to complete a particular task. To accomplish a task and to get the desired output, you have to give each instruction clearly and also sequentially. Consider a situation where the Twirly cat has lost the way to her house as shown in Fig. 8.2.

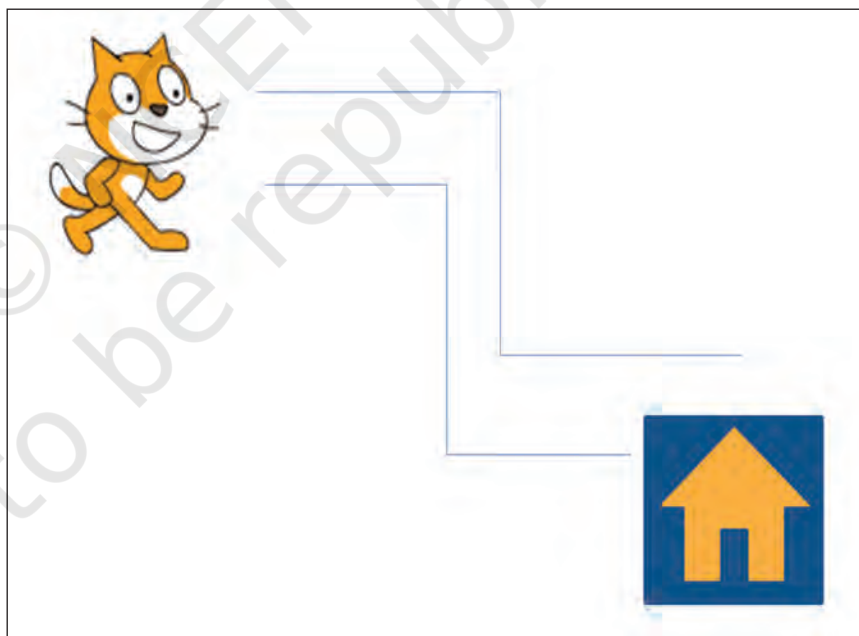


Fig. 8.2: Twirly cat finding its way

What instructions would you give her to help her reach the house? Write them in the space provided below:

Step 1: Move forward by 10 steps
Step 2: Turn right by 90 degrees

Have you given the right instructions? Will Twirly cat reach its home? Can you check the given instructions using any software application or tool? Yes, you can do so by using the Scratch application. Using this application you can create your own stories, games and various other animations using simple drag and drop instructions.

Animations in Scratch can be created in offline as well as online mode. As it is an open source software you can download it from <https://scratch.mit.edu>, install it on your computer and then use it. You can also create and share your animations online using the above URL.

On opening Scratch, you see the interface as shown in Fig. 8.3. Each object on the scratch window is called a sprite. This object can be any person, an animal, an automobile, a building or even text.

Scratch is a free programming language developed by MIT in the year 2005.

