

**INFORMATION & COMMUNICATIONS TECHNOLOGY  
STANDARD**

**IX**



**GOVERNMENT OF KERALA  
GENERAL EDUCATION DEPARTMENT**

---

**State Council of Educational Research and Technology (SCERT), Keralam  
2025**

## NATIONAL ANTHEM

Jana-gana-mana adhinayaka jaya he  
Bharatha-bhagya-vidhata,  
Punjab-Sindh-Gujarat-Maratha  
Dravida-Utkala-Banga  
Vindhya-Himachala-Yamuna-Ganga  
Uchchala-Jaladhi-taranga  
Tava subha name jage,  
Tava subha asisa mage,  
Gahe tava jaya gatha.  
Jana-gana-mangala-dayaka jaya he  
Bharatha-bhagya-vidhata,  
Jaya he, jaya he, jaya he,  
Jaya jaya jaya jaya he!

## PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage.  
I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness

## INFORMATION & COMMUNICATIONS TECHNOLOGY - IX

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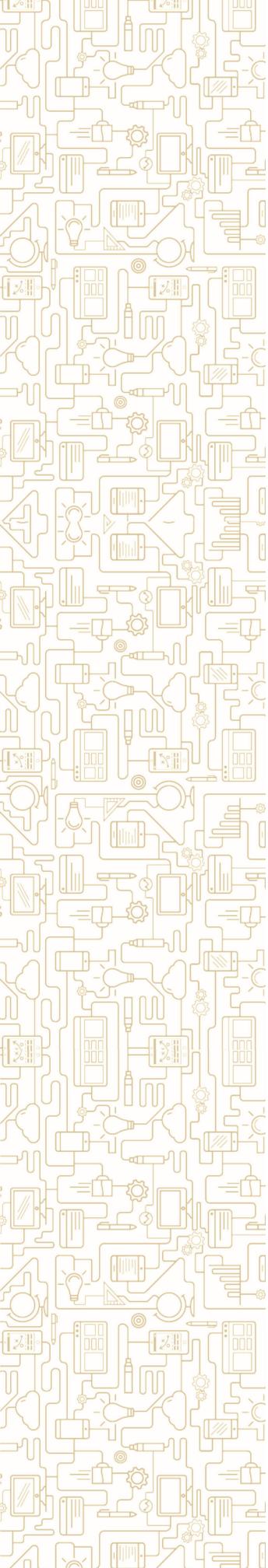
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## PREFACE

Dear Children,

Technology is paving the way for new changes in education. Today, it is expanding perspectives in knowledge, helping us grow as global citizens, and opening new doors before us. The 9th standard ICT textbook comes to you with these immense possibilities.

It is expected that this textbook will be a friend that makes your learning interesting and creative. This textbook describes the possibilities of different fields such as graphic designing, word processing, presentation, spreadsheet, webpage designing, networking, and internet services. Software such as Calcium, GeoGebra, PhET, and similar software you come across will help you comprehend the concepts in all subjects deeply and promote practical experience in using them.

This ICT textbook will certainly guide you, providing both wings to your imagination and light to your thoughts. As it explores new areas such as Artificial Intelligence in a simple and engaging manner, it will support your learning journey, making it easier to understand and excel in all subjects.

With regards,

**Dr. Jayaprakash R.K.**  
Director  
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# CONTENTS

1. Poster Images .....	07
2. Styles to Get it All in Style.....	23
3. Let's Develop Software.....	37
4. Data Analysis Made Easy .....	48
5. The Web of Goodness .....	58

## Explanation of Illustration



**Additional Reading**



**Let's Assess**



**Extended Activities**

# **THE CONSTITUTION OF INDIA**

## **PREAMBLE**

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

**JUSTICE**, social, economic and political;

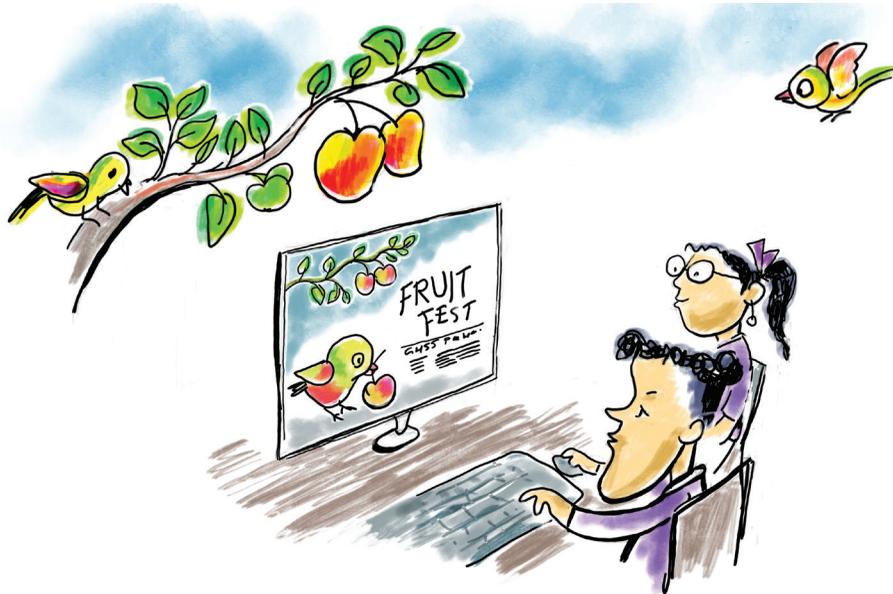
**LIBERTY** of thought, expression, belief, faith and worship;

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

**FRATERNITY** assuring the dignity of the individual and the <sup>2</sup>[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

### Poster Images

*Sarah and her friends are planning to design a poster on the computer to promote the Fruit Festival, which is being hosted in school by the Environmental Club.*

#### Image editing

Image editing is the process of enhancing or modifying an image's appearance with the help of software. Using image editing software, we can perform various tasks, such as improving image quality, removing unwanted elements, and adding new ones.

Colour, images, messages, and their arrangement are essential elements in a poster. The effectiveness of a poster is depends on how attractively these elements are presented.

Look at Figure 1.1. This is the kind of poster Sarah's group plans to prepare for promoting the fruit festival.



Figure 1.1 Sample poster

What are the things included in this poster?

- Images of different kinds of fruits
- .....
- .....

A poster that has the potential for effective communication is created when the text, images, and background are all appropriately arranged.

In previous classes, you have been introduced to Krita, a software that helps us draw, edit images, and design graphic products such as posters, banners, and collages. Similar to Krita, GIMP (GNU Image Manipulation Program) is an image editing software that is highly useful for graphic design tasks. Let's help Sarah and her friends create such a poster using GIMP.

To do this, the first step is to open GIMP and create a new canvas.

### Let's Create a Canvas

Open GIMP on the computer and create a canvas with a width of 600 pixels and a height of 400 pixels as described below.

## GIMP (GNU Image Manipulation Program)

GIMP was originally known as the General Image Manipulation Program. It was created by Spencer Kimball and Peter Mattis, students at the University of California, as part of their academic project. In 1992, it became part of the GNU Project and was renamed the GNU Image Manipulation Program.

### For Creating the Canvas

- Open the Gimp software.
- Click File New.
- In the window that appears, enter the required width and length for the canvas. (Figure 1.2)OK
- Click the OK button

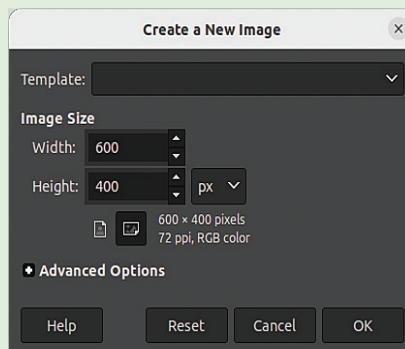


Figure 1.2 Create a New Image Window

## Pixels

A pixel is the basic unit of a digital image. It is an abbreviation of Picture Element. As the pixel count increases, the image quality improves.

Now that the canvas is prepared, have a look at the main window of GIMP that has just opened (Figure 1.3). Are the features similar to those in Krita software?

Which tools are available in GIMP that we used in Krita? Let's check the toolbox and complete Table 1.1.

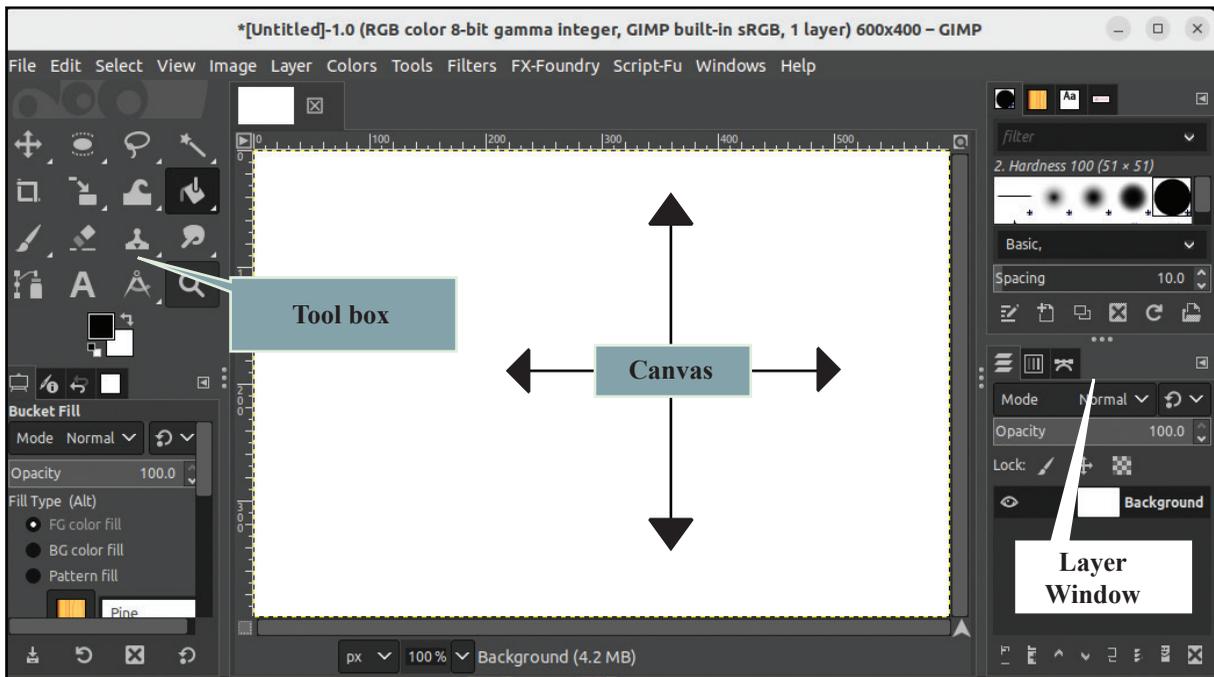


Figure 1.3 GIMP main window

**Wilber**

Wilber, the official symbol of GIMP, was created by Tuomas Kuosmanen, a Finnish citizen, on 25<sup>th</sup> September, 1997, using the GIMP software.

Tool	Usage
Move	to adjust the position
Bucket Fill	

Table 1.1 Common Tools and their Uses in Krita and GIMP

Have you completed the table?.

While preparing a poster, each element (such as the background, images, text, etc.) should be placed on separate layers. We've already discussed the benefits of this approach in previous classes.

Look at the layer window provided in Figure 1.4. This clearly shows that when a canvas is created in GIMP, the background is placed in the background layer.

Let's apply a new colour to this background.

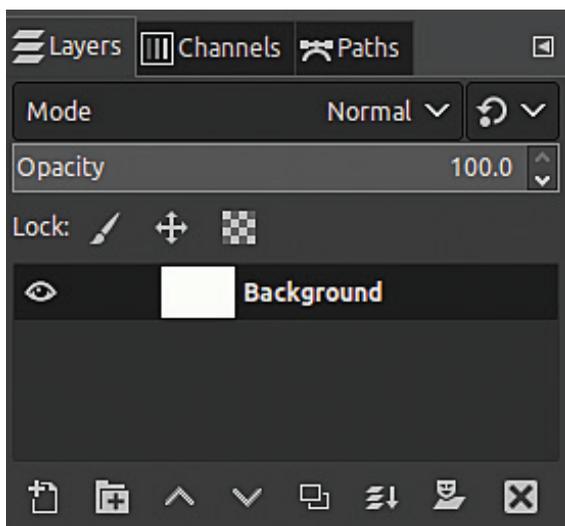


Figure 1.4 Layer Palette

### Assign Background Colour

There are various methods to assign colour to the canvas in GIMP. The Bucket Fill tool is one such feature that can be used for this purpose. Will you explore the toolbox and find out what other tools can be used for this purpose?

- Paintbrush
- .....

Look at Figure 1.5. The first step in creating our poster is to design a background similar to the one shown here.

This has been created by combining two colours. Using the Gradient tool in GIMP, it is possible to create backgrounds like this by adding multiple colours.

Use the Gradient tool to colour the existing background on the canvas as shown in the example.

Right-clicking on any tool in the toolbox will display the other tools in that group.



### Layers

Layers are transparent sheets that can be added on top of an image. When creating an image using image editing software, placing each element or part on separate layers allows for individual editing of each part at any time.



Fig. 1.5 Background with Two Colours Blended Together

### Using the Gradient Tool to Apply Colour

- Select the Gradient tool from the toolbox.
  - You can select Gradient from Tools → Paint Tools → Gradient or by pressing G on your keyboard.
- Click on the Active Foreground & Background colour selection boxes and select the appropriate colours for the background and foreground.
- Click on the top part of the canvas and drag down to apply colour.

You have given a background colour. Now you can save the image. Click on File → Save, give the image a name, and save the project.

### GIMP Project File

When a file is saved in GIMP, the .xcf extension is added to the filename. This format is specific to GIMP and serves as its project file format. Saving images and text as .xcf files ensures that features like layers and transparency are preserved for future editing.

We need to add images to our poster. The images are being brought one by one onto the canvas, and they are provided in the Class\_9 folder located in the School\_Resources on the computer.

The first element to include in the poster is an image of fruits. To do this, we need to open the 'Fruits.png' image in GIMP, which is saved on the computer.

### To Open the Image in GIMP

- In GIMP, click File → Open.
- Next, select the image and click Open.

The image has now opened in a new window and can be added as the background.

## Images to the Canvas

We currently have an image open in GIMP, showing fruits placed on a white surface.

Now, look at Figure 1.6. The background colour of the image has been removed, and only the image part is included in the canvas.

Let's explore how this can be made possible..



Figure 1.6 When Image is Added to the Background

Various selection tools are available in GIMP to select the entire image or a specific part as per the requirement.

Observe the toolbox, identify the different selection tools in GIMP, and then write their names and uses in Table 1.2. When the mouse pointer is placed over each tool, the tool's characteristics are shown as a tool-tip

Selection Tool	Shortcut key	Use
Rectangle Select	R	Select a rectangular region
Ellipse Select		
Free Select		
Fuzzy Select		

Table 1.2 Various Selection Tools in GIMP

The image part has been selected here using the Fuzzy Select Tool (U).

The selection is based on a technique called Threshold, which decides how much of the similar colours, starting from the edges of the image, should be included in the selection.

Try removing the background colour of the fruit image using the Fuzzy Select tool.

### To Remove the Background Colour of the Image

- To remove the background colour of the image
- In the Tool Options at the bottom of the Toolbox, enter the required amount in the Threshold field.
- Click on the colour to be excluded from the image (here, click on the background colour). This will select that area.
- Then, press the Delete key to remove this area.
- To deselect the image, choose None from the Select menu.

The background of the image has been removed, hasn't it?

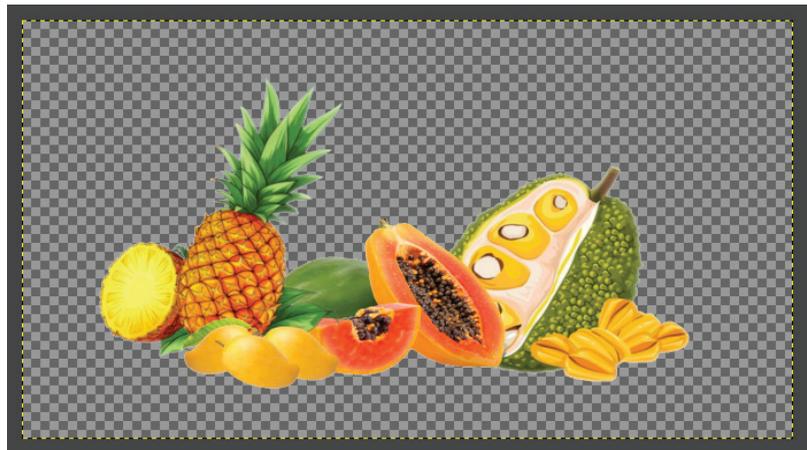


Figure 1.7: Image after Background Removal

Now, the image can be added to the canvas prepared for the poster. However, as we already know, if the image is inserted directly into the background, its position and size won't be adjustable later on.

