



INFORMATION & COMMUNICATIONS TECHNOLOGY
Standard

VI



Government of Kerala
General Education Department

State Council of Educational Research and Training (SCERT), Kerala
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 - VI

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PREFACE

Dear children,

Welcome to the world of new technology! Information technology has become an integral part of our lives today. It has an impact not only in homes and schools, but also in every field we interact with. This book will take you to the exciting world of computers and other information and communication devices.

Here you can learn Malayalam typing, make computer games, and get acquainted with the use of word processor and spreadsheet software. It also explains techniques for making animations, recording audio, and composing music for songs.

The educational software introduced in this book, GeoGebra can be used for mathematics studies, Stellarium can be used for sky observation, and Marble can be used as a Digital Globe.

Through these activities, you will understand how to utilize computers and various software in your studies. This will make your studies easier and more interesting.

May this book inspire you to gain new knowledge and explore the endless possibilities of technology.

Dr. Jayaprakash R.K.

Director
SCERT

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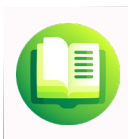
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Each chapters also contains illustrations



FURTHER READING



LET'S ASSESS



EXTENDED ACTIVITIES

THE CONSTITUTION OF INDIA

PREAMBLE

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

JUSTICE, social, economic and political;

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

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

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

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

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



Chapter 1

Malayalam Computing

Below is a name slip prepared on the computer by a student named Niya.

പേര്
 ക്ലാസ് ഡിവിഷൻ
 സ്കൂൾ

Don't you use this kinds of name slip?

Name

Class & Division

School

Most of them are prepared in English, aren't they?

How could Nia have typed Malayalam words into the computer?

Type in Malayalam

Have you tried writing your name and address in Malayalam using a computer?

To Change the Keyboard Language

To change the keyboard language, click on the Keyboard Layout Indicator on the top panel of the computer screen. From the menu that appears, select the required keyboard language layout.

For example, to switch from the English layout to Malayalam, change "English (India, with rupee) en" to "Malayalam (Poorna, extended InScript) ml" in the menu.

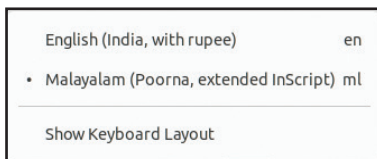


Fig. 1.1 Window for Changing the Keyboard Layout

Do you remember typing English letters using LibreOffice Writer in the fifth grade?

Open LibreOffice Writer and try typing.

When typing, the letters appear in English; how can they be converted to Malayalam?

Try changing the language using the keyboard indicator on the top panel of the desktop as shown in Figure 1.1, and then try again.

Now let's start typing.

But Malayalam letters are not appearing on the keyboard. How can it be typed correctly?

For this, how about getting acquainted with the Malayalam keyboard layout?

Have you seen the keyboard layout in Figure 1.2? The keys display both Malayalam and English letters. What is the purpose of this?

The placement of Malayalam characters obtained when

Easy Language Switching

Keyboard languages can be quickly switched using shortcut keys.

Try pressing and holding the Super Key, then pressing the Spacebar, and start typing.



each key is pressed after switching the keyboard layout to Malayalam is shown in Figure 1.2. Most keys display two additional Malayalam characters along with the English letter. The character on the top can be accessed by pressing the Shift key while using the respective key. A keyboard arranged in this manner is called the InScript Keyboard (Figure 1.2).

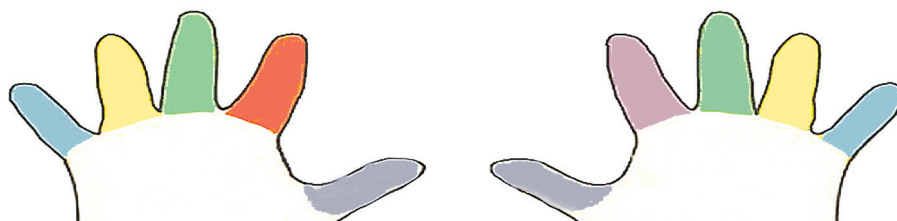


Fig. 1.2 Inschrift Malayalam Keyboard Layout

Open your computer and click on the Show Keyboard Layout option shown in Figure 1.1 to view the keyboard layout.

Now, open LibreOffice Writer and try typing your name to see if it works.

Did you notice the colour-coded combination of fingers and keys in Figure 1.2 ? You should practice typing accordingly.

That is, you should practice typing the keys marked in red using the index finger of your left hand. Observe the placement of other keys and practice typing accordingly. This will help you type faster and more efficiently.

Does typing each letter by looking at the keyboard feel challenging?