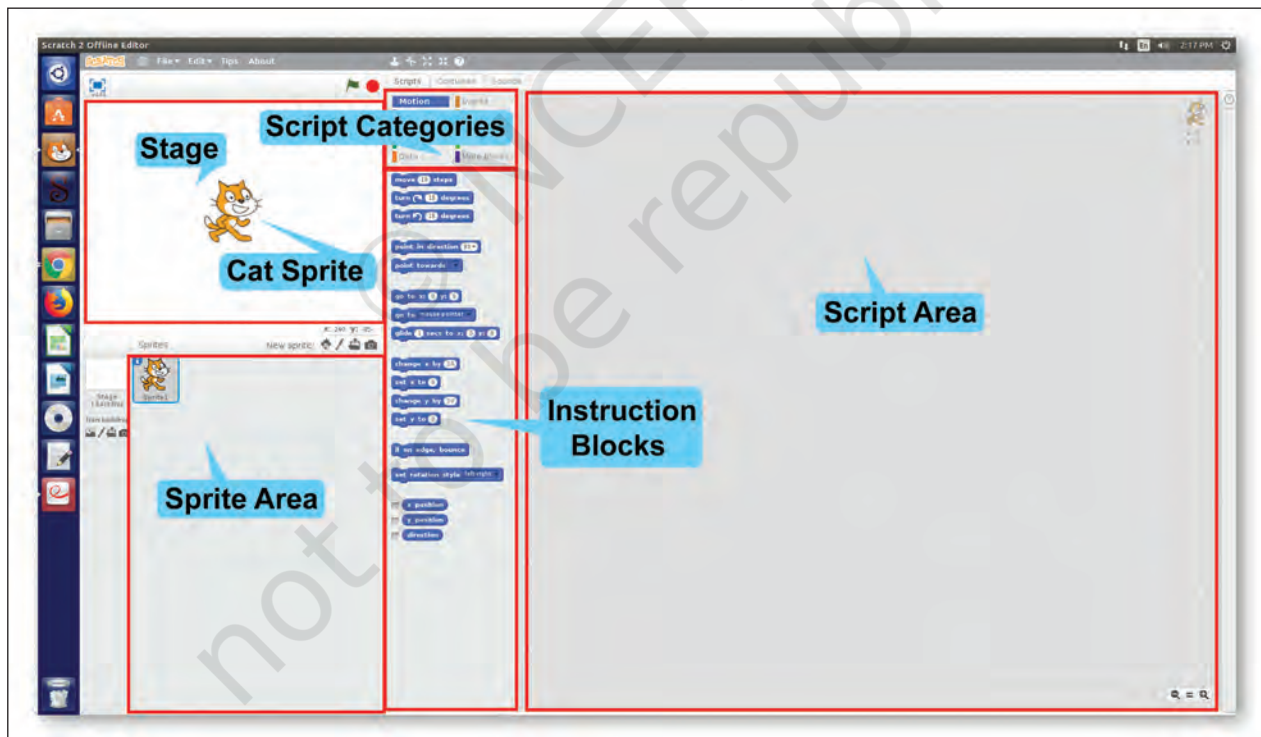


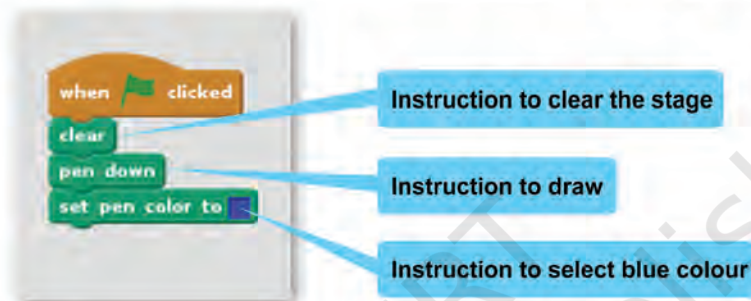


Fig. 8.3: Scratch Interface

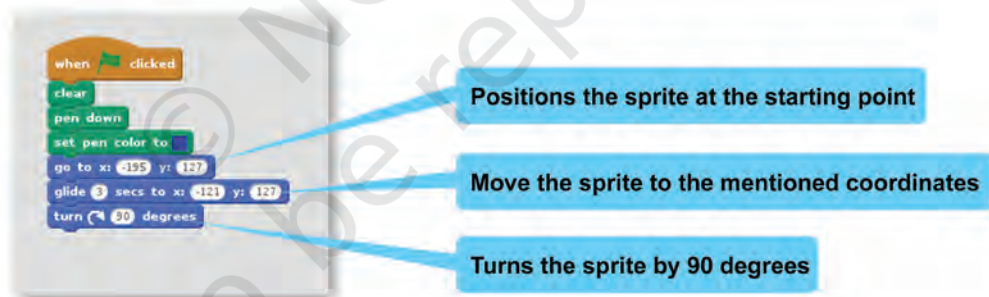
After learning about the Scratch interface let us now verify the steps that would take out Twirly cat home. In

the Scratch window, our Twirly cat will be called a cat sprite. To make the sprite move on a specific path, you have to choose the appropriate instruction block and drag it to the script area. Make sure you choose the instructions in a logical sequence. When the script is complete, you need to execute it to see the output on the stage. (Refer Fig. 8.4).

1. Open Scratch and click **Events** category of scripts. Drag  to the script area. this instructs that when you will click , the script will start execution.
2. Click and select the **Pen** category of scripts. The instructions blocks of this category will be displayed. Drag the two instruction blocks to the script area as shown below.



3. Click **Motion** category of **Scripts** tab. Drag the required instructions to the script area.



To see the result of instructions, click  on the top right of the stage.



Similarly, drag more instruction blocks in correct sequence so that the cat sprite can complete a square path.