## When Removing the Background Colour

We could remove the background because the image has an alpha channel. If the image is RGB-only without an alpha channel, you need to add the alpha channel first. To do this, right-click on the image layer in the Layers palette and select **Add Alpha Channel**.

Therefore, you can insert the image into a new layer.

Try doing the actions mentioned below.

## To Add the Image to the Canvas

- Select the image with the background removed.
- Click Edit → Copy to copy the image.
- Select the Canvas Window, then click Edit → Paste as → New Layer.
- Rename the layer by double-clicking on it, which will allow you to edit the layer's name.

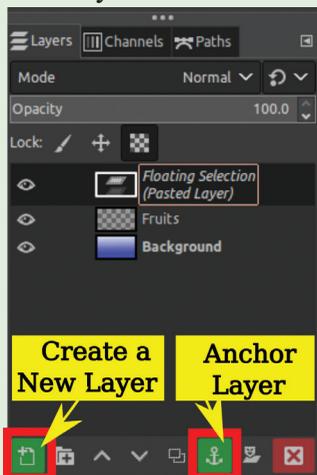


Figure 1.9 To Create a New Layer

[A new layer can also be created using the **Create a new layer** option in the Layers palette (Figure 1.9)]

The image of the fruits has been added to the canvas.

Now, the size and position of the pasted image need to be adjusted in a way that fits the poster.



## RGBA Channels

RGBA is a colour model that represents colours using four channels. It refers to the colours red, green, and blue, plus an alpha channel. The primary colours Red, Green, and Blue are used to create various other colours by adjusting their values. The alpha channel controls the transparency or opacity of the colour. You can view the RGBA channels in GIMP by going to Windows → Dockable Dialogs → Channels (Figure 1.8).

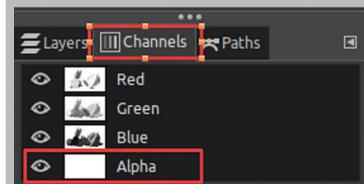


Figure 1.8 RGBA Channels

## Let's Align the Image.

When adding images to a poster, we need to decide how to arrange them. Keeping in mind all the components that need to be included in the poster, the size and position of each image must be determined. The Move tool can be used to change the position of an image, and the Scale tool can be used to adjust its size. Using these tools, now arrange the inserted image appropriately on the canvas.

### To Adjust the Size and Position of the Image

- Select the layer containing the image you want to resize.
- Then, select the Scale tool from the toolbox.
- Click on the image.
- In the window that opens, enter the required Width and Height. (Figure 1.10)
- Click Scale.
- Then use the Move Tool to adjust the position of the image.

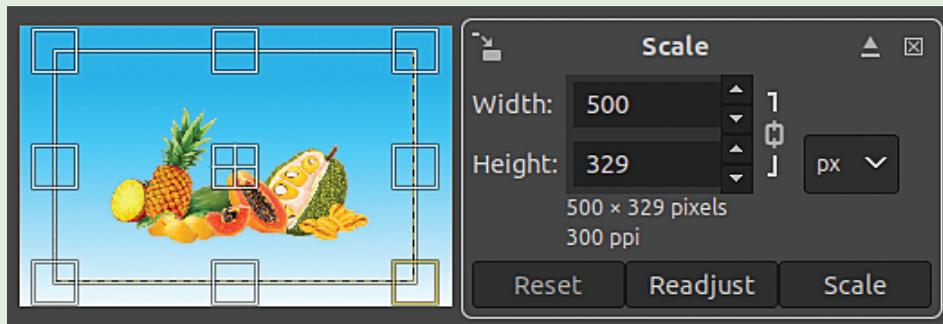


Figure 1.10 Scale Window

When using the Scale tool, you can also resize the image by clicking and dragging the square that appears around the image. If you want to change the width and height separately, you must Unlink the chain link next to Width and Height.

The image of the fruits has been arranged on the poster. Don't forget to save your work in between.

## Enhancing the Picture

What are the ways to make the image included in the poster more attractive?

Increasing the brightness and intensity of the colours in an image is one method for improving it. Changing the background colour according to the included images can also help make the picture more attractive. Try changing the Brightness and Contrast of the image as given below.

### To Adjust the Brightness-Contrast of Images

- Select Brightness-Contrast from the Colours menu.
- In the window that opens, move the slider to change the Brightness and Contrast of the image (Figure 1.11).



Figure 1.11 Brightness-Contrast Window

The tool used to change the size, shape, and proportions of images is the Transform Tool.



The image has more brightness and clarity. If necessary, select the Background Layer and change the background colour.

Next, the image of the bottle is to be added to the poster. This image is provided in the School\_Resources folder as Bottle.png.

Open the image in GIMP. Is it only the bottle?

Let's explore how to extract only the bottle from the image and place it onto the canvas.

## Elements to be Included in the Poster

We have finalised the elements to be included in the poster. So far, we have used two layers to add these. Provide the details of the images included in each layer of the poster you have prepared, in Table 1.3.

Layer name	Elements
Background Layer	Background
Layer 1	
Layer 2	
Layer 3	

Table 1.3 List of Layers

## Extracting a Portion from the Image

The Paths Tool (B) is a tool that helps in selecting a specific part of an image based on a defined shape and allows drawing shapes that can be manipulated using handles.

Use this tool to extract only the bottle part from the Bottle.png image and add it to the poster as a new layer.

### To Select an Image Using the Path Tool

- Open the image (Bottle.png) in GIMP and select the Path Tool from the toolbox.
- Then, click repeatedly along the edges of the image to make a selection.
- To complete the selection, press the Ctrl key and click when you reach the starting point of the selection (Figure 1.12).
- Then, select the path of the marked area from the 'From Path' option in the Select menu (this will complete the selection).
- Use the copy-paste method to insert the image on a new layer.
- Adjust the size and position of the image.



Figure 1.12 Image of the Bottle Selected Using the Path Tool



Figure 1.13 When the Bottle is Inserted into the Canvas

In the poster provided as a sample (Figure 1.1), there are two bottles. Do we need to follow the same procedure for this?

The easiest way to do this is to copy the image included in the canvas and use it.

To duplicate a layer, simply right-click on the layer you want to duplicate and select  Duplicate Layer.

The duplicate layer can be renamed and used further.

Let's save the poster by adding a second bottle to the canvas.

We have included all the necessary images for the poster. Shall we now add the headings and messages?

### Add Text to the Poster

The words and headings included enhance the communicative potential of the poster. They should be arranged in a way that suits the layout of the poster and emphasises the message.

Let's add the title FRUIT FEST to our poster. To do this, try the activities given below.

We can use Crop Tool to cut part of an image



### Adding Text to a Poster

- Select the Text tool from the toolbox.
- In the Tool Options, set the font size, color, and font style.
- Click on the canvas and type the words (Figure 1.14)

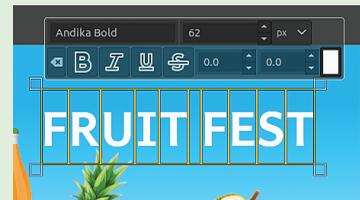


Figure 1.14 When Text is Added to the Canvas

### Text Shadow Effects

If the heading is displayed in three-dimensional, the poster will become more attractive. By coordinating shadows and light, it will be possible to give the images a three-dimensional effect.

How about making the message more appealing by adding a shadow to the title we've prepared?

## Applying Shadow Effect to Letters

- Duplicate the text layer.
- Apply black colour to the text on the duplicate layer (select the Text tool and click on the text to access editing options).
- Move the black-coloured text behind the original text. (To adjust the position of layers, you can use the Raise this layer/Lower this layer options in the Layers palette. (Image 1.15)
- Apply a Blur effect to the black-coloured text to enhance the shadow. For this,
- Select the layer and go to the Filters menu Blur → Gaussian Blur → Click OK.
- Then, use the Move tool to adjust the position of the text so that the shadow appears exactly as desired.

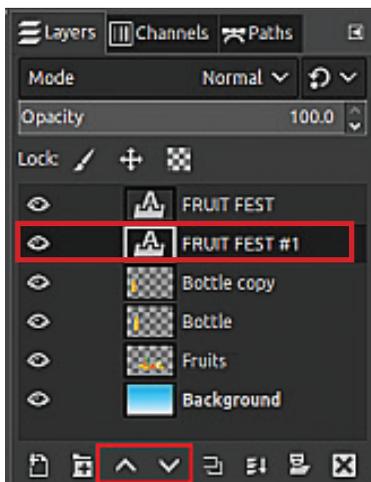


Figure 1.15 Raise this Layer/Lower this Layer Techniques

We can use the Flip tool to change the direction of pictures or shapes



In the same way, you can include other messages on the canvas and their position and size can be adjusted.

## Shadow and Light with One Click

We have now added black and white to give the text a three-dimensional appearance. Multiple layers were created to accurately add shadow and light. To achieve this quickly, we can use the Drop Shadow technique in GIMP. Follow these steps to add a shadow to the bottle placed on the canvas.

- Select the Bottle layer.
- From the Filters menu, select Light and Shadow → Drop Shadow.
- In the next window, enter appropriate values for X, Y, Blur, and Radius, and click OK

## Let's Draw Shapes

Look at Figure 1.16. Some shapes have been combined to make the poster's background more attractive. Now, let's explore how we can create similar designs by combining shapes in GIMP.



Figure 1.16 The Poster to be Completed

In GIMP, using selection tools like Rectangle Select, Ellipse Select, etc., you can draw shapes and fill them with colour to create such designs. Please note that they can only be edited and improved if they are created on separate layers.

The text 'Eat well Live well' is included inside a rectangular shape. This shape can be created using the Rectangle Select tool.

Below is the method for creating a shape and filling it with colour using the Rectangle Select tool in GIMP.

### To Create Shapes Using the Selection Tool

- Drag and select on the canvas with the Rectangle Select tool.
- Then, click on Color Selection and choose the appropriate colours.
- Colour the selected area using either Bucket Fill Tool (Shift+B) or Gradient(G).
- Adjust the position of the rectangle using the Raise this layer/Lower this layer techniques.

Different selection tools can be used to select and create various shapes on the canvas, fill them with colour, and complete the poster.



### Image Editing - Job Opportunities

Today, image editing is a field with vast employment opportunities. There are job prospects in various sectors related to image editing, such as graphic designing for posters, notices, brochures, websites, visual effects in video games and movies, social media posts, e-commerce, and more.

Now we have created an attractive poster in GIMP. Don't forget to save the file.

### Let's Export the Image

If the posters or images created in GIMP need to be used in other documents, the image must be converted from the project file to an image file.

Using the Export method in GIMP, it is possible to convert the created image to various image file formats.

Shall we export the poster we created as a JPG image file?

#### To Export the Image

- Click Export from the File menu.
- In the next window:
  - Select the folder where you want to save the file
  - Name the file
  - Click Select File Type (By Extension) and select the format you want to export (PNG image, JPEG image, TIFF image, etc.).
- Then click Export.

Using the techniques we have learned in GIMP, we will expand the poster by adding the school name, logo, the name of the school website, and a QR code.



### Let's Assess

- ♦ When trying to move an image included in the canvas using the Move tool in GIMP, if the background is also moving along with the image. What could be the reason?
  - a) The image could not be pasted into the canvas.
  - b) The image was pasted into the background layer of the canvas.
  - c) The Move tool is not working.
  - d) The image format is not supported.

## Poster Images

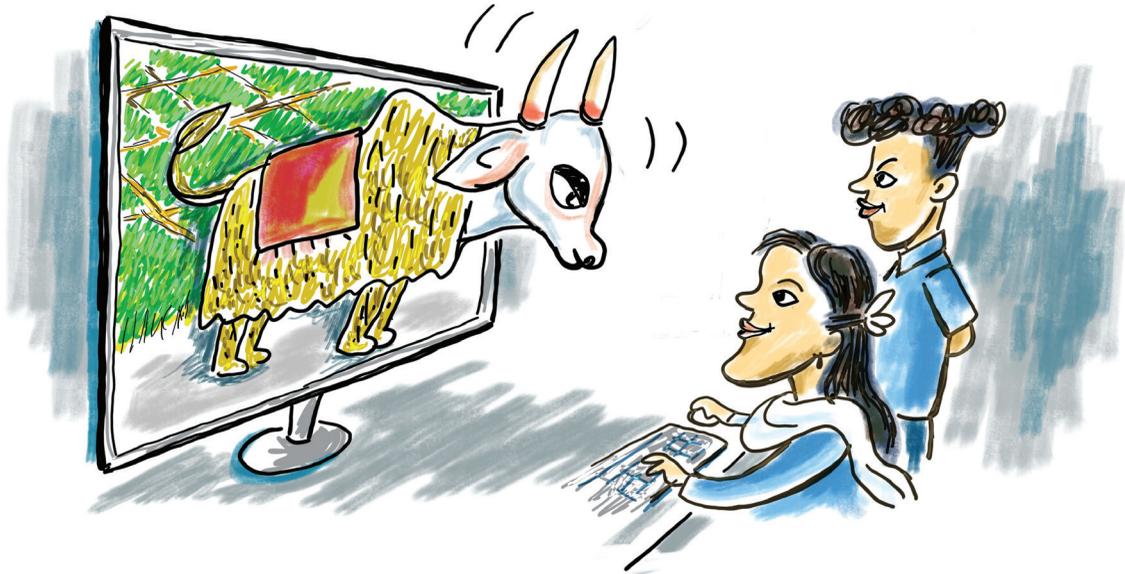
- ♦ Which of the following is the project file format of GIMP?  
A) XCF    B) PDF    C) JPG    D) PNG
- ♦ Which tool is used in GIMP to resize a portion of an image?  
A) Scale Tool                      B) Move Tool  
C) Paths Tool                        D) Fuzzy Select



## Extended Activities

1. Based on the chapter "Digestion and Transport of Nutrients" in the biology textbook, create a poster in GIMP for an awareness class on the topic "Bad Habits and Heart Health".
2. Prepare the cover page for the diary being created for the Environmental Club members of the school using GIMP.
3. Design the cover page in GIMP for a digital album that includes temples and cave paintings from the Gupta period, based on the chapter Land Grant system and Indian Society from the Social Science textbook.





## Chapter 2

### Styles to Get it All in Style

*“The beauty of spoken words,  
The beauty of written words,  
The beauty of country side,  
The beauty of the place where I live!”*

Anu and her friends are preparing a Folklore Encyclopedia in LibreOffice Writer, which is to be published on August 22, Folklore Day.

They have collected descriptions of art forms related to rice cultivation, agricultural songs, agricultural tools used in the past, agricultural practices, and agricultural proverbs to be included in the Folklore Encyclopedia and have typed them up in LibreOffice Writer.

They are thinking about how to make the document look more attractive.



## OCR to Input Text

There are many ways to input the content of a document into the computer without typing using the keyboard. One of them is the OCR (Optical Character Recognition) technique. OCR is a technique that recognizes the characters in an image file or scanned document and converts them into text. Tesseract OCR, GOCR, and EasyOCR are such software.

The gImageReader on our computer is an OCR application. If you convert the pages of a book into image files or PDF files and feed them to this software, the characters in them will be recognized by gImageReader and converted into text.

The method of converting the contents of an image file into text using gImageReader is given below (the image file named kummatti.png in the School Resources folder can be used for this).

- Open gImageReader (Figure 2.1).