The key to improving is typing regularly and practising consistently. Through this, typing will become faster and easier without looking at the keyboard layout.

The arrangement of Malayalam characters on the keyboard is designed to make typing easier.

The Malayalam keyboard layout in Figure 1.2 is provided in the School_Resources folder on the computer. With the help of the teacher, you can print it out and check it to understand the exact location of the keys.

Inscript Key Layout

In the Inscript keyboard we use, vowels (സ്വരാക്ഷരങ്ങൾ) (except ള) are arranged on the left side, while consonants (വ്യഞ്ജനാക്ഷരങ്ങൾ) are on the right side of the keyboard.

Try pressing the key for 'ക' both with and without holding the Shift key.

This means that consonants like "ക" and " " are on the same key, right?.



Fig. 1.3 Character Arrangement Pattern in Inscript Malayalam Keyboard

In many places, two consecutive letters from the alphabet are arranged on the same key. The same pattern is followed for vowels (സ്വരാക്ഷരങ്ങൾ) and their sub-symbols (ഉപചിഹ്നങ്ങൾ). Letters that are used less frequently are usually placed away from the centre of the keyboard.

Additionally, many letters are arranged on keys above and below in alphabetical order. Refer to Figure 1.3 to observe how the consonants ക, ഖ, ഗ, ങ are arranged on the keyboard.

Combining Letters

Compound letters (കൂട്ടക്ഷരങ്ങൾ) are formed by joining multiple letters together.

While typing in Malayalam, the Chandrakkala (crescent) (ഌ) is used to join letters.

Look at the keyboard and find out which key contains the Chandrakkala symbol.

The method for forming compound letters (കൂട്ടക്ഷരങ്ങൾ) is provided in Table 1.1 below. Try typing them and complete any missing entries in the table.



ക	്	ക	→	ക്ക
ക	്	ത	→	കത
ല	്	ല	→	ല്ല
മ	്	വ	→	മ്പ
ഒ	്	ക	→	ക്ക
ക	്	വ	→	കുവ
ഞ	്	ച	→	
പ	്	ര	→	
ന	്	ത	→	
ന	്	ദ	്	ര →

Table 1.1 How to Type Compound Letters

Don't forget to find more words that include compound letters and type them into the computer.

While Typing Words

When Kevin typed his name, it appeared as "കെവിൻ" on the screen. How can this be corrected? After typing "ക", the vowel sign "െ" should be typed, shouldn't it? Unlike what we write, the sub-symbols that should be added before or after the consonant (ചില്ലക്ഷരങ്ങൾ) should be typed only after the letter.

Remember that there are separate keys for chillaksharangaal (ചില്ലക്ഷരങ്ങൾ).

Now try typing the words given below.

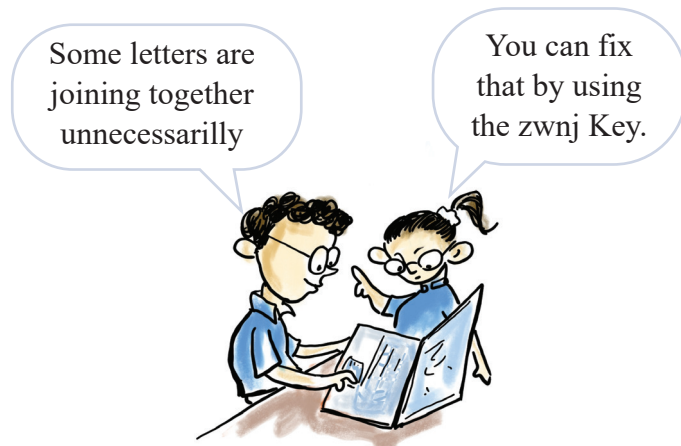
- കര, തട, കട, തകര
- കരി, കാക്ക, ചിരുത, ചീര
- മുറം, മുക്ക്, മോതിരം
- ചെറുത്, ചേന, ചോതി, ചൈത്രം
- സിതാര, മികവ്, നവനീതം
- അയല, ആമ, ഈറ്റ
- ഔഷധം, കൊടി, കോഴി, തൈമാവ്
- സൗന്ദര്യം, പരമ്പര, പങ്കായം, ആസ്വാദം

ചില്ലക്ഷരങ്ങൾ	
ർ	റ്റ \ \\
ൻ	v ന് ന
ൾ	* ഴ് 8
ൺ	X ഴ് ം
ൽ	> ൾ .