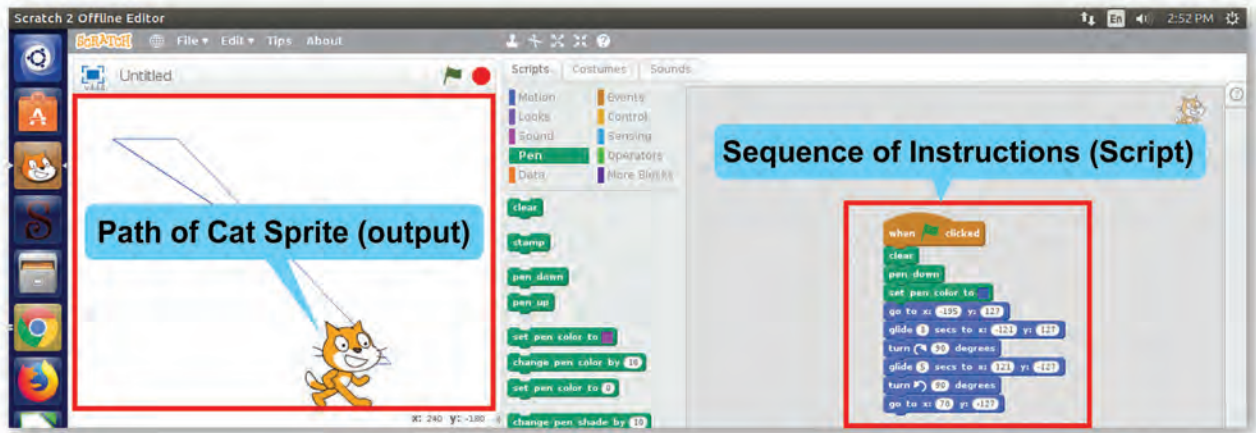
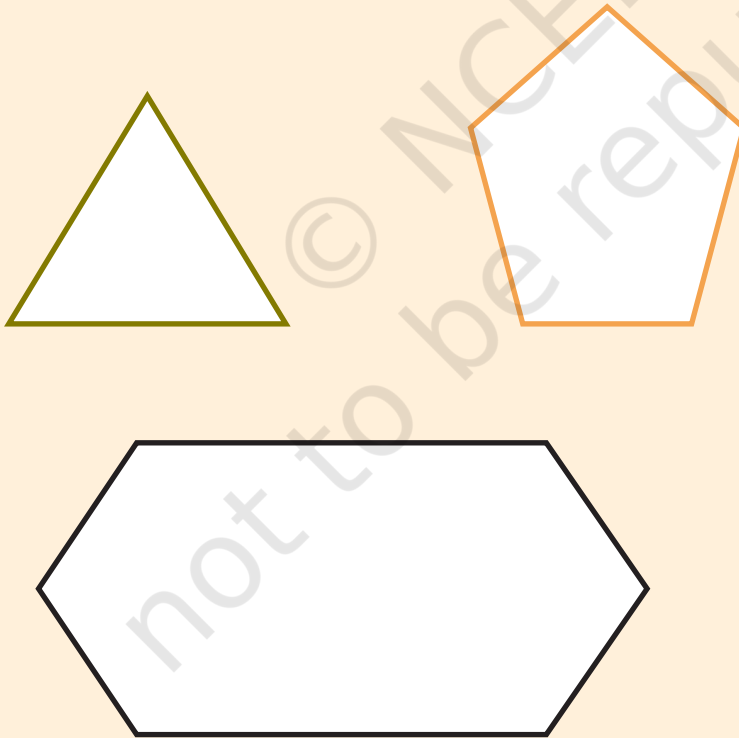


Fig. 8.4: Path traversed by cat sprite

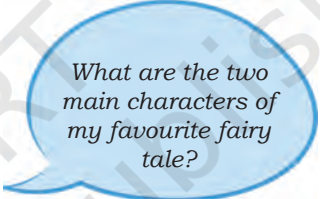
Activity 2

Build a script to make the cat sprite follow the paths drawn below.



Scratch is not just about static shapes. You can even create an animated story using various characters (sprites), instructions and tools using Scratch.

Have you ever thought that instructions have to be given in a logical sequence to communicate your ideas too? In the previous chapters you have learnt to communicate your ideas through text, images, video and audio using various tools and applications. The audio and video tools helped you to communicate realistic images and videos. But what if you had an imaginary concept or story to communicate with your friends? Such a story may not have any realistic character. For example, a fairy tale or a story of two animals going on a space voyage or two fishes talking in water. Can that be done using any text editing, image editing or presentation tool?



What are the two main characters of my favourite fairy tale?

Let us create a story where the underwater animals are talking about water pollution. Our imaginary characters will be a star fish named Twinkle, an octopus named Octi, a whale named Blue and a fish named Laali. In our story we need the following objects:

- Underwater background
- Octi, an octopus
- Twinkle, a starfish
- Blue, a whale
- Laali, a fish
- Text in the form of dialogues or messages
- Sound of cough
- Sound of water drops and ripples

Script for the story to be created

*(Underwater backdrop with water, water plants and water animals)
A red fish glides from right side, comes towards the centre and then slowly moves out from left side)*

(sound of water drops and ripples will be heard at frequent intervals throughout the movie)

Twinkle : Cough... Cough (sound of male cough)

Octi (glides from left side) : Hey Octi ... Are you OK? What happened? (moves a bit)

Twinkle: Oh Octi...Cough Cough...This dirty water will kill me. (sound of male cough)

Octi : OHH!!