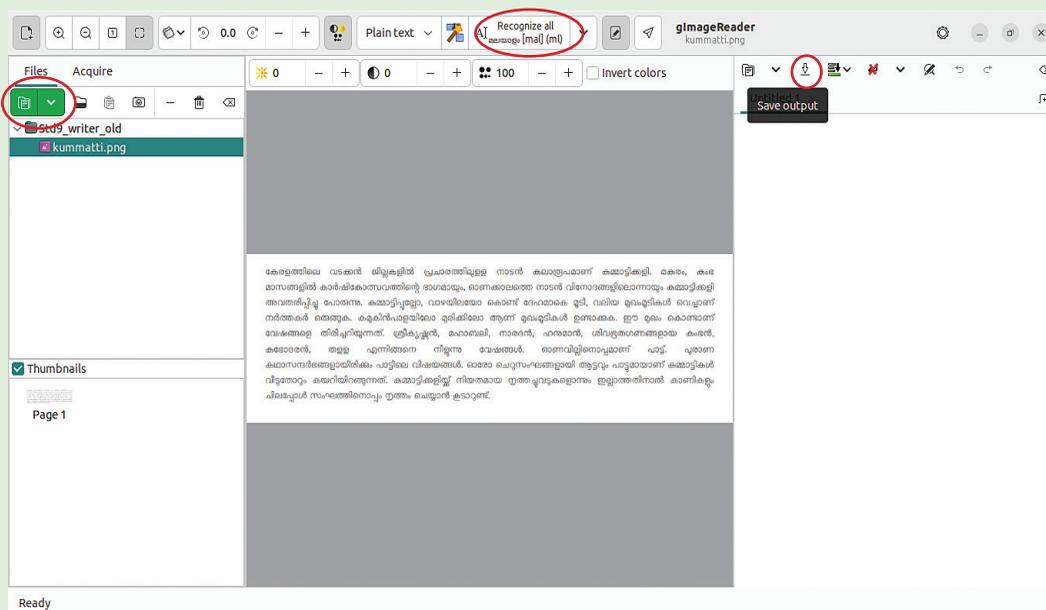


Fig 2.1 gImageReader Window

- Click Files → Add images and insert the file you want to convert to text.
- Click Select language in the Recognize all section and select the language of the text.
- Then, click Recognize all.
  - The characters in the image file will be available as text on the right side of the window.
- Save the content as a text file by clicking Save output or copying the text.

How can we help Anu and her friends? Let's take a look.

## Style the Documents

Today, we get to read many publications, both digital and offline, such as newspapers, magazines, etc. Have you noticed how beautifully and differently the contents of all such publications are organized? Each one has its own design.

Look at the features of the content in our ICT textbook.

- All the headings have a common size, colour, and shape
- All the sub-headings are of the same style.
- Paragraphs are arranged in the same pattern.
- .....
- .....

We have learned in previous classes how to make letters, paragraph, and pages attractive using Libre Office Writer. Let's take a look at that.

Complete the table below.

To give colour to the letters	Font Color
To give background colour to the page	
To arrange the distance between paragraphs	
To arrange text according to the images and shapes	Wrap
To give border to the table	

Table 2.1 Formatting Techniques in Libre office Writer

Is there any easy method to make the document look attractive?



When preparing a document with many pages, it is a bit difficult to format the content of each page separately. Moreover,

If you later change the design of the headings, subheadings or paragraphs, you will have to repeat this operation on each page.

Instead of this, it would be easier if we could determine in advance what formatting techniques we use for each element of the document ( font, colour, size, distance from the margin, etc of headings, subheadings and paragraphs) and then use it when needed.

For this we use the technique **Styles** in LibreOffice Writer.

### Let's Define Headings

A sample document typed and prepared by Anu and her friends to be included in the Folklore Encyclopedia is given

#### Styles

We identify the headings in a book based on their font, colour, size, and distance from the margin.

Libre Office Writer has the facility to pre-define such formats for the contents of the document.

Styles are pre-defined features of headings, paragraphs, and pages.

These styles can be used later in the document as needed.

in the School\_Resources folder as sample.ott. Let's see how to make this document attractive using the Styles technique in LibreOffice Writer.

The first heading in the file sample.ott can be formatted using the Styles technique as shown below. Open the file and do this activity.

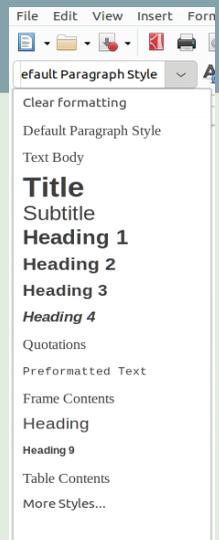


#### ott file

OTT is a document template file in the Open Document Standard Format (ODF). When opening files in the ott format, they are available as unsaved files (Untitled). Therefore, it is advisable to save the file first while using such templates.

## To Format a Heading Using the Style Technique

- Open the file sample.ott in LibreOffice Writer and select the first heading.
- Click the Style Box at the left side of the formatting toolbar (Fig 2.2)
- Then click Heading 1 to give style to the heading
- Save the file with a name.



**Fig 2.2 Stylebox Window**

What changes do you notice in the first heading when the Heading 1 style is applied? Click on the heading and check the formatting toolbar. Complete the list based on your findings.

- Font size - 18 pt
- Font style - .....
- .....
- .....

Heading 1 is a style that defines some features for main headings.

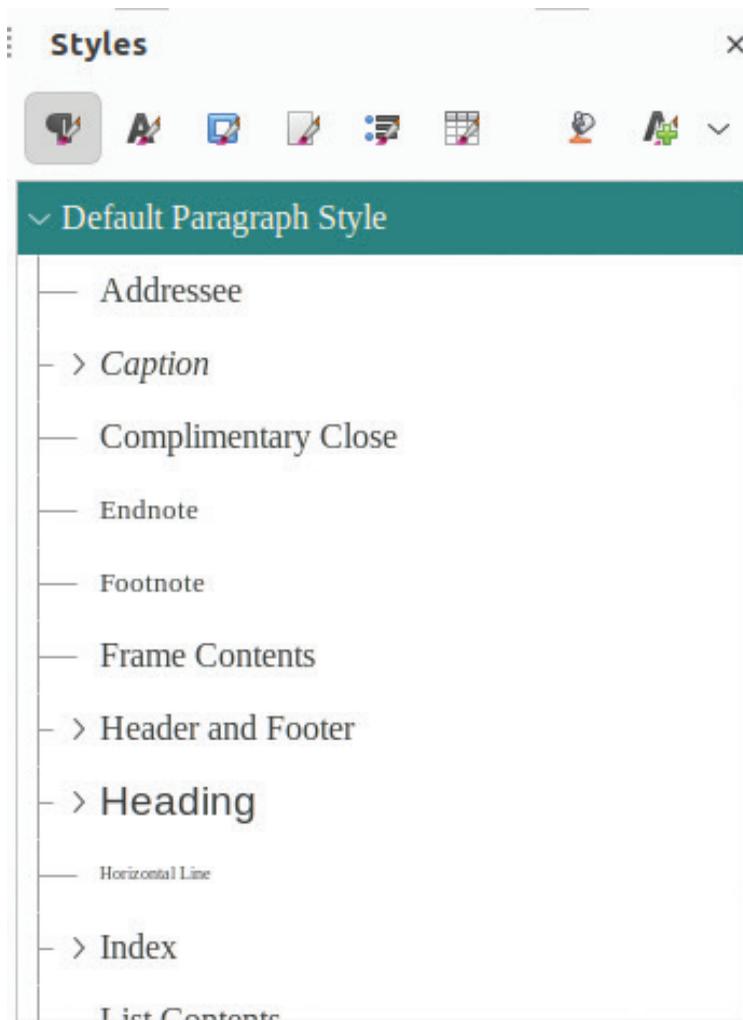
When this style is applied, the software recognizes the words we have selected as a heading and applies the formats defined in the style to that heading.

Similarly, LibreOffice Writer has various styles to make the contents of a document attractive.

Click More Styles in the style box and check the Styles window that opens and see which categories of styles are in this window (Figure 2.3).



- Paragraph Styles



The Styles window can be opened by clicking on the  in the side bar or using the key F11.



Fig 2.3: Styles Window

- .....
- .....
- .....
- .....

Can you find out which category the Heading 1 style we used belongs to.

Now, what if we want to give the Heading 1 style to other headings in the document?

Let's see how to give the Heading 1 style to headings using the **Fill Format Mode** in the Styles window.

## To Style Headings Using Fill Format Mode

- Select the style to be applied (here Heading 1).
- Click on Fill Format Mode (Figure 2.4) and select the headings to be styled.
- Press Esc key to exit Fill Format Mode

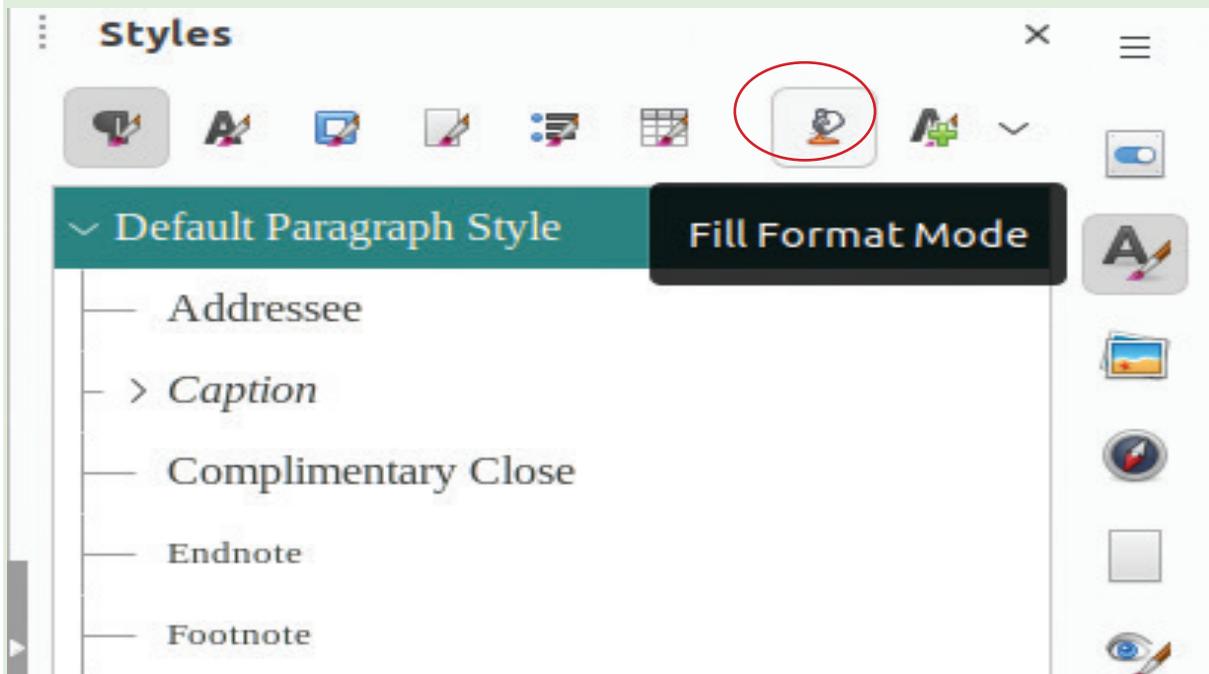


Figure 2.4 Fill Format Mode

## Fill Format

Fill Format is a technique that helps to give styles to different contents in a document. The Fill Format technique helps to easily give the same style to the contents arranged on different pages in a large document.

Now give all the headings in the document the style Heading 1. Make sure to save the file.

## Let's Change the Styles

What should we do if we want to format a style that has been already prepared in LibreOffice Writer? Let's make changes in the Heading 1 style based on the instructions given below.

## To Change the Style

- Open the Styles window.
- Right-click on the style you want to change (here Heading 1) and select Modify
- In the window that opens, make the necessary changes to the current formats of Heading 1 (Figure 2.5).
  - Change the design of the letters using the formats given below and click OK.
    - Font → Family : THUMBA, Size: 14pt
    - Font Effects → Font Color : Red
    - Alignment → Center

Font Family : THUMBA  
 Colour : Blue  
 Size : 14pt  
 Alignment : Center

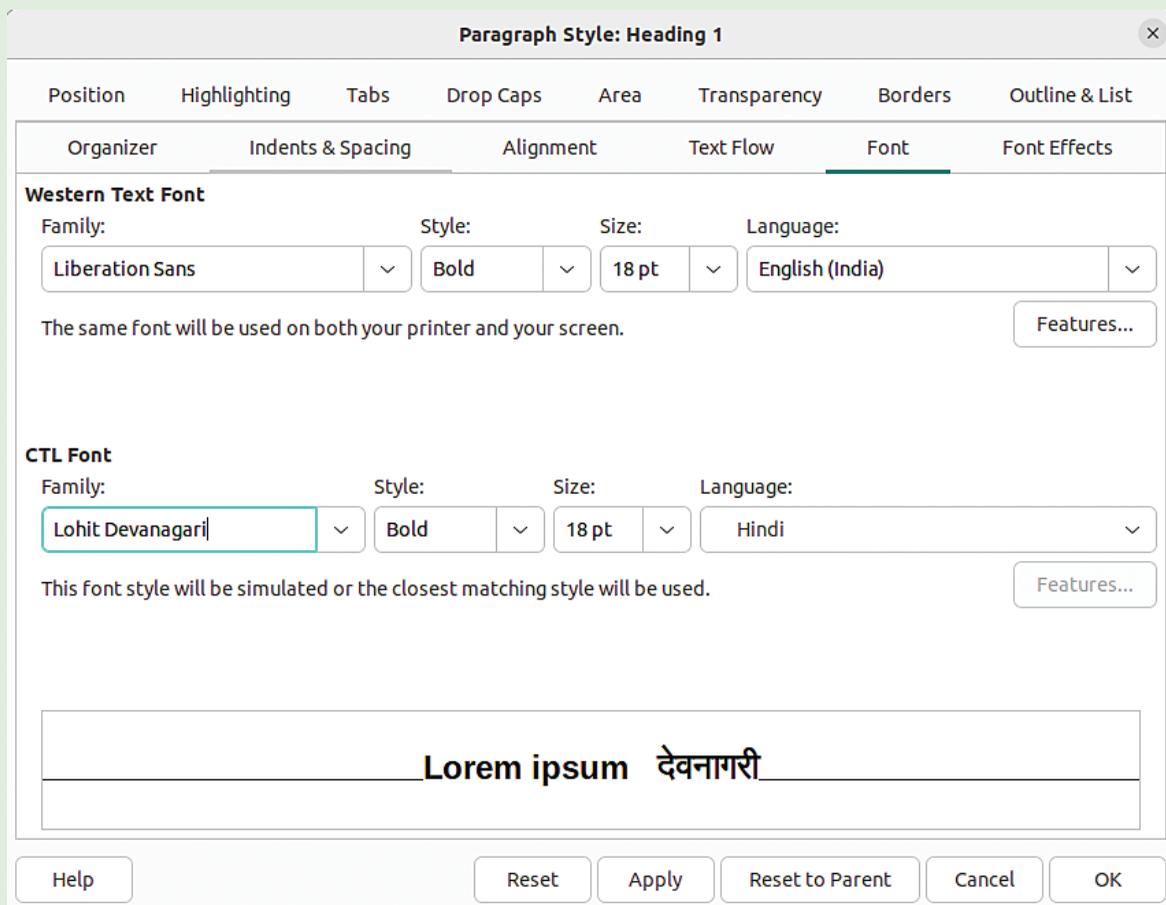


Fig 2.5 Style Formatting Window

For Malayalam fonts, changes should be made in CTL Font



For headings MyStyle1, and for subheadings MyStyle2



Now look at the changes that have been made to the document.

Changes have been applied to all the headings that are given the Heading 1 style, right?

Once you give style to the headings, subheadings, or paragraphs in a document, you only need to change or edit the style to change their formats on each page.

While preparing large documents or books, is it now easy to make refinement if we do like this?

### Let's Create New Styles

Now, shall we create new styles to give our own design to the folklore encyclopedia?

Just as we can change existing styles in LibreOffice Writer, we can also create new ones. First, let's decide which styles are needed for the document and what their characteristics are.

Decide in advance the formats for the new styles MyStyle1 and MyStyle2 to be created for the headings and subheadings in our document . Then record them in Table 2.2.

Style	Font			Alignment	Distance from the margin
	Family	Size	Colour		
MyStyle1				Center	
MyStyle2	Keraleeyam				

Table 2.2 Formats of New Styles



### LaTeX

There are many software available today that help with desktop publishing. LaTeX is one of the most convenient tool for preparing scientific/mathematical articles and dissertations. LaTeX has the facility to create symbols and formulae that are needed while preparing scientific papers. TexMarker is a software that helps in preparing documents in LaTeX.

Let's see how to create a new style according to the specified formats.

### To Create New Styles

- To create a new style in the Heading section, open the Styles window, right-click on Heading in the Paragraph section, and select New.
- In the window that opens, select the Organizer tab and enter the name of the style we are creating (MyStyle1).
- Choose the type of heading (Heading1, Heading 2...) under Inherit from.
- In the Font, Font effects, Alignment, Indents & Spacing tabs, make the necessary changes and click OK to save the style.
- Now the style we created (MyStyle1) will appear below Heading 1.
- Then, using the Fill Format Mode technique, give the style MyStyle1 to all headings.