പട്ടിക 1.2 ചില്ലക്ഷരങ്ങളുടെ കീകൾ

- എന്റെ, തന്റേടം, പാറ്റ, തൃഷ
- അവൻ, അവൾ, അവർ, കൺമണി, ഊഞ്ഞാൽ
- അപ്ലോഡ്, സബ്വേ, റിസ്‌വാൻ

Combining Letters



ZWNJ

While typing in Malayalam, when two characters are written close together, they may merge into a compound letter or a special symbol. To keep them separate, insert a Zero Width Non-Joiner between them.

When you type 'അപ്ലോഡ്', it appears as 'അപ്ലോഡ്'. Similarly, words like സബ്വേ, റിസ്വാൻ also change automatically. When you type 'പ്ല' it becomes 'പ്ല', and 'ബ് വ' changes to 'ബ്വ', while 'സ :് വ' becomes 'സ്വ'. In some cases, there is no need for letters to merge in this way.

To resolve this, you can insert the Zero Width Non-Joiner key after the crescent symbol (ചന്ദ്രക്കല) on the keyboard.

Now, try typing the words given at the end of the list.

If you find other such words, make sure to note them down.

Let's Prepare a Diary

Haven't you practised typing in Malayalam? Below is a diary entry typed on a computer by a student named Diya about her day."

10/7/2025

രാവിലെ ആരയ്ക്കുണർന്നു.

പ്രഭാതകൃത്യങ്ങൾക്കു ശേഷം കുറച്ചുസമയം പഠിച്ചു.

അനുജനൊപ്പം വ്യായാമം ചെയ്തു.

ചെടികൾക്ക് വെള്ളമൊഴിച്ചു.

ചക്കിപ്പച്ചയ്ക്ക് ഭക്ഷണം കൊടുത്തു, ഓമനിച്ചു.

പത്രം വായിച്ചു.

അടുക്കളയിൽ അച്ഛനെയും അമ്മയെയും സഹായിച്ചു.

പ്രഭാതഭക്ഷണത്തിനു ശേഷം സ്കൂളിൽപ്പോകാനൊരുങ്ങി...

Similarly, type your diary entries in LibreOffice Writer and enhance them using font styles, colours, and other formatting options. Many beautiful Malayalam fonts are available in the formatting toolbar of Writer. Try it and see!

Different Ways to Type

There are many ways to type in Malayalam. You can type in English and convert it to Malayalam. You may already know that typing on a phone can be done using both voice input and handwriting recognition.



Let's Assess

- Where are the consonants mostly found on the Malayalam Inscript keyboard?
 - (a) Left
 - (b) Top
 - (c) Right
 - (d) Bottom

- Swathi types by positioning her fingers correctly on the computer. Which finger should be used to type the letter ക ?
 - (a) Left index finger
 - (b) Left middle finger
 - (c) Right middle finger
 - (d) Right index finger



Extended Activities

1. Do you remember the eight-line song from the Malayalam class in 5th grade that we enjoyed singing, "തീവണ്ടിപ്പാട്ട്"? Open LibreOffice Writer, type it just like in the textbook, and make it look beautiful.

തീവണ്ടിപ്പാട്ട്

കുതിച്ചു പായും തീവണ്ടി
കിതച്ചുനിന്നൊരു കൊടി കണ്ട്
പിടിച്ചു കയറീ ഞാനും പലപല
മുറികളിലൊന്നിൽ, രസമുണ്ട്!

ഇടക്ക് ചുളം വിളിയുണ്ട്
പിടച്ചിലുള്ളിൽ പലതുമുണ്ട്
വലിച്ചു മണ്ട്ണ വണ്ടിക്കാരനെ
കാണാനുള്ളിൽ കൊതിയുണ്ട്

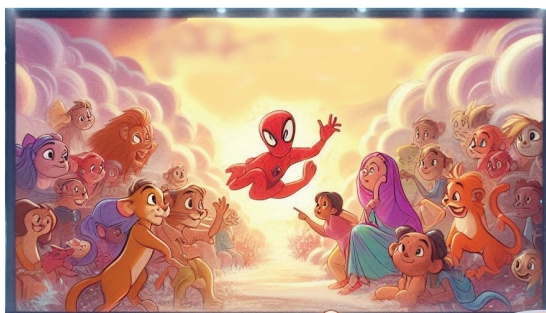
2. Collect the five main headlines of this week's news from the newspaper and type them in LibreOffice Writer.
3. Select any paragraph from the Malayalam textbook and organize a quick typing competition in the lab.





Chapter 2

Drawings in Motion



How do these pictures move

"Teacher, are cartoons made using pictures?"

The children gathered together and went to the computer lab to ask Mini teacher about their doubts.

"I read it in a book, but after telling them, none of them believe me."

In the middle of Meera's question, Amathi made a remark of discontent.