Blue: (glides from right side) OH GODD!! My eyes are burning.

Octi : These humans , they pollute our water and we suffer. (sound of male cough)

Blue: What's wrong with the water today?

Blue: We all will die one day. (Blue whale glides down)

Octi: Let's all request them. (Twinkle and Octi move towards their left)

Message pops up on the screen

“ Stop Water Pollution”

So in your story, you will need an underwater background with four sprites that you can add from the variety of sprites provided by Scratch. When you open Scratch, the default cat sprite will be present in the centre of the stage. All sprites that you will further add will also appear on the stage, as shown in Fig. 8.5.

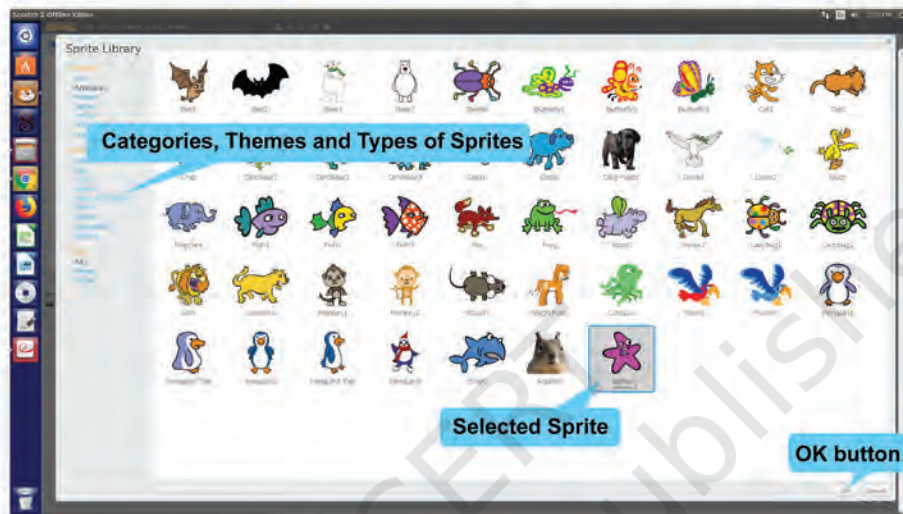
1. Click Choose Sprite from **Library** button. 



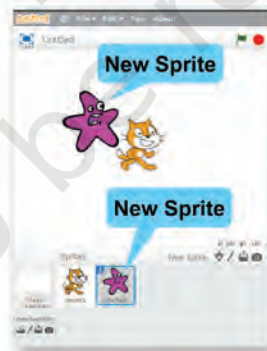
1. Click Choose Sprite from **Library** button.



2. From the **Sprite Library**, choose any category, theme or type of sprite.



3. Choose the desired sprite and click **OK** button. The sprite will be added to your project. It will be displayed on the stage as well as in the sprite area.



Likewise add all the four sprites to your project.

Fig. 8.5: Adding a sprite

You can select multiple sprites from the Sprite Library by keeping the Shift key pressed while selecting the sprites.

By default, the cat sprite is displayed in all Scratch projects but in your story you do not need it. So it has to be deleted, as shown in Fig. 8.6.