Now try to refine the document by creating a new style called MyStyle2 for the subheadings. Note that MyStyle2 is a heading in the Heading2 section.

Don't forget to save the file.

### Footnote (Foot Note/ End Note)

Haven't you seen some hints or explanations at the bottom or end of pages in articles and encyclopedias during your studies? Footnotes are included to provide additional information, hints, and references about any terms mentioned in the document.

Let's see how to give Foot Note/ End Note for the explanation of some words in the document.

For this, first we have to prepare the words for which footnotes/indices are to be given and their explanations.

Now find the words to be included in the foot note of our folklore encyclopedia and their explanations.



### Create New Styles Using the Drag and Drop Method

In LibreOffice, you can create new styles using the Drag and Drop method. To do this, select a paragraph or other content that you have prepared with formatting techniques and drag it to the Styles window.

Then, in the New Style from the Selection window that opens, give the style a name and click OK. The style will be added to the Styles window with the name you gave it.

You can use the styles we create using Load Styles from Template in the Styles action option in other documents also.

- Folklore .....
- .....

Follow the steps given below to include an explanation of the terms you find as a footnote.

### To Insert a Footnote/Index Into your Document

- To include a footnote/index in the document, click at the end of the word where the index is required.
- Click Insert - Footnote and Endnote – Footnote.
- At the very bottom of the page, a number 1 appears below a small line.
- Type the notes or additional information there.

The number 1 will also appear near the word you clicked to include the Footnote. Clicking on this number will take you to the explanation below. Clicking on the footnote will take you to the footnoted word.

To add footnotes to more words, just follow the same procedure. You can see that the footnotes are arranged in sequential numbers.

What if you want to arrange them all together at the end of the document instead of adding explanations at the bottom of each page?

Click at the end of the word and select Endnote instead of Footnote.

Try to give Endnote to the words you found in the same way as Footnote.

The words and their explanations that need to be given Footnote Endnote in our document are given in the folder School\_Resources by name footnote.txt. Complete this activity using this file.

Now, using the Header, Footer, Page Number, Page Border mechanisms that we learned in previous classes, design the folklore encyclopedia and make it stylish.

These can be done using **Footnote or endnote** Window.



## To Create Table of Contents

You must have seen the details of the contents of books and magazines listed as a Table of Contents at the beginning. The Table of Contents helps us understand the topics, subtopics, and their page numbers included in the book.

Typing and adding the Table of Contents is a laborious task. Moreover, it is difficult to make changes in the Table of Contents when changes are made to the pages or adding and deleting new pages.

LibreOffice Writer has a technique called Table of Contents and Index that helps us prepare the Table of Contents without typing and to automatically reflect the changes we make in the document.

The software creates the Table of Contents by recognizing the styles given to the headings and subheadings in the document. While creating a new style, select the correct heading style (Heading1, Heading 2, Heading 3) in the Organizer tab's Inherit from option which helps the headings and subheadings to be arranged correctly in the table of contents.

Prepare the Table of contents of the folklore encyclopedia using the hints given below.

In which page is the unit  
Web of Goodness?



Find it from the  
Table of Contents .



## Scribus



Scribus is a free and open-source desktop publishing software. Scribus can be used to make the page layout and design of magazines, books, etc. more attractive. One of its advantages is that it supports Unicode fonts. Many Malayalam newspapers in circulation today are using Scribus to design pages.

## To Prepare the Table of Contents

- After placing the cursor on the first page of the document, insert a new page using Insert → Page break.
- Click on the part of the new page where the table of contents to appear and then click Insert → Table of Contents and Index → Table of Contents, Index or Bibliography.

- In the window that opens (Figure 2.6), type the heading of the table of contents in the Title field.
- Click OK.

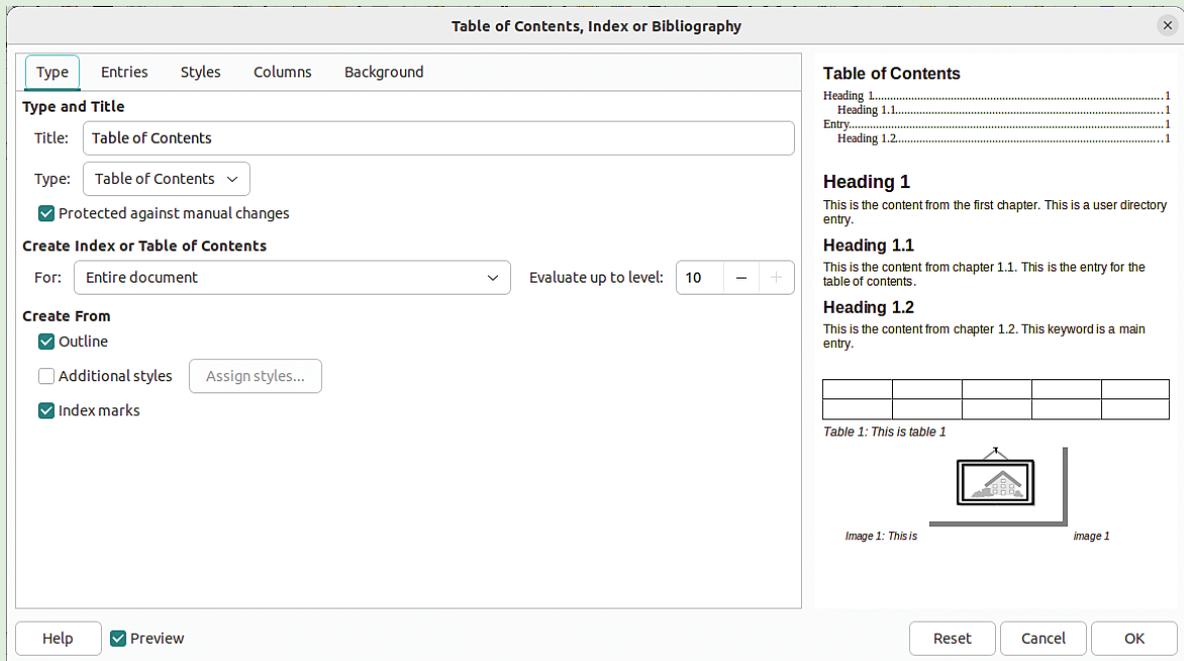


Fig 2.6 Table of Contents Window

## From the Table of Contents to the Content

What are the features of the Table of Contents we have included?

- When the mouse pointer is placed on any heading in the Table of Contents, a message appears.
- The message indicates that you can go to that page by clicking on the part where the mouse pointer is, while holding down the Ctrl key. Clicking on the headings or subheadings in the table of contents activates the link to the page it belongs to and takes you to that page.

## To Edit the Table of Contents

The options update index, edit index etc. obtained when right-clicking on the Table of Contents, can be used to modify and format the table.

If you uncheck "Protected against manual changes", you can directly format the Table of Contents.

Press and hold the Ctrl key and click on other headings.

Find out what changes have been made to the Table of Contents to reach different parts/pages of the report when our document is converted to PDF.

Does your Folklore Encyclopedia look more attractive now? Hope you get it ready for publishing.



### Let's Assess

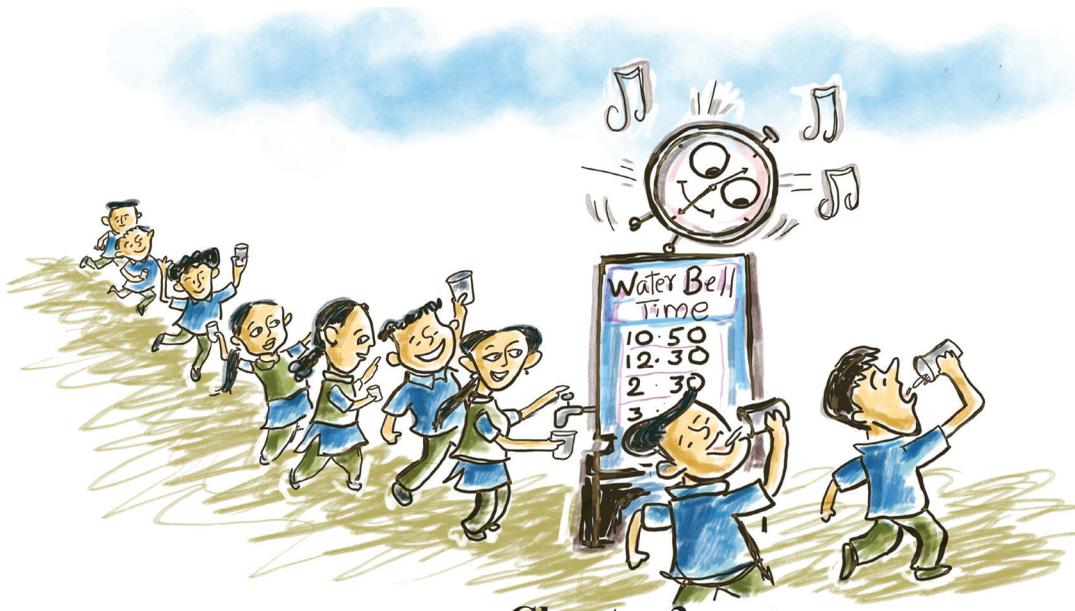
- ♦ In the seminar document prepared in connection with Gandhiji's contribution to the freedom struggle, the headings were given the style Heading 1. After that, the style was modified and the font color was changed to blue. What changes will have occurred in the seminar report now?
  - a) Only the first heading will have turned blue.
  - b) All headings using Heading 1 will have turned blue.
  - c) Heading 1 in the table of contents will have turned blue.
  - d) No changes will occur.
- ♦ What type of style should be selected in the Inherit from option of the Organizer tab when preparing the table of contents for those that will appear as main headings?
  - A) Heading1
  - B) Heading2
  - C) Heading3
  - D) Heading4



### Extended Activities

1. Create a new style called MyParaStyle for the paragraphs in the folklore encyclopedia you prepared. Apply this style to all paragraphs.
2. Prepare a class magazine using LibreOffice Writer by including the articles of the children in your class. Use the style technique to design the content. Include a Table of Contents showing categories and names of the articles on the first page.
3. In the Social Science textbook you are asked to prepare a short biographical book based on the lives of thinkers of 6th Century BC who propagated new ideas. Prepare such a book in LibreOffice Writer and make it attractive using Style techniques. Include a Table of Contents and footnote in the document.





## Chapter 3

### Let's Develop Software!

Don't you know that it is necessary to drink enough water to maintain health and body hydration? Drinking water at regular intervals is essential in hot weather. We often forget to do so. What arrangements have been made in your school to remind you of this?

- A bell to remind us to drink water.
- Posters.
- .....

Similarly, we have many occasions in our daily lives when we need to remember the time to do something . What methods do you usually adopt for this?

- Write it down so that we can notice it .
- Assign someone the duty to remind you.
- Set an alarm clock.
- .....
- .....

The simplest way to do this is to use an alarm clock. Devices can do this accurately and without getting tired.

What if your school had a self-operated water bell system to remind you exactly when to drink water? If you create such an application using a computer and connect it to the school's sound system, it would be convenient to remind all the children of the time.

How can we create such a software ?

Applications can be created on a computer using programming languages such as Java, Python, C++, etc., or block coding applications such as Scratch and PictoBlox that we learned in previous classes.

Let's make a digital alarm clock using PictoBlox.

### Make an Alarm Clock

A digital alarm clock Application prepared using Pictoblox is given in the folder Alarm\_clock in School\_Resources by name Alarm\_clock.html. Open this file in web browser.

Set an alarm in the clock so that it works in a short time. Observe how the application works and complete the list given below.

- When the flag is clicked , the clock works.
- The time in the clock is the time on the computer.
- .....
- .....

Have you understood the working pattern of the alarm clock?

The sprites to prepare this application are provided in the Alarm\_clock folder in School\_Resources. Examine these sprites and the application and record the function of each component in the table 3.1.



### Block programming

Block programming is a method of creating computer programs using code blocks through the drag-and-drop method. In this, there is no need to memorize programming instructions. They are provided in simple language as separate blocks in the editors of this system. Block programming is a very useful system for beginners in programming. Scratch, Blockly, App Inventor, and Blockly are some block programming techniques.

Sprites	Function
Clock dial (clock.png)	Functions as the background
Second hand (Second_handle.png)	Moves clockwise every second.

Table 3.1 Sprites Used in the Alarm Clock and their Function

We have observed the operation of each component in the alarm clock. What about preparing a Water bell application of this model using the software PictoBlox on our computer?

There are two main steps in preparing applications.

1. **Preparing the interface (layout designing):** Prepare the application interface by including the necessary components.
2. **Giving instructions (coding):** Give the instructions necessary for the components to work.

Save the file once the Interface is set.



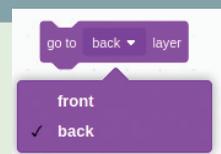
### To Prepare the Interface

The first thing we need to do to create a digital alarm clock application on the computer is to prepare its interface.

Open PictoBlox and use the files provided in the Alarm\_clock folder to design the interface of our application as shown in Figure 3.1.

### To Adjust the Position of the Sprites

When you have more than one sprite in the same position on the stage, you can use the go to front/back layer code in the Looks section to rearrange their order.



## Prepare the Background of the Clock

- Delete the existing sprite in PictoBlox.
- Insert the sprite clock.png given in the Alarm clock folder and adjust it so that it is in the middle of the stage.
- Include the sprite **Hour handle.png** as the hour hand and set the size to 50.
- Select the sprite hour hand and open the Costume Editor.
- Use the Select tool to drag over the object and select it.
- Then adjust the rotation centre (Pivot Point) that appears when you move the object so that it is the rotation centre of the hand. (Figure 3.1)
- Adjust the hour hand so that the rotation centre of the hand is at the black mark in the middle of the clock dial (if necessary, move the dial to the layer immediately behind it).
- Then, add Minute\_handle.png and Second\_handle.png as minute and second hands respectively to the dial as shown in Figure 3.2.
- Include Alarm\_button in the clock after adjusting size.

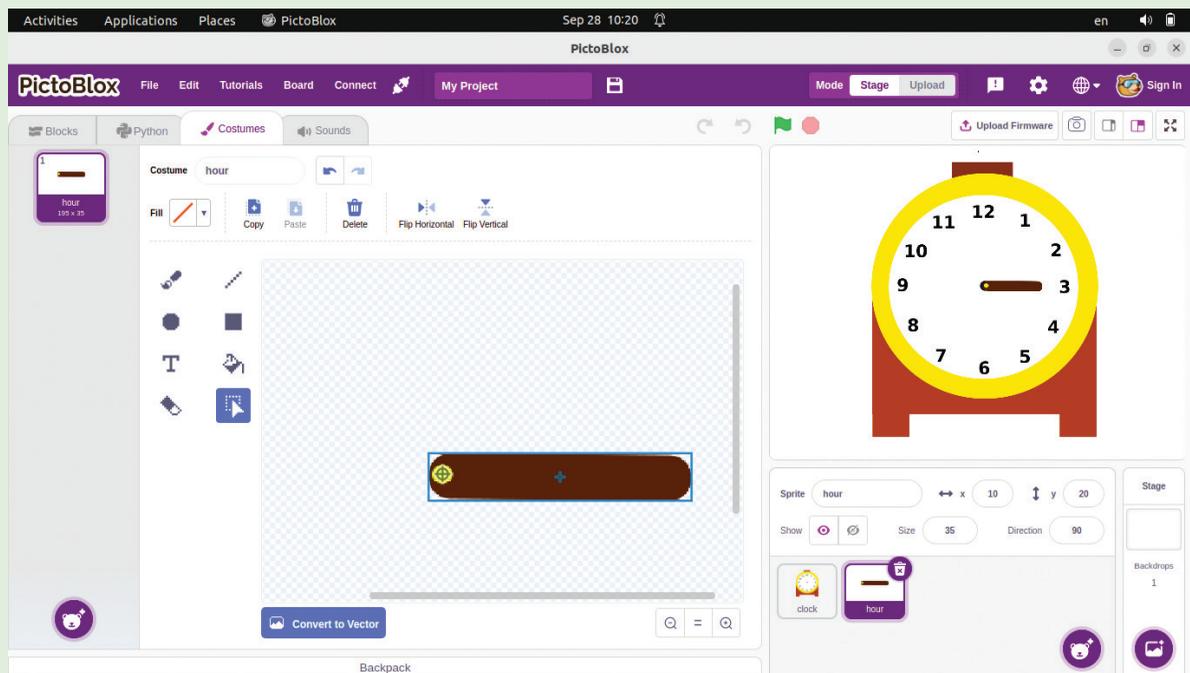


Figure 3.1 The Steps to Adjust the Rotation Center and Position of the Sprite

## Giving Instructions (Coding)

The first phase of the application, the layout design, is now complete.

## The Centre of the Sprite

This is the small crosshair icon that appears in the sprite's costume editor. This is known as the sprite's Pivot Point.



The sprite rotates around this centre while using rotation commands



Figure 3.2  
Digital alarm Clock  
Interface Model

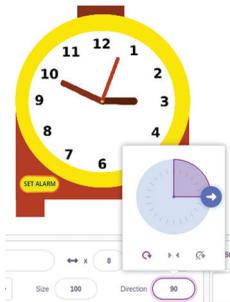


Figure 3.3  
Direction Field of Sprite

How can we move these hands according to the time on the computer?

Let's check.

## Moving the Second Hand

Haven't you noticed the movement of each hand in clocks? In this way, we need to move the hands of the clock we are preparing. For this, we have to give the necessary instructions to each hand.

Select the sprite `Second_handle` and click on the arrow in its direction field and rotate it clockwise (Figure 3.3).

What change do you see?

The second hand also moves according to the change in the direction point of the arrow, right? So if we give this sprite the instruction to change the direction point every second, can't we move this second hand?

How many degrees should the second hand move in one second?

Since the dial of the clock is circular, its angle is 360 degrees. The second hand has to complete this circle in 60 movements. So, we can understand that 6 degrees, which is  $1/60$  part of 360, has to be changed every second (Figure 3.4).

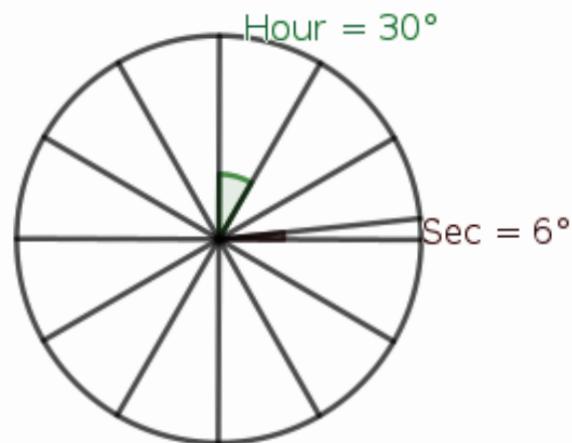


Figure 3.4 Angle Measurements in Clock

So, think of what instructions should we give to move the second hand.

Examine Figure 3.5 and with the help of operators, give instructions to the second hand of the clock.

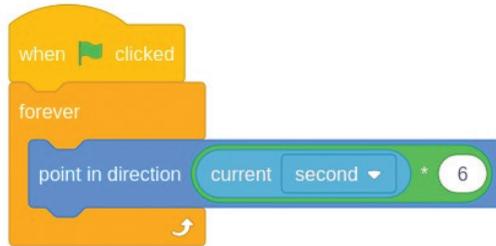


Figure 3.5 Instructions for Moving the Second Hand

Now, click on the flag and run the program. Did the second hand on our alarm clock start moving?

Now, give instructions in the same way and try moving the minute hand.

### To Move the Hour Hand

We have completed the task of moving the second and minute hands according to the time on the computer.

The next task is to move the hour hand. What is the difference in the movement of the hour hand from the movement of the second hand and the minute hand in the clock??

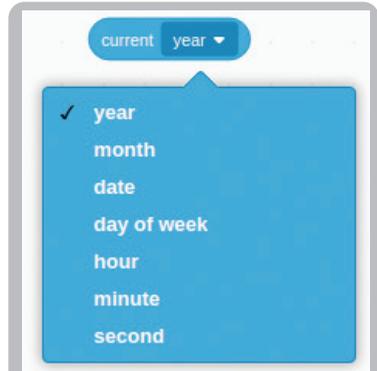
The second hand and the minute hand move 6 degrees each. But the hour hand should move 30 degrees, which is  $\frac{1}{12}$  part of 360 in an hour. In turn, it should move 0.5 degrees, which is  $\frac{1}{60}$  part of 30 degrees in a minute, according to the movement of the minute hand.

For this, the equation given below can be used.

$$\text{Point in Direction} = \text{Current Hour} \times 30 + \text{Current Minute} \times 0.5$$

Give the codes given in Figure 3.6 to the hour hand and try to operate it.

### To Include Time



To get the computer's time in the PictoBlox project, you can use the block current in the sensing section.

Examine and find what this block contains.

### Operators in PictoBlox

In PictoBlox the Operators tab contains blocks that help perform mathematical, logical, and string operations.



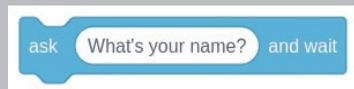
are some of the operators on the Operators tab.



Fig 3.6 Instructions to Move the Hour Hand

### To Collect Data from Outside

We can use the ask and wait code in the sensing section to collect data as input to the project we are preparing and also to provide a field for typing it.



### Setting Alarm

All the hands on the clock have started moving correctly. The next step is to configure our clock as an alarm clock.

See how the button that helps to set the alarm works.

- When you click on **SET ALARM**, you can set the alarm time.
- The alarm works according to the set time.

When we click on the **SET ALARM** button in the alarm clock we activated, a field for recording the time is displayed. What should we do to set up this type of field in our application?

- We can collect the required information using the code **ask and wait** in the Sensing section. The variable technique introduced in previous classes can be used to store the collected information.
- For example, we can create a variable called Hour for the hour of the time given for the alarm.
- For example, we can create a variable called Hour for the hour of the time given for the alarm.
  - Then, we can store the **ask and wait** we get from, **answer** in this variable.

See Figure 3.7 and give instructions to the sprite **SET ALARM** to receive the alarm time.

Now, create another variable called Minute and complete the task of giving the necessary instructions for receiving minute.



Fig 3.7 Instructions to Receive Time of Alarm

Remember that you can also use the block `current year` to check if the alarm time is the same as the time on the clock....

### Let's Include Sound.

We have completed the task of collecting the time required to set the alarm. Now, when the set time arrives, the alarm should sound. How do we add sound to our clock?

Open the Sound tab. Don't you see the option to include sound

When should the sound be played?

The alarm should be played when the time stored in the variable and the time on the clock are the same. Along with this, you need to give instructions on how many times the alarm sound should repeat. Look at the codes given in Figure 3.8 and give instructions to complete the activity.

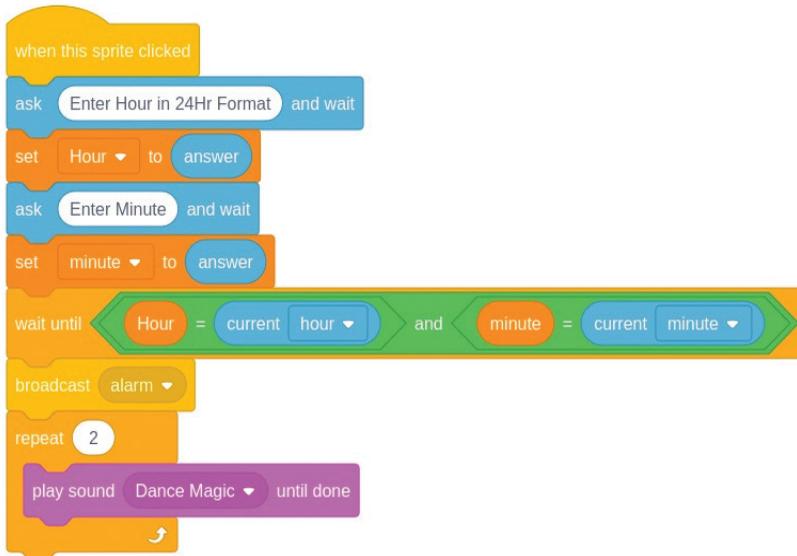


Figure 3.8 Instructions for Adding Sound to the Alarm

Now you have completed all the necessary steps for the alarm to work.

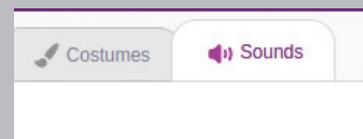
Now try operating the alarm. Discuss with your friends the necessary things to set up our digital alarm as a school water bell system and start measures to implement it.

### To Store Information

Variables can be used to store inputs received for a project being prepared and to be used in the program. They can also be changed according to instructions. They can store information in the form of numbers or text.

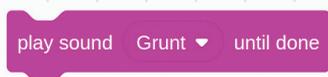
### To include sound

The Sounds tab in PictoBlox allows you to add sound to your project.



You can use sounds available from the software library, recorded sounds, or even upload sounds from your computer to the project.

To turn on the sound, use the command





## Block Coding and Text-Based Programming

So far, we have been familiar with the programming method based on code blocks. However, in real workplaces, software developers mainly use text-based programming languages to create programs. Those who approach programming studies seriously should definitely practice text-based programming languages such as Python, Java, and C++.

### Let's Get Acquainted with Coding Using Python

Python coding is also possible in PictoBlox. What if we use a Python program to create an animation that can be run when the alarm rings on our water bell?

- Start a new project in PictoBlox
- Access the Python coding window directly from the project opening window or by opening the Python tab in Block Coding.
- Delete the current sprite and add the background and sprite as shown in Figure 3.9 (the necessary images are provided in `python_animation` folder in the `School_Resource`).
- Add a costume called `boy2` to the picture called `boy1`

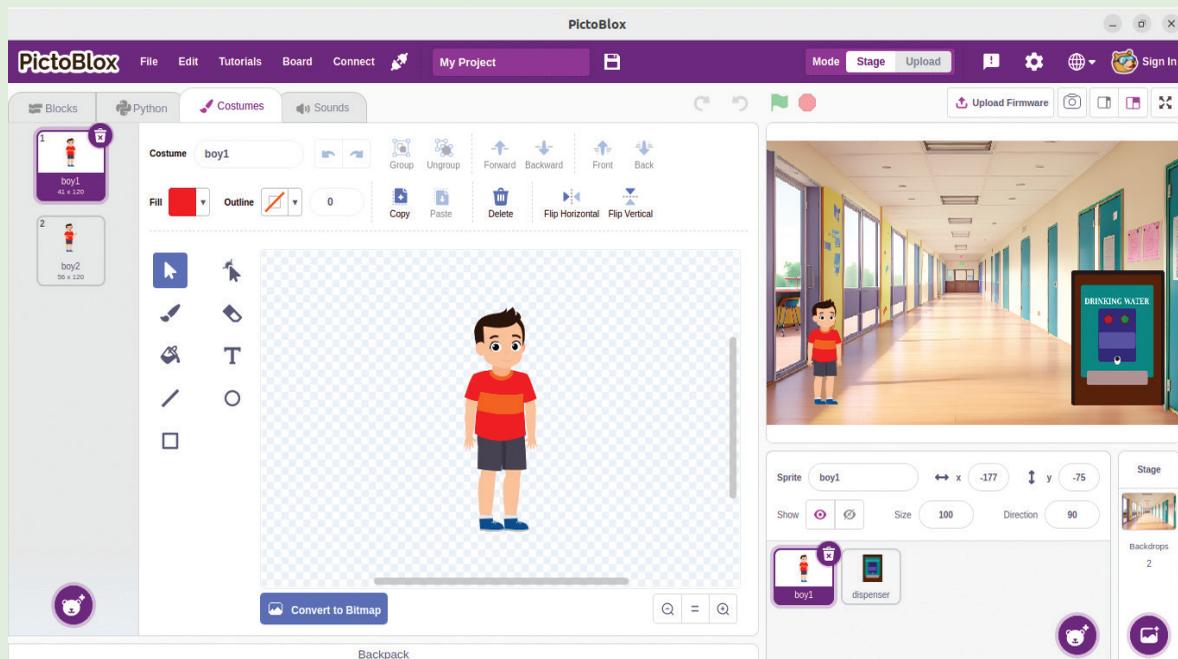


Figure 3.9 When the Sprites are Added to the Python Coding Window in PictoBlox

When the sprites are added to the stage, some of the Python codes associated with them are generated in the script section on the left.

Now, let's add the instructions needed to animate the sprite.

Type the Python code given in Figure 3.10 into your project, replacing the existing code, without any syntax errors.

```

boy = Sprite('boy1')
boy.setsize(SIZE=150)
boy.setx(X=-212)
boy.switchcostume(COSTUME='boy1')
dispenser = Sprite('dispenser')
dispenser.setsize(SIZE=60)

while True:
    boy.move(STEPS=1)
    if boy.istouching('dispenser'):
        boy.move(STEPS=-15)
        boy.nextcostume()
        boy.say("Drinking water is important during hot weather",4)
        break

```

Figure 3.10 Python Instructions to Add to the Sprite

Click the Play button to run the code. Save the project as alarm\_clock\_animation.

Discuss with the teacher how to add this animation to the water bell project.

## Python

Python is a text-based programming language suitable for beginners in programming. It was created in 1991 under the leadership of Guido van Rossum. It is a very easy-to-learn language. Python can be used to make small games and at the same time A.I. based technologies. A wide range of tools and libraries are available in Python.

## Syntax

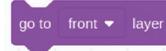
Syntax is the correct structure of code in a computer language, similar to the rules of grammar in a language. In Python, the use of indentation and the use of symbols such as "" to organize code are part of syntax.



## Let's Assess

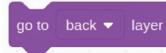
- When two sprites are included in Pictoblox as shown in the picture, the pigeon is behind the tree. How can the pigeon be brought to the front?

a) The pigeon can be brought to the front layer using the



block.

b) The tree can be brought to the back layer using the



block.



c) Both answers are correct.

d) Both answers are incorrect.

- What code should be given to move the sprite Earth shown in the picture in Pictoblox counter clock wise by 5 degrees per second?



A) point in direction current minute \* 5

B) point in direction current minute \* -5

C) point in direction current second \* -5

D) point in direction current second \* 5



## Extended Activities.

- Add bells to the top of the prepared alarm clock that move when the alarm sounds.
- Turn the alarm clock into a clock that operates automatically at regular intervals without receiving input.

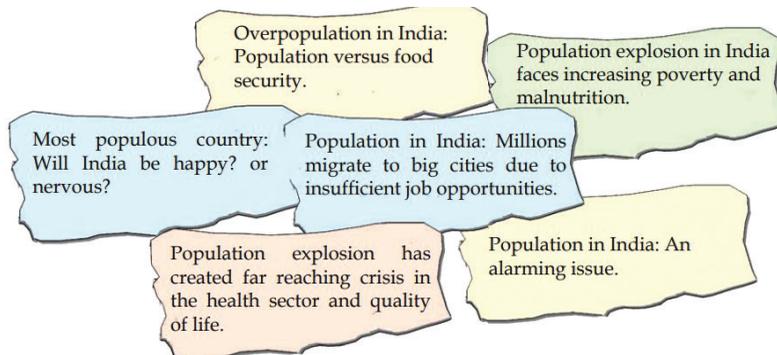




## Chapter-4

# Data Analysis Made Easy

*“Population density is not just a statistic; it is a measure of our ability to share resources, space, and opportunities”.*



You may have noticed that the chapter on ‘Demographic Trends in India’ in your social science textbook states that there are significant regional variations in the population density of our country. The study of population density in a country is of great importance as the socio-economic factors of an area and its population density are interrelated.

The study and analysis of regional variations in population density is a task that involves handling a large amount of data. We have understood that spreadsheet software can be used for analyzing such vast amounts of data and drawing conclusions from it.

## DATA

Data refers to raw and unprocessed information. It can take various forms such as numbers, words, images, or videos. When these raw data are organized and analyzed, meaningful information can be derived from them. By using this information, we can make decisions and solve problems. In today's technology-driven world, data holds significant importance.

Let us try to analyze the states of the country based on population density with the help of LibreOffice Calc.

For this, data related to the 2011 Census of India has been collected from the internet and organized into a file named `Census_India_2011.ots`, which is provided in the `School_Resources` folder. Open the file and observe the table (Figure 4.1).

A	B	C	D	E	F	G	H	I
SLNo	State	Population	Male	Female	Area(Km <sup>2</sup> )	Population Density	Sex-Ratio	Literacy
1	Uttar Pradesh	199812341	104480510	95331831	240928		912	67.68
2	Maharashtra	112374333	58243056	54131277	307713		929	82.34
3	Bihar	104099452	54278157	49821295	94163		918	61.8
4	West Bengal	91276115	46809027	44467088	88752		950	76.26
5	Andhra Pradesh	84580777	42442146	42138631	275045		993	67.02
6	Madhya Pradesh	72626809	37612306	35014503	308252		931	69.32
7	Tamil Nadu	72147030	36137975	36009055	130060		996	80.09
8	Rajasthan	68548437	35550997	32997440	342239		928	66.11
9	Karnataka	61095297	30966657	30128640	191791		973	75.36

Figure 4.1 Population Ratio in Various States – Table  
(Source : [www.census2011.co.in](http://www.census2011.co.in))

What information is in the table?