1. Right click on the sprite to be deleted.
2. Click **Delete** option from the pop up menu.

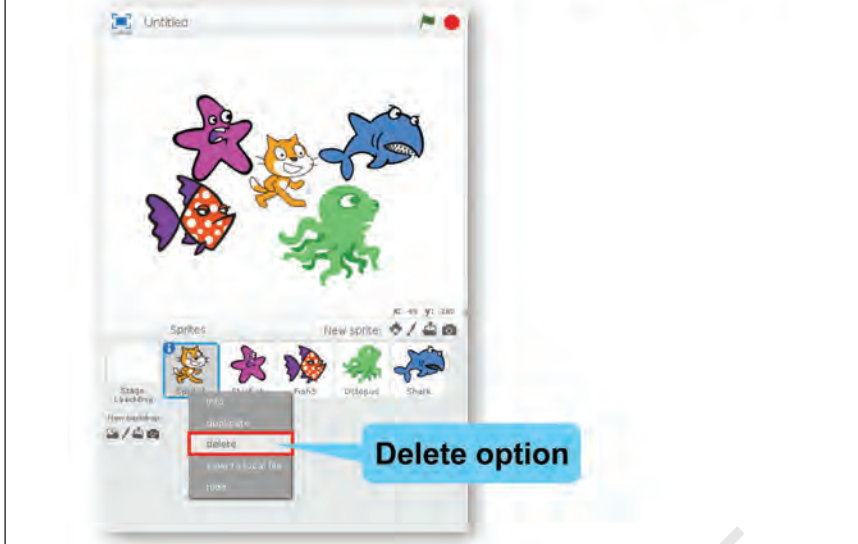
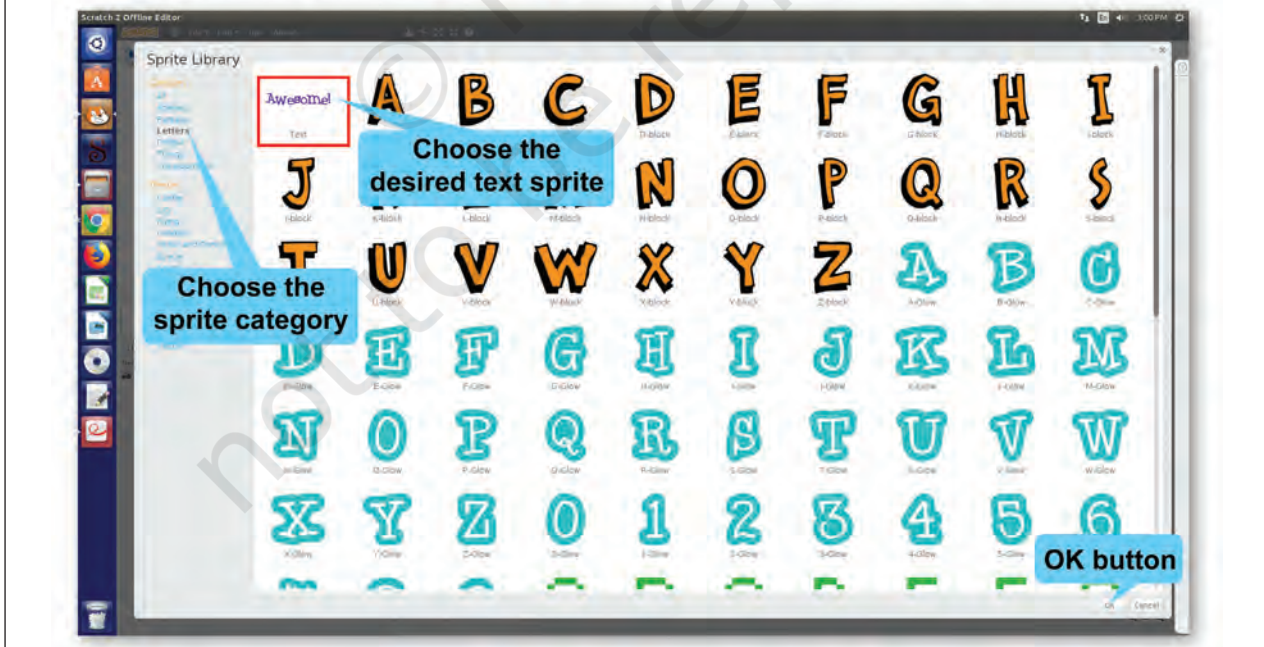


Fig. 8.6: Deleting a sprite

You want to give a message at the end. For this purpose you need to add a text sprite also (Refer Fig. 8.7).

1. Click **Choose Sprite from Library** button to open the Sprites library.



- The text sprite will be added in the sprite area but it does not contain the text that you want. To add the desired text to the sprite you will have to select the sprite and click **Costumes** tab.



Fig. 8.7: Adding a text sprite

You may require to move a sprite from one position to another. Scratch helps you to specify position of a particular character using coordinates. The stage on which the characters are placed is just like a coordinate plane with x and y coordinates as shown in Fig. 8.8.