- The total population of our country based on its states.

- .....
- .....
- .....
- .....



### How many rows? How many columns?

In LibreOffice Calc, multiple sheets can be added. A spreadsheet file with more than one sheet is referred to as a workbook. Each workbook can accommodate up to 10,000 sheets. Each Calc sheet can contain a maximum of 1,048,576 rows and 1,024 columns.

In the given table, the population density for each state has not been recorded.

As the first step of data analysis, we need to determine the population density of the states.

### Let's Find the Population Density

How can population density be determined? We know that population density can be calculated by dividing the population of a region by its area. The file Census\_India\_2011.ots includes the population and area of various states. From this, we can calculate the population density of those regions.

Using the steps provided below, calculate the population density of each state and record it in the 'Population Density' column of the table.



#### Density of Population

The average number of people per square kilometer of an area is the population density of that area.

$$\text{Population Density} = \frac{\text{Total Population}}{\text{Land area}}$$

### To Calculate the Population Density of the States

- Click on the cell where you want to enter the result (here, to find the population density of Uttar Pradesh, click on cell G2).
- Type the formula to find the population density ( $=C2/F2$ ) (where C2 represents the total population of Uttar Pradesh and F2 represents the land area - Figure 4.2).
- Press the Enter key.
- To find the population density of other states, instead of typing the formula in each cell where the answer is required, use the 'Fill Handle' option.
- Give the file a name and save it.

(Instead of typing the cell address directly while typing the formula, it is enough to click on the respective cell.)

	A	B	C	D	E	F	G	H	I
1	SLNo	State	Population	Male	Female	Area(Km <sup>2</sup> )	Population Density	Sex-Ratio	Literacy
2	1	Uttar Pradesh	199812341	104480510	95331831	240928	$=C2/F2$	912	67.68
3	2	Maharashtra	112374333	58243056	54131277	307713		929	82.34
4	3	Bihar	104099452	54278157	49821295	94163		918	61.8
5	4	West Bengal	91276115	46809027	44467088	88752		950	76.26
6	5	Andhra Pradesh	84580777	42442146	42138631	275045		993	67.02
7	6	Madhya Pradesh	72626809	37612306	35014503	308252		931	69.32

Figure 4.2: Method of Calculating Population Density

When the population density of states was calculated, many numbers had long decimal places. We have learned in previous classes that the ROUND function or the Delete Decimal Place,  option in the toolbar can be used to manage decimal places.

Use the "Delete Decimal Place" option to round the population density to two decimal places.

## Let's Categorize States Based on Population Density

The situation often arises where data needs to be categorized based on specific criteria. Such categorization will make the data analysis easier. It will also help in quickly finding the necessary information.

For this purpose, the states need to be divided into five categories. Please refer to Table 4.1.

Population Density	Category	States
Below 100	Very low population density	
100 to less than 200	Low population density	
200 to less than 400	Moderate population density	
400 to less than 800	High population density	
800 and above	Very high population density	

Table 4.1 Classification According to Population Density



### Online Spreadsheets

Online Spreadsheets are now available, allowing multiple people in different places to use them simultaneously. Examples of such Spreadsheets include Google Sheet, Microsoft Excel and Zhoho sheet.

Here, we need to find out which states are included in each category.

There are several functions in LibreOffice Calc for classifying data. LOOKUP is a function that can be used in cases where data needs to be classified into more categories.

Let us see how to classify states on the basis of population density using the LOOKUP function.

First, we need to decide on the criteria for classifying data. Here, the criteria as per Table 4.1 should be adopted.

To classify the data, perform the activities listed below.

## Data Classification Using the LOOKUP Function

- Enter the criteria for classification in a new sheet (Sheet2) as shown in Figure 4.3. This will be the LOOKUP Table. It can be defined as 'Criteria'. For this,
  - Select the lookup table and click Data → Define Range.
  - In the opened window, enter "Criteria" in the box labelled "Name" and click OK (Figure 4.4).
- Then, select the cell where you want the result (here J2) and click the Function Wizard (fx) on the toolbar.
- From the Function wizard window that opens, select LOOKUP and click Next.
- In the Search Criterion box, enter the cell address where the population density is recorded (here, G2). In the Search Vector box, provide the name of the lookup table defined as Criteria. Leave the Result Vector box empty (as shown in Figure 4.5).
- When the OK button is clicked, the result appears in this cell (J2). Drag the fill handle to apply it to the remaining cells as well.
- Save the file by giving the classified row the header Classification.

	A	B
1	0	Very Low Density
2	100	Low Density
3	200	Medium Density
4	400	High Density
5	800	Very High density

Figure 4.3 LOOKUP Table

Figure 4.4 Define Range Window

Figure 4.5 LOOKUP Function Window

We have already classified the states based on population density using the LOOKUP function (Figure 4.6). Now we can complete the table Census\_India\_2011 (Figure 4.1) provided in the School\_Resources folder by finding out which states fall into each category.

	A	B	C	D	E	F	G	H	I	J
1	SLNo	State	Population	Male	Female	Area(Km <sup>2</sup> )	Population Density	Sex-Ratio	Literacy	Classification
2	1	Uttar Pradesh	199812341	104480510	95331831	240928	829.34	912	67.68	Very High Density
3	2	Maharashtra	112374333	58243056	54131277	307713	365.19	929	82.34	Medium Density
4	3	Bihar	104099452	54278157	49821295	94163	1105.52	918	61.8	Very High Density
5	4	West Bengal	91276115	46809027	44467088	88752	1028.44	950	76.26	Very High Density
6	5	Andhra Pradesh	84580777	42442146	42138631	275045	307.52	993	67.02	Medium Density

Figure 4.6: The Table Categorized Based on Population Density

How can we find out how many states belong to each category? For example, we can count how many states are in the 'Medium Density' category from this table. But is it practical to manually count this from a large data-set with many entries? Doing so increases the risk of errors. This task can be easily performed using the COUNTIF function in LibreOffice Calc.

This operation can be easily done using the COUNTIF function in LibreOffice Calc.

### Let us Find the Number of States

COUNTIF is a function that can be used to easily determine how many cells in a dataset meet a specified condition. This is very useful for data analysis and reporting tasks.

Use the COUNTIF function to find the number of states in each population density category in our table.

### Counting Data Using COUNTIF

- In the sheet, prepare a list of data to be counted as shown in Figure 4.7.
- Select the cell where you want to enter the count and click Function Wizard → COUNTIF → Next.
- Click in the Range box and drag to select the cells from which you want to count the number (here, from J2 to J36 in Sheet1)

Group	Number
Very Low Density	
Low Density	
Medium Density	
High Density	
Very High Density	

Figure 4.7 List of Data

- Then, in the Criteria box, enter the cell address containing the name of the group you want to count (here, the cell labelled Very Low Density).
  - Notice the changes in the Result box and the Formula box (Figure 4.8).

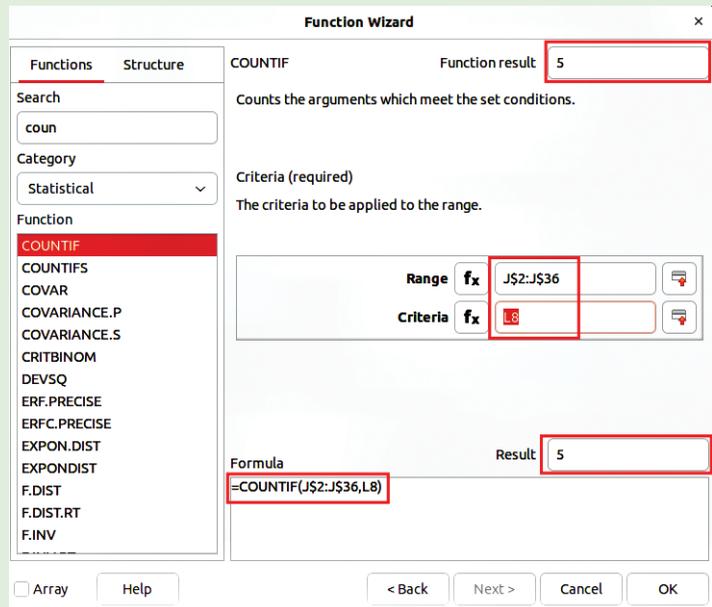


Figure 4.8 COUNTIF Window

- Now, click OK and try dragging down using the fill handle. (See Image 4.9)

Save the file.

Group	Number
Very Low density	5
Low Density	6
Medium Density	10
High Density	5
Very High Density	9

Figure 4.9 Using COUNTIF to Find the Number

You are familiar with sorting data using the LOOKUP function and counting the sorted data using COUNTIF.

Now, if specific data needs to be separated and stored in another table, how can that be done?

For example, what needs to be done to separate and display only the states with very high population density from this table?

AutoFilter is the method used to separate specific data from a table.

## Filtering Data

Try using AutoFilter to separate the states with very high population density from our table.

### Using the AutoFilter Method to Separate Data

- Select any of the cells with headings (here Classification).
- Select Data → AutoFilter.
- Now you will see that the button  has appeared in the cells with headings.
- Then, click the button  in the cell titled Classification.
- In the window that opens, keep the tick mark of the required data only. (Here the tick mark of Very High Density is kept. Figure 4.10).
- When OK is clicked, a list of only the states with Very High Density is displayed.

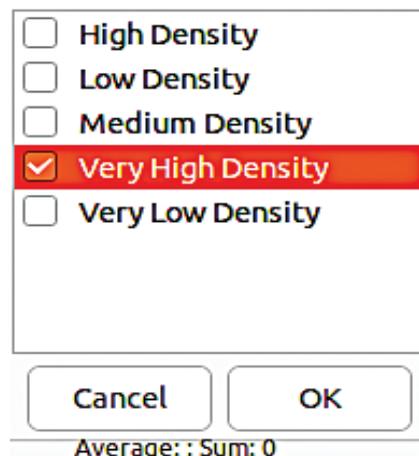


Figure 4.10 AutoFilter Window

The data can be filtered by setting criteria in the order Data → More Filters → Standard Filter. States in other categories can also be filtered and identified using this method.

## Let's Protect the File

Can we protect our saved spreadsheet files from unauthorized editing while still allowing them to be viewed? LibreOffice Calc provides a feature to securely store data without restricting the ability to open and view it. This can be achieved using the Protect Sheet option.

Let's explore how to safeguard data in a Calc sheet. Follow the steps below to try it out.

### To Protect Sheets

- From the Tools menu, select Protect Sheet.
- Enter a password for the sheet in the Password box. Enter the password again in the Confirm box and click OK. (Figure 4.11)
- Save the file.

Check if it is possible to edit a sheet that has been secured with a password.

What if you need to edit the file? How can you do that? Find out.

Instead of protecting the entire sheet, you can also protect only specific cells. Find out how.

You must have realized that with LibreOffice Calc, it's easy to organize and analyse data. Make sure to save the file once you've completed your tasks.

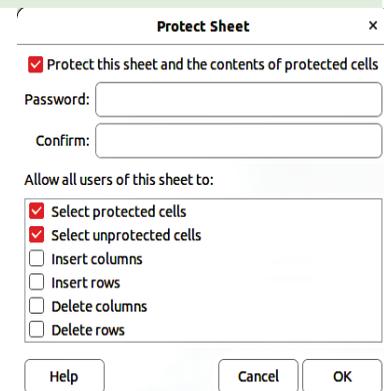


Figure 4.11 Protect Sheet Window



## Let's Assess

- ♦ What is the use of the Auto Filter feature in LibreOffice Calc?
  - a) To sort data based on specified criteria.
  - b) To display only rows that meet specified criteria.
  - c) To delete rows that do not meet the criteria.
  - d) To create a summary of the filtered data.
- ♦ What is the usage of the COUNTIF function in LibreOffice Calc?
  - a) To count all empty cells in a range.

- b) To count the number of cells that meet a specified condition.
  - c) To find the largest content in a cell.
  - d) To count all cells that contain formulas
- ♦ What is the use of the LOOKUP function in LibreOffice Calc?
- a) Search for a value in a row or column and return the corresponding value from another row or column.
  - b) Count the number of empty cells in a range.
  - c) Sort data based on a selected column.
  - d) Protect cells from editing.



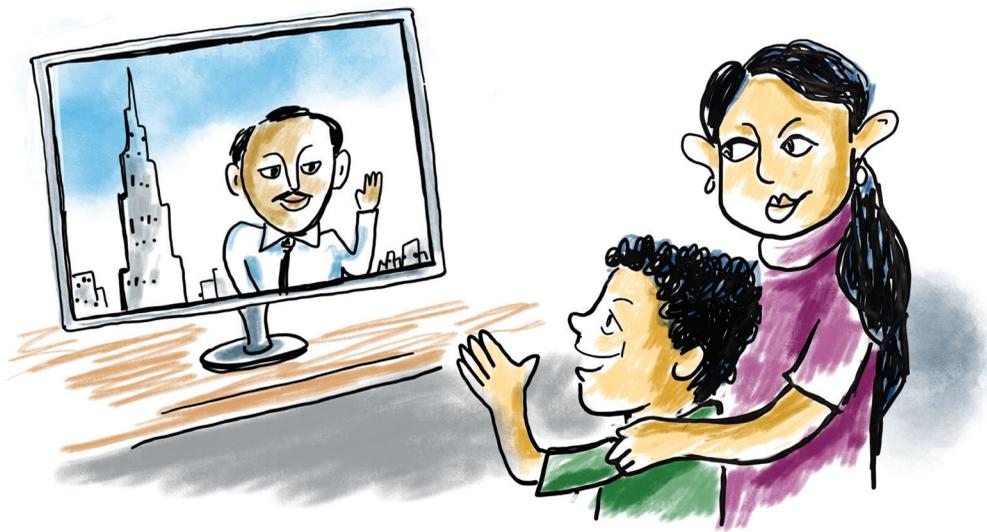
### Extended Activities

1. In the "School\_Resources" folder, the file "Census\_India\_2011.ots" contains the literacy rates of all states in India. Create a new worksheet to list the names of the states along with their corresponding literacy rates. Use the COUNTIF function to calculate the number of states with literacy rates above 90% and below 70%.
2. Prepare a spreadsheet where the scores provided by the judges for each event in the School Kalothsavam are entered, and the grades are automatically displayed according to the set criteria.
3. Create a table in LibreOffice Calc for the students and the scores they received in a subject. Use the LOOKUP function to record the grade for each student in the table. Protect the sheet with a password.

Note: Lookup table.

Score	Grade
Below 40	D
40 to 59	C
60 to 79	B
Above 80	A





## Chapter 5

# The Web of Goodness

*"Internet is an interconnected repository of information used for both good and evil. It is our responsibility to use it solely for the betterment of humanity."*

**Stephen William Hawking**

(Renowned Physicist)

The collective effort of those who seek goodness is the primary reason for the progress we have achieved today. We can accelerate progress only when we share our knowledge with others and incorporate their knowledge into ours.

This perspective has laid the foundation for many initiatives on the internet. Among them, stands the Wikipedia about which we have come across in the previous classes, as a prime example of a global repository of knowledge.

### Features of Wikipedia

Wikipedia is one of the key systems we use for gathering information from the internet. What makes Wikipedia special? Discuss with your friends and complete the list below. You may make use of the resources available on the internet.

- An encyclopedia created through the collaborative effort of numerous people.
- Accessible to anyone with an internet connection.
- Anyone can edit and modify.
- .....
- .....
- Monitored by volunteers who are passionate for knowledge exchange.

In short, sharing information in a manner that is accessible to everyone, enabling people from different corners of the world to update the content, ensuring reliability through impartial and accurate perspectives and preserving information for future generations, all these qualities highlight Wikipedia as an excellent model for collaborative knowledge sharing.

### Anyone can Edit !

Membership is not mandatory to make edits on Wikipedia, the IP address of the one who make editions will be displayed on Wikipedia. However, obtaining membership and logging in to edit is considered a more desirable approach.

Hope you have understood the importance of becoming a part of content preparation in Wikipedia.

How can we attempt to publish valuable information, images and activities related to the history of our school on a platform like this? If anyone who knows more about the school could update and expand the content consistently, wouldn't it be a valuable repository of knowledge for the coming generations ? Definitely, isn't it ?

There is a wiki exclusively for the schools in our state – Schoolwiki. Let's see what all details of each school are available in the Schoolwiki and learn how to add and update those details.

## Wiki

The term 'Wiki' is derived from the Hawaiian word 'WikiWiki', which means 'quick'. This word indicates that wikis are intended for anyone to edit.

**Ward Cunningham**, an American programmer, created the first wiki, called 'WikiWikiWeb' in 1995.



Ward Cunningham

## SchoolWiki

SchoolWiki (<http://schoolwiki.in>) is a school encyclopedia created and maintained by the collaboration of all schools in Kerala. It is built using MediaWiki, the free software from the Wikimedia Foundation, similar to Wikipedia. The prime aim of Schoolwiki is to collect and share the creative works of students and the learning resources prepared by teachers. The history and foundational information of schools in Kerala, the outstanding works from the State School Arts Festival, Digital Magazines of Schools etc., are being updated in SchoolWiki.

### Let's Explore Schoolwiki

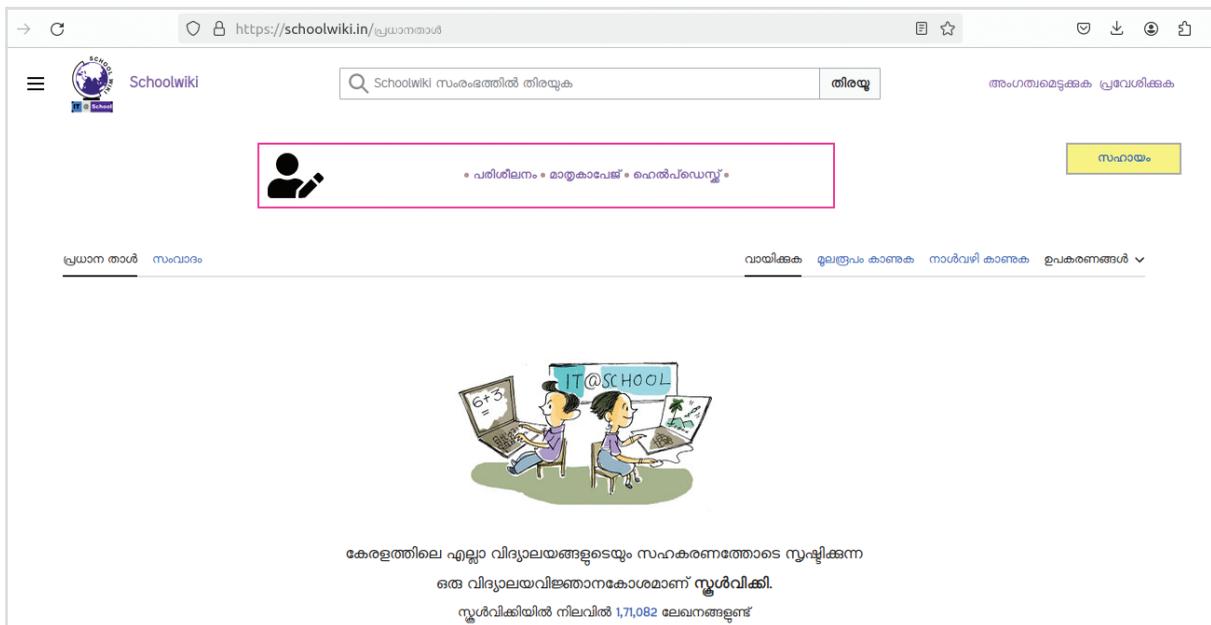


Fig. 5.1 Schoolwiki home page

Access the Schoolwiki page by typing the address <http://schoolwiki.in> in the browser. You can navigate to the Schoolwiki page of a school by typing the name or code of the school in the search box at the top of the homepage.



Go through the page and find the following details -

- Year of establishment of the school.

- Email address
- Educational district where the school is located
- .....
- .....

Note down the details you have found out in a notebook.

How about adding more information to our school page, including school history and pictures?

But, you need to be a member of SchoolWiki to add information and make corrections in SchoolWiki. And E-mail address is mandatory while filling the online form for the same.

## E-mail

E-mail is short for electronic mail. The first form of e-mail was published in the late 1960s by the United States Department of Defence over the ARPANET network. Ray Tomlinson, who developed the program for it, is known as the father of email.

An e-mail address consists of two parts, the username and the domain name of the service provider. For example in gourykrishna@gmail.com the username is gourykrishna, gmail.com is the name of the service provider.

One's e-mail address is also the digital identity of that person. It is considered as the primary point of contact while using online services.

Gmail(google), Yahooemail and Disrootmail are popular email service providers.

How to create an e-mail address? You can create an email address using the general template given below.

### To create an e-mail address

- Open any e-mail service provider's website.
- Choose a username.
- Create a password..
- Provide additional information as instructed.
- Verify account.

## Become a Member of SchoolWiki

After receiving the email, you can use it to subscribe to SchoolWiki. You may join SchoolWiki by following the steps given below..

### To Become a Member of Schoolwiki

- Click 'Sign up' at the top right of Schoolwiki home page (Fig.5.2).

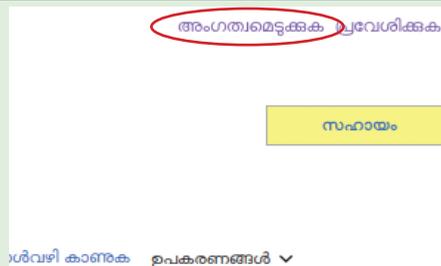


Fig.5.2 – Link to Subscribe Schoolwiki

- In the form that opens, give the following details -
- Username
- Password
- Confirm Password.
- E-mail address
- Name
- Captcha

Fig 5.3 Schoolwiki Membership Form

Click on 'Create your membership' and complete the steps.

- After creating membership check you e-mail and verify the Schoolwiki account.



Captcha is a method used to verify if the user is a human. It can often be scribbled letters or pictures or solving basic math problems. Its purpose is to prevent the creation of fake accounts using computer programs.

If the username exists, try adding a place name or house name along with the name.



Once you are a member of SchoolWiki, you can add or edit resources by logging in with your username and password.

Adding and editing information in Wikipedia and SchoolWiki has to be done very carefully and with utmost attention.

SchoolWiki has included a '**Ezhuthukalari**' link to practice wiki editing. Let's continue our activities there.

### The '**Ezhuthukalari**' in Schoolwiki

'**Ezhuthukalari**' is a page created on SchoolWiki for students to practice wiki editing. In this, each student can create their own page. Here, they can add their works and edit them. As this is a page for training purposes only, whatever is added by one will not be available to others. Click on the 'സഹായം' link to know more about the '**Ezhuthukalari**'.

Wiki editing only after the training in 'Ezhuthukalari'

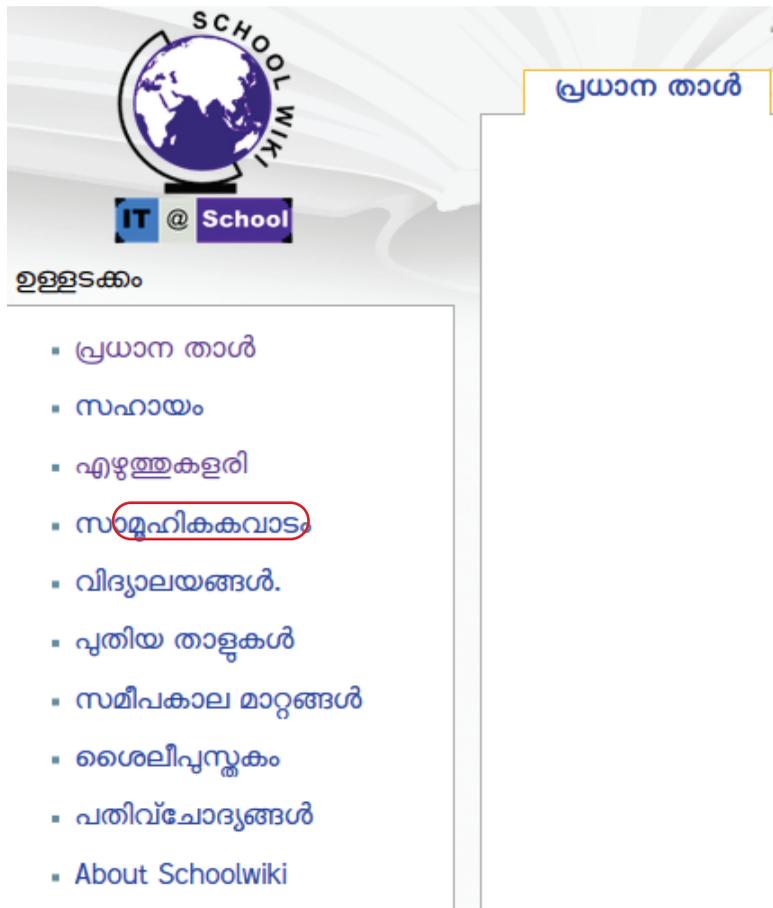


Fig 5.4 – Ezhuthukalari link

Create a page of your own in the Ezhuthukalari using the details given below.

### To Start a Page in 'Ezhuthukalari'

- Open Schoolwiki and click on the link 'Pravesikkuka'.
- Log in using your username and password.
- Click on the link 'Ezhuthukalari' seen on the left side of the page (Fig 5.4).
- Enter your name in the window that opens and click on 'Pravesikkuka' (Fig 5.5).

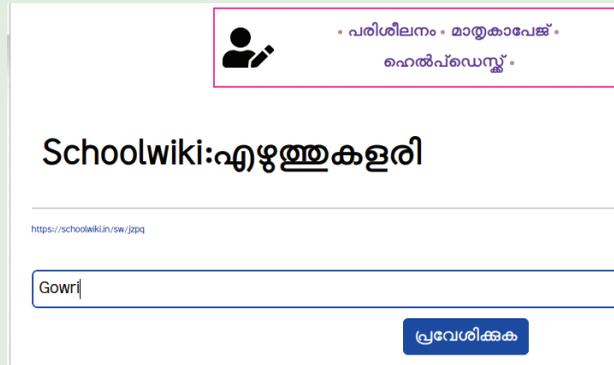


Fig 5.5 – To Start a Page in 'Ezhuthukalari'

- Then, either type the required text in the box or paste the pre-prepared contents.

See the Fig 5.6. It is a page opened by Gouri in 'Ezhuthukalari'

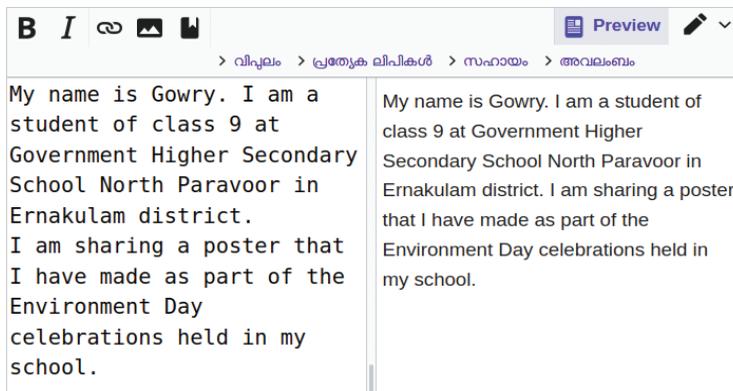


Fig 5.6 – A Page Opened in 'Ezhuthukalari'

You have also created a page like this, haven't you? Make your name Bold using the formatting techniques found at the top of the page. Then try the Italic format and save the page by clicking the 'Save the changes' button seen below (Fig 5.7).

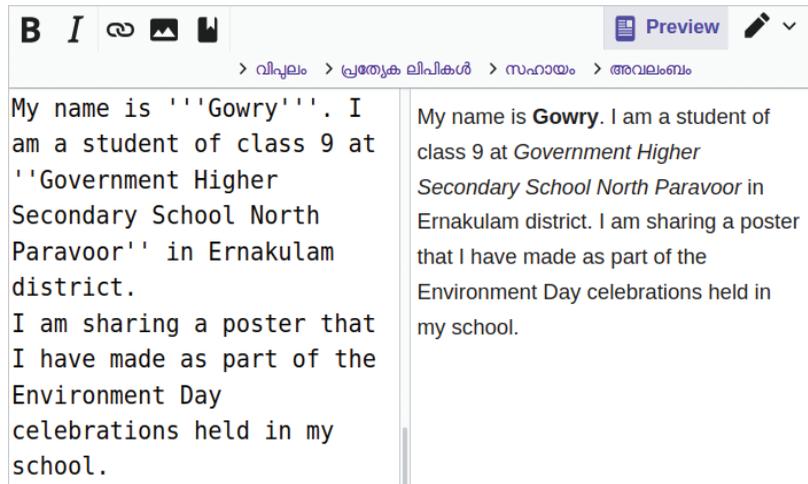


Fig 5.7 – When Bold, Italic Formats are Applied to the Text

Save the page. Now take a look at how the front page you created looks good in Schoolwiki.

We have familiarised ourselves with how to edit Schoolwiki pages. ‘Moolarooam thiruthuka’, ‘Thiruthuka’ options can be used to edit Schoolwiki. Here we shall use the option ‘Thiruthuka’.

To make further additions to your page, click on ‘Thiruthuka’ at the top and make the necessary changes to the page (Fig 5.8).



Fig 5.8 - ‘Thiruthuka’ Link in the ‘Ezhuthukalari’

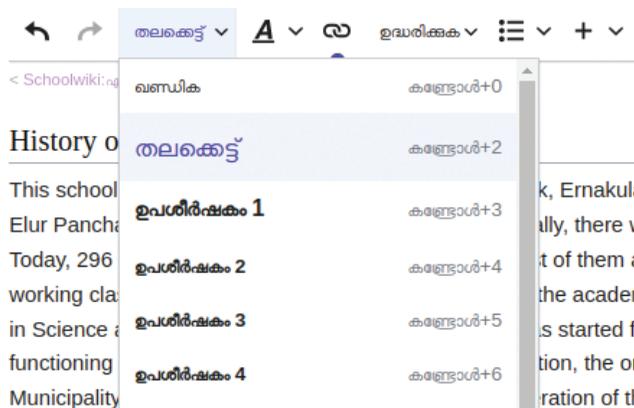


Fig 5.9 – Formatting Tools in Schoolwiki – Headings

Now, we shall see how to include a heading for the content in our page. For example, imagine we need to include a description of the school on our page. We need a heading for that, right? Type the heading and then select the corresponding text. Then, choose the required option from the headings in the formatting toolbar. (Fig 5.9)

See the poster prepared by Gouri as part of the Environment Day celebrations, posted on her 'Ezhuthukalari' page (Fig 5.11).

You can also add images to the page by clicking on the 'Chithrangalum Mediakalum' icon in the formatting toolbar. Try it.



Fig 5.10 – link for adding images in Schoolwiki

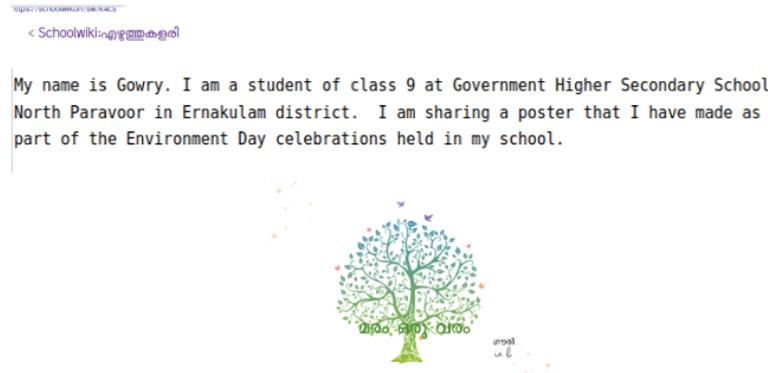


Fig 5.11 – Image Added to the Page



How can I review and edit my page ?

Just open the 'Ezhuthukalari', enter the name of the page and click on 'Pravesikkuka'.

We have practised how to add resources and edit Schoolwiki pages.

We are now familiar with how to add and edit the articles and images not only in Schoolwiki, but also in other wiki initiatives such as Wikipedia.

Now, discuss with your friends and update your school page in Schoolwiki. Take the teacher's help for this.



**Good Additions only**

You may now have a doubt about the errors that may occur while creating a page and also that deliberate editing may distort the article when data collection is done in a collaborative manner.

Enterprises like Wikipedia have a robust governance system in place. Incorrect content and updations will be deleted immediately. There is also a mechanism to permanently ban those who commit such misdeeds continuously. Such people are called Wikipedia Vandals.