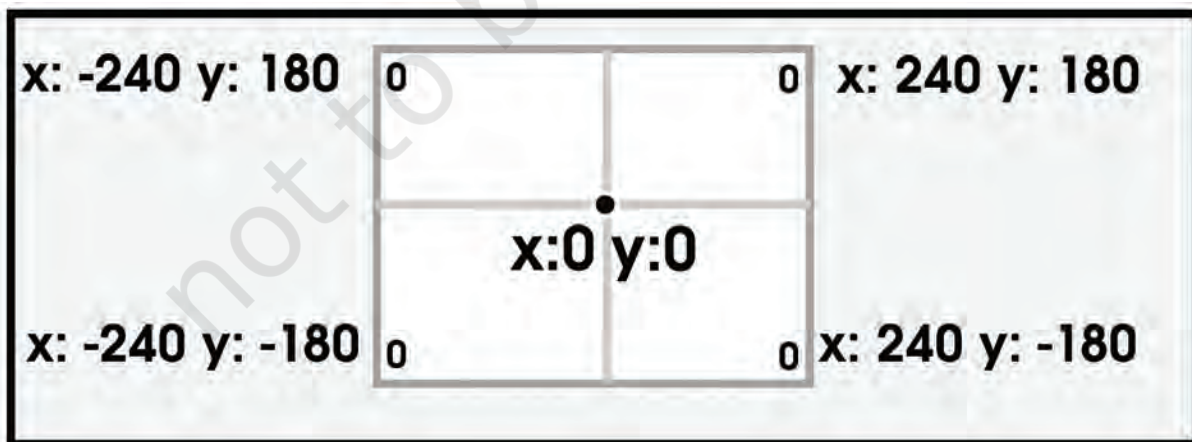


Fig. 8.8: Coordinates of X-Y plane (stage)

According to this plane any character placed on the centre of the stage has the X any Y coordinates as (0,0). The maximum and minimum values for any of the coordinates can be 240 and -180, respectively. As you move your mouse pointer on the stage, the x and y coordinates displayed on the right bottom of the stage keep on changing.

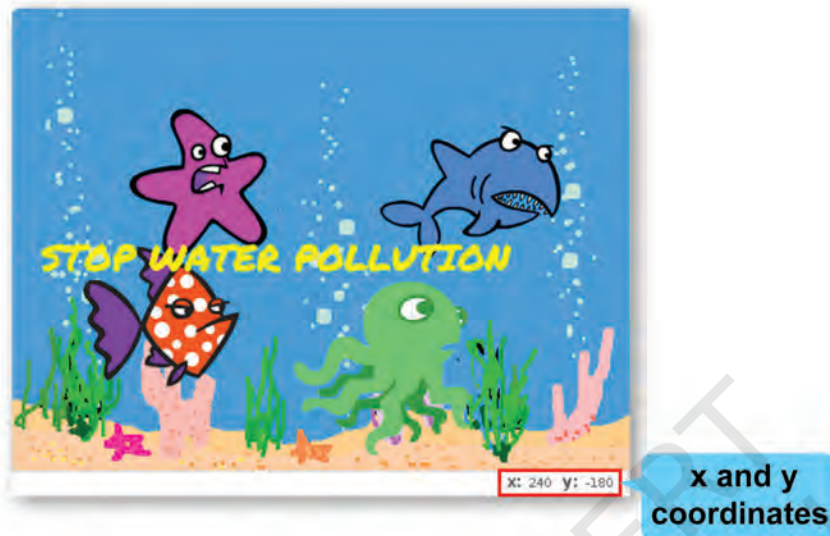


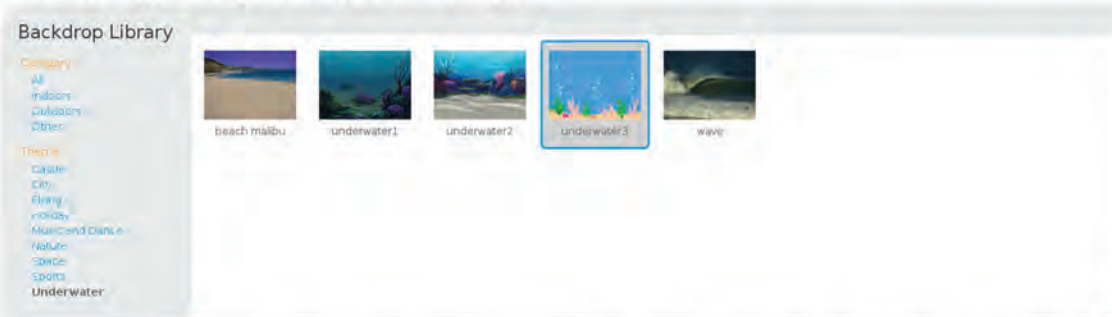
Fig. 8.9: Coordinates of mouse pointer

You might need to specify these coordinates while giving instructions for movement of the selected sprite from one position to another.

As per your story six sprites (4 characters plus 1 text sprites) have been added to the project. But the stage is having a white backdrop while your script requires a backdrop that depicts the underwater world. (Refer Fig. 8.10).



2. Select **Underwater** theme and the desired backdrop (**Underwater 3**) from the given palette of backdrops.



3. Click **OK** button. The selected backdrop will be added to your project.



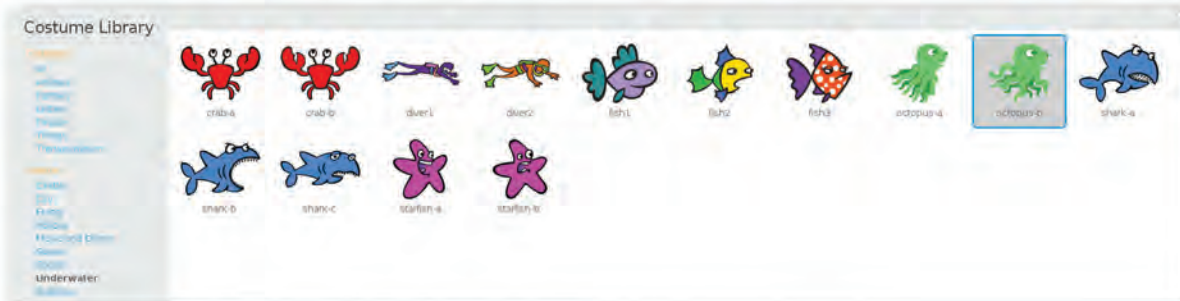
Fig 8.10: Adding a backdrop to animation

1. Select the sprite for which you want to add a costume.
2. Click **Costume** tab. The selected sprite (octopus-a) is displayed on the tab.



So now you are in the water world. Next, you might need to select different forms of the added sprites. Each form is known as a costume. You can add as many costumes as required by you for the story (Refer Fig. 8.11).

- To add another costume for the same sprite, click **Choose Costume from Library** button. The **Costume Library** opens.



- Select **Underwater** theme and choose **Octopus - b** costume.
- Click **OK**. The new costume (octopus -b) will be added on the costume panel.



Fig. 8.11: Adding costumes to a sprite

After the costumes for each sprite are added, add the sounds required in your project for each sprite, as shown in Fig. 8.12.

- Select the sprite for which you want to add the sound.
- Click the **Sounds** tab and click **Choose Sound from Library** button.



The sound library will be displayed.



Likewise add all sounds for the selected sprite. For example, for the starfish character, the sounds of water drops, coughing male and ripples are added. All these sounds are displayed on the Sounds tab for the selected sprite.





Fig. 8.12: Adding sound


After adding sprites, costumes and sounds, our next step is to build an animated story using these sprites, their costumes and sound effects. This process involves giving instructions in a logical sequence and the set of instructions for each sprite is called a script. The script will contain instructions for each and every action for that particular sprite. These actions may include movement, sound, change of costume, etc., as shown in Table 8.1. Each instruction is dragged from the Scripts tab to the script area. You can drag as many

instructions as you want and add them to the script stack in the script area on the right side of the Scratch window. The added instructions will be executed in the same sequence as you have stacked them. Some of the commonly used instructions are listed below along with their explanations.

Table. 8.1: Types of instructions

Some commonly used script categories and instructions		
Category	Instructions	Explanation
Motion	Move <n> steps Turn  <n> degrees Glide <n1> secs to x:<xn> and y: <yn>	Move the sprite by <i>n</i> number of steps Turn right by <i>n</i> degrees Move while gliding in <i>n1</i> seconds to <i>xn</i> and <i>yn</i> coordinates
Looks	Hide Show Say <text> Say <text> for <n> secs Switch costume to <cst>	Hide the sprite Show the sprite Display text in speech bubble Display text in speech bubble for <i>n</i> seconds Change the costume of the sprite to any of the added costumes (cst)
Sound	Play sound <audio> Play sound <audio> until done Stop all sounds	Play audio and move to next instruction block Play audio till it is complete and then move to next block Stop all sounds
Events	When  clicked	Run the script when green flag is clicked
Control	Wait <n> secs	Wait for <i>n</i> seconds, then move to next block of instruction

After learning about some of the instructions that can be given to the sprites, you can now start forming the scripts for each sprite, as shown in Figs. 8.13 and Fig. 8.14. Once you have formed scripts for your sprite, you would like to see the output (Refer Fig. 8.15).

1. Select the sprite (starfish) for which you want to form the script.
2. Click the **Scripts** tab. The script area will be blank as no instruction has been given for the selected sprite.
3. Click Events button under the **Scripts** tab. Drag **When**  **clicked** to the script area.



4. Next, click **Sound** button under the **Scripts** tab. Click and drag the instructions 'Play sound water drop'
5. Likewise drag the instructions in sequential order for playing sound, moving the sprite, hiding the sprite, showing the sprite, making the sprite wait for few seconds or even displaying the speech bubble for a particular sprite.