We have discussed systems like Wikipedia and Schoolwiki, which collect and publish information and images in a collaborative manner.

Let's check what other systems are available on Internet to help you post information and images online.

### Social Media

The advent of Social Media has created a revolution in the field of communication. They provide a platform to share resources and interact with others.

Which social media platforms are you familiar with? Expand the list.

- Linked in
- Youtube
- Instagram
- .....
- .....
- .....



## LinkedIn

LinkedIn is a professional networking platform. As a group of people working in the same field, it helps to share a lot of things. Its most important feature is connecting job seekers and employers. Users can create profiles that include their qualifications, experience and achievements.



Fig 5.12 – Use of Social Media

See the Fig 5.12. Analyse the figure and discuss the main advantages of Social Media in your class and expand the table 5.1.

Platforms	Uses
Resource Exchange	Send text, images, video etc.
Networking	Contact with family, friends, colleagues etc.
Social Construct	Create social groups and communicate
Real-time Communication	Video calls and live telecast etc.
E-Commerce	Carry out Online transactions

Table 5.1 – Advantages of Social Media



Social media has a lot of possibilities. The interventions in them are to be made very carefully. Pay attention to the following points.

### Be Smart on Social Media...

- We should check the privacy settings of the system we are using and configure them securely. Be careful when sharing personal information like address, phone number, date of birth.
- Disrespectful behaviour should be reported and those individuals should be blocked. At the same time, we must be careful to be respectful in our interactions.
- Don't spread fake news and misinformation.
- Don't trust strangers you meet online and rush to meet them.
- Screen time should be reduced and breaks should be taken in between. Recognize the signs of social media addiction and seek help if needed.
- Information shared on social media should not be offensive or harmful to anyone.
- Respect the privacy of others and do not share their personal information without permission.
- If you have bad experiences from social media, you should share it with your parents, teachers and close friends.

Just like social media, the online transaction platforms used by most of the people today also require a lot of caution.

There was a time when the elders at home would waste time queuing for bill payments, certificates etc., The time when such matters were dealt with and done directly! How easy and useful the online services have made life today, haven't they?

What are Online transactions? Let's get to know the different types of online shopping methods.

### Buy and Sell Online

Online transaction is the buying or selling of goods or services online. Paying bills and exchanging money are part of it.

Check some of the important online transactions given in table 5.2. Discuss in the class to find out more details and complete the table.

Requirements	Examples
Buying and Selling products online	<ul style="list-style-type: none"> <li>• amazon.com</li> <li>• olx.in</li> <li>• .....</li> <li>• .....</li> </ul>
Online money transaction	<ul style="list-style-type: none"> <li>• Google pay</li> <li>• Debit cards</li> <li>• .....</li> <li>• .....</li> </ul>
Online banking	<ul style="list-style-type: none"> <li>• YONO SBI</li> <li>• Canara Digibanking</li> <li>• .....</li> <li>• .....</li> </ul>
Online bills	<ul style="list-style-type: none"> <li>• Electricity (KSEB Quickpay)</li> <li>• .....</li> <li>• .....</li> <li>• .....</li> </ul>

Table 5.2 – Different Types of Online Transaction Platforms

## Two-Factor Authentication - 2FA

Two factor authentication is a way to use an account on security-sensitive sites in addition to a password.

After entering the password, the account can be managed only by entering a one-time code (OTP) received on the phone or email address.

Debit Card is to use the money in our account. On the other hand, a Credit Card is a loan for a fixed period of time.



So far, we have discussed some online services. The internet has become an indispensable part of our lives today. The Governments are making effective use of the Internet to provide services to the public in Education, Entertainment, Health and the like,

You may remember the online classes and First Bell classes through VICTERS channel that were conducted and telecast during the time of unprecedented natural calamities and the Covid-19 pandemic a few years back.

SAMAGRA Plus is such an online initiative to reduce learning gaps among the students and to make learning interesting.

The **Learning Room** in the SAMAGRA Plus digital resource portal under the General Education Department Kerala, has additional resources with audio-visual techniques related to various subjects, assessment activities and self-assessment tools. **The SAMAGRA Learning Room** is an innovative digital multimedia system designed to meet the learning objectives of all subjects covered in the curriculum.

Let's see how to use the Learning Room system in SAMAGRA Plus.

### Learning Room in SAMAGRA

Explore the SAMAGRA Plus Learning Room using the details given below.



Fig 5.13 – Home Page of SAMAGRA Plus Portal



## Attention

We have seen advertisements on social media offering unbelievable discounts. Many of them are likely to be fake or of poor quality. Check the validity of online offers and avoid clicking on suspicious links.

- Open the web browser on the computer and type <https://samagra.kite.kerala.gov.in> in the address bar and enter the Samagra Plus portal. You can reach the Learning Room through the link called **Learning Room**.
- Then, select your medium, class and subject and proceed (Fig 5.14)



SAMAGRA Plus Portal Link

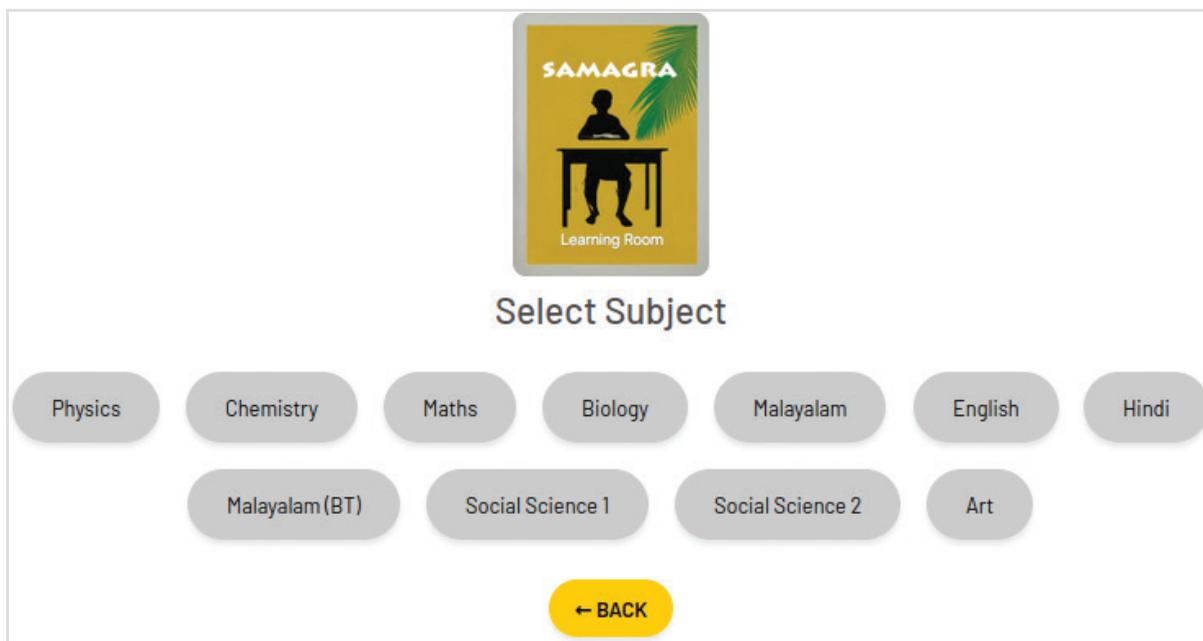


Fig 5.14 – Select Subject in the Learning Room

PDF of textbooks available on each subject page. Explore the Pages, Learning materials, Self-Assessments, Podcasts and other resources.

You are familiar with how to use the Learning Room in SAMAGRA.

Now, open the home page of SAMAGRA Plus Portal and check what all other features are available in it.

- Question Bank
- Podcast
- .....
- .....

Explore each one. You can make use of it for your studies.

Have you ever thought of the systems that have made our lives so smart and easy with the advent of internet !

However, unfortunately the cyber world that we interact with daily is not of only good things. Just like the offline world we live in, there are criminals and evil in the online space too.

We should be well aware of the common evils in cyberspace so that we can identify them, avoid becoming victims of their evil act, and stay away from them.

Let's get acquainted with some important cyber crimes.

### Cyber Crimes

#### Podcasts

Podcasts are audio messages on various topics. Even when we are busy with other things we can listen to them on our phone or computer, just like from a radio station! TED Talks Daily and Stuff You Should Know are some of the websites that have informative podcasts in English. All India Radio's Aakashvani podcast is also a popular one.

I got an e-mail that I have won lottery worth 1 Crore. They are asking for Rs.1500/- as processing charge.

Be cautious, it is definitely a scam message from fraudsters.



## Malwares

These are computer programs that can enter our computers in various ways, leak information or cause damage.

Viruses and others enter our system through e-mails, downloaded files, USB drives etc. Precautions include following safe browsing practices, performing regular updates, being careful when using public Wi-Fi, and backing up important information.

## Phishing

This category includes fake e-mails and messages from social media claiming you won the lottery, got a job, or won an award. The purpose is to cheat by leaking information including bank account.

## Cyber Stalking

This is a crime of cyber-harassment by gathering information about us through social media or other means and using threats and blackmail.

## Camera hacking

The crime of stealing our private pictures and videos using the camera of a laptop or mobile phone by infiltrating with a virus or malware.

## Crypto hacking

Crypto hacking is the crime of stealing digital currencies such as cryptocurrencies from our accounts, just like stealing our money or valuables from a bank. Most of these frauds are done through phishing and malware.

## IoT attacks

Hackers can infiltrate IoT device networks to steal data and cause destruction, including misuse. Most of these attacks are carried out through security loopholes using malware or spy hardware.

As the cyber world evolves, new cyber evils and crimes will emerge. Therefore, understanding them and adopting preventive measures is crucial.

## Fact Checking

As the influence of social media deeply permeates society, one of the most dangerous aspects is the spread of fake news. We need to learn how to identify and counter these fake news which are shared and made viral by many people intentionally or unintentionally. Identifying and verifying the authenticity of the source such news is important. On receiving such a news it is essential to seek clarification from others, or use official channels or conduct a detailed search on the internet to ascertain the truth.



## Digital Currencies

These are digitally exchangeable currencies or cash-like assets that work with the help of blockchain technology. All transactions of digital currency are stored in the digital ledger.

Examples are Bitcoin, Ethereum, and Litecoin.



## IoT - Internet of Things

Internet of Things or IoT is a technology that connects devices to the Internet to collect data, communicate and remotely control them.

## Be Vigilant

We have seen some measures to avoid cyber attacks (Fig 5.15). You may divide into groups, gather information about these measures from the internet, discuss and present them in the class.

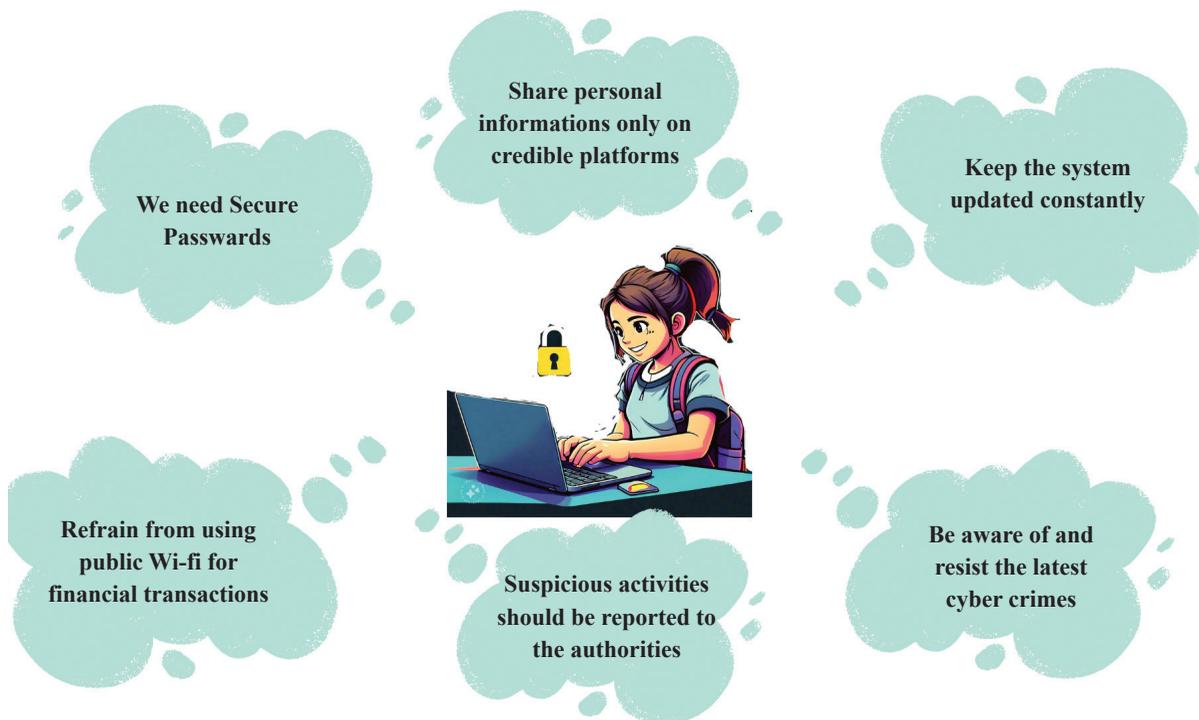


Fig 5.15 – Some Instructions for Cyber Security

As the famous physicist Stephen William Hawking reminds, we can become better digital beings by absorbing the maximum goodness of this cyberspace and transferring it to others.



## Let's Assess

- ♦ What is the name of the software used to create Wikipedia, Schoolwiki etc., ?
  - a) Wikiwiki
  - b) Mediawiki
  - c) Wikimania
  - d) Softwiki
- ♦ Which among the following is not a social media ?
  - a) Youtube
  - b) Schoolwiki
  - c) Instagram
  - d) WhatsApp
- ♦ Which is a cybercrime that collects our information and threatens and blackmails us through social media?
  - a) Phishing
  - b) IoT Attacks
  - c) Cyber stalking
  - d) Crypto hacking



## Extended Activities

1. Add a review of any book you've read to the **Ezhuthukalari** of the Schoolwiki along with the cover page.
2. Improve the 'My Village' page in the 'Projects' section of your Schoolwiki.
3. Watch the video 'Biomolecules' in the 'Towards Life Processes' unit in Biology available in the SAMAGRA Plus Learning Room. Then, answer the questions given in the **Assessment**. link.
4. Using the information you learned from this chapter and validated from the Internet, organize a seminar at the school to raise awareness about the **Things to Keep in Mind in the Cyber World**.



## Notes

A series of horizontal dotted lines for taking notes.



# CONSTITUTION OF INDIA

## Part IV A

### FUNDAMENTAL DUTIES OF CITIZENS

#### ARTICLE 51 A

*Fundamental Duties - It shall be the duty of every citizen of India*

- a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

## CHILDREN'S RIGHTS

*Dear Children,*

*Wouldn't you like to know about your rights? Awareness about your rights will inspire and motivate you to ensure your protection and participation, thereby making social justice a reality. You may know that a commission for child rights is functioning in our state called the Kerala State Commission for Protection of Child Rights.*

*Let's see what your rights are:*

- Right to freedom of speech and expression.
- Right to life and liberty.
- Right to maximum survival and development.
- Right to be respected and accepted regardless of caste, creed and colour.
- Right to protection and care against physical, mental and sexual abuse.
- Right to participation.
- Protection from child labour and hazardous work.
- Protection against child marriage.
- Right to know one's culture and live accordingly.
- Protection against neglect.
- Right to free and compulsory education.
- Right to learn, rest and leisure.
- Right to parental and societal care, and protection.

### Major Responsibilities

- Protect school and public facilities.
- Observe punctuality in learning and activities of the school.
- Accept and respect school authorities, teachers, parents and fellow students.
- Readiness to accept and respect others regardless of caste, creed or colour.



*Contact Address*

**Kerala State Commission for Protection of Child Rights**

'Sree Ganesh', T.C.14/2036, Vanross Junction

Kerala University P.O., Thiruvananthapuram-34, Phone : 0471 - 2326603

E-mail : [childrights.cpcr@kerala.gov.in](mailto:childrights.cpcr@kerala.gov.in), [rte.cpcr@kerala.gov.in](mailto:rte.cpcr@kerala.gov.in)

Website : [www.kescpcr.kerala.gov.in](http://www.kescpcr.kerala.gov.in)

**Child Helpline - 1098, Crime Stopper - 1090, Nirbhaya - 1800 425 1400**

**Kerala Police Helpline - 0471 – 3243000/44000/45000**

*online R.T.E Monitoring : [www.nireekshana.org.in](http://www.nireekshana.org.in)*