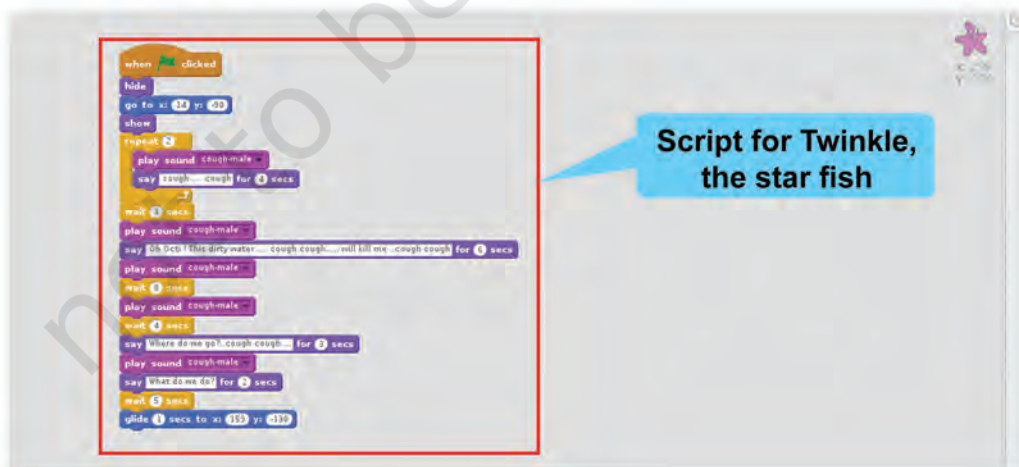


Fig. 8.13: Forming a script for Starfish Sprite

The figure displays four Scratch scripts, each for a different character or element in a story. Each script is shown in a window with a red box highlighting the code and a blue callout bubble with a white arrow pointing to the script.

- Script for Octi, the octopus:** Starts with 'when clicked', followed by 'hide', 'glide 1 secs to x: -239 y: -134', 'show', 'glide 6 secs to x: -139 y: -99', 'say Hey I'mble... Are you Ok? What happened? for 5 secs', 'move 50 steps', 'wait 7 secs', 'say OH for 2 secs', 'wait 5 secs', 'say These humans are so bad... they pollute our water for 4 secs', 'wait 4 secs', 'say Lets all request them for 2 secs', and 'glide 1 secs to x: -43 y: -124'.
- Script for Laali, the red fish:** Starts with 'when clicked', followed by 'hide', 'point in direction 50', 'glide 1 secs to x: 240 y: 144', 'show', 'glide 10 secs to x: 50 y: 50', 'turn 15 degrees', and 'glide 10 secs to x: -240 y: 20'.
- Script for text, "STOP WATER POLLUTION":** Starts with 'when clicked', followed by 'hide', 'wait 40 secs', 'glide 1 secs to x: 1 y: 155', 'show', and 'glide 1 secs to x: -23 y: 97'.
- Script for Blue, the whale:** Starts with 'when clicked', followed by 'hide', 'glide 1 secs to x: -311 y: 47', 'wait 15 secs', 'show', 'glide 5 secs to x: 55 y: 62', 'say OH GOOOO !!!... My eyes are burning... for 4 secs', 'glide 1 secs to x: -21 y: 25', 'wait 1 secs', 'say Whats wrong with the water today? for 4 secs', 'say We ALL will die one day! for 2 secs', and 'glide 1 secs to x: -21 y: -115'.

Fig. 8.14: Scripts for all characters of the story

Activity 4



Fig. 8.15: Playing the animation

Create an animation in which your name appears in an animated manner. (Hint: Use letter sprites)

After completing the activity, answer the following questions:

1. How many sprites did you add?
2. Did you add costume for any of the sprite?
3. Did you add sound?
4. Did you run the script in full screen mode?

Exercises

Do it Yourself

1. Use Scratch to draw the following alphabets:
A, E, F, H, M, W, Y, Z

2. Draw the following figures in Scratch



3. Create an animated story using Scratch for the following:

- a. A jungle where a lioness is giving safety tips to her cubs.
- b. A spacecraft moving in space.
- c. A dance performance on stage by a fairy.

4. Identify True and False Statements from the following:

- a. You can create animated stories with imaginary characters by Scratch. (T/F)
- b. Animations in Scratch can be created online only. (T/F)
- c. By using Scratch we can create static shapes as well as animated stories using various sprites, instructions and tools. (T/F)
- d. Each object on the Scratch window is called a sprite. (T/F)
- e. Scratch has an inbuilt library of sprites. (T/F)

Notes

© NCERT
not to be republished