The teacher replied with a smile,

"Yes, animations are created using pictures. If you have the software to create animation, you too can create animated movies on a computer".

"Shall we make today's class about creating animation?" the teacher added. As soon as they heard this, the computer lab echoed with applause.

Pencil2D



Pencil2D is a free animation software developed by a group of volunteer computer programmers. It is designed to make creating animations using hand-drawn images simple and easy.

It was mentioned that all the cartoon characters you enjoy watching on TV and mobile phones are nothing but mere pictures.

Creating animated movies requires a large number of pictures. If we have images of the different stages of an animated character's movement, we can use a computer to bring those movements to life through animation.

The Pencil2D software installed on the computers in your lab is a tool that helps in creating animations and cartoons. Using this software, shall we try making a small animation of a ball falling to the ground and bouncing back ?

Let's Draw a Picture

You have already learned how to draw a picture on a computer using the software called ColorPaint in class 5.

The Pencil2D software, which we intend to use for creating animations, also has the ability to draw images.

Open the Pencil2D software on your computer and examine its features with the help of Figure 2.1.

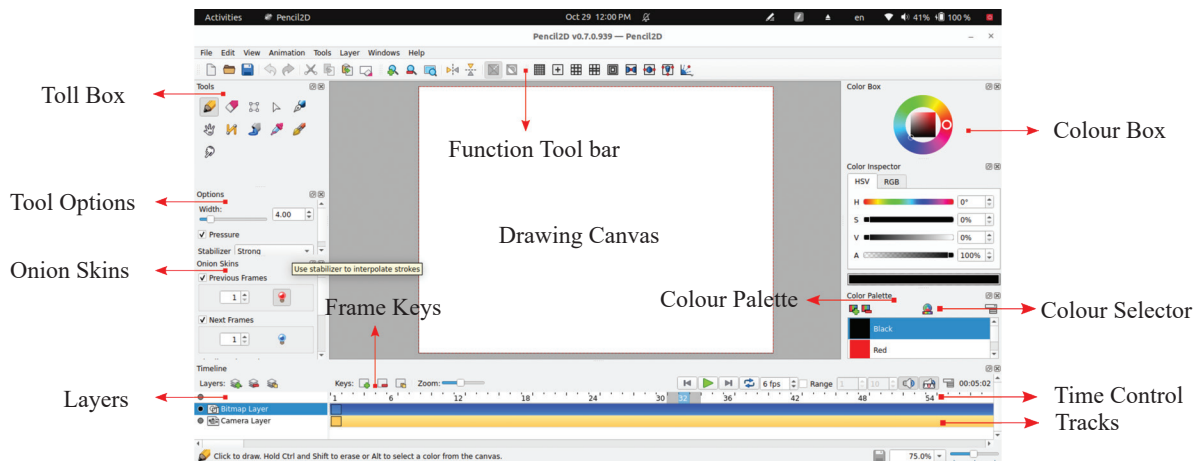


Fig. 2.1 Pencil2D Main Window

The drawing canvas, which is the surface for drawing, the toolbox with drawing tools, the color palette for selecting colours, the editing tracks for editing and animation, and the timeline are arranged in the main window of Pencil2D.

In the tool window (Image 2.1), placing the mouse pointer over the icons will display the tool's name and its use as a tooltip. Write down the tools found and their uses to complete Table 2.1.

Tool Icon	Name of the tool	Usage
	Pencil	To draw pictures
	Eraser	To erase pictures
		
		
		

Table 2. Pencil2D tools and usage

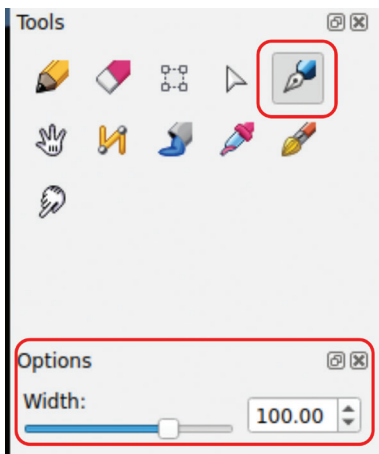


Fig. 2.2 Pencil2D Tool Window - Tool Options

Pencil2D has tools for sketching, erasing, drawing polygons, and adding colour.

We are creating an animation of a ball falling to the ground. For this, let's first draw the image of the ball.

Draw the shape of a ball on the canvas as shown below.

- Select the Pen tool  from the tool box.
- Then set the line thickness in the tool options (Width:100 - Figure 2.2).
- Select a colour from the color box.
- Now, click once on the top left corner of the canvas with your mouse.

Now, a ball shape (circle) has appeared on the canvas, as shown in Figure 2.3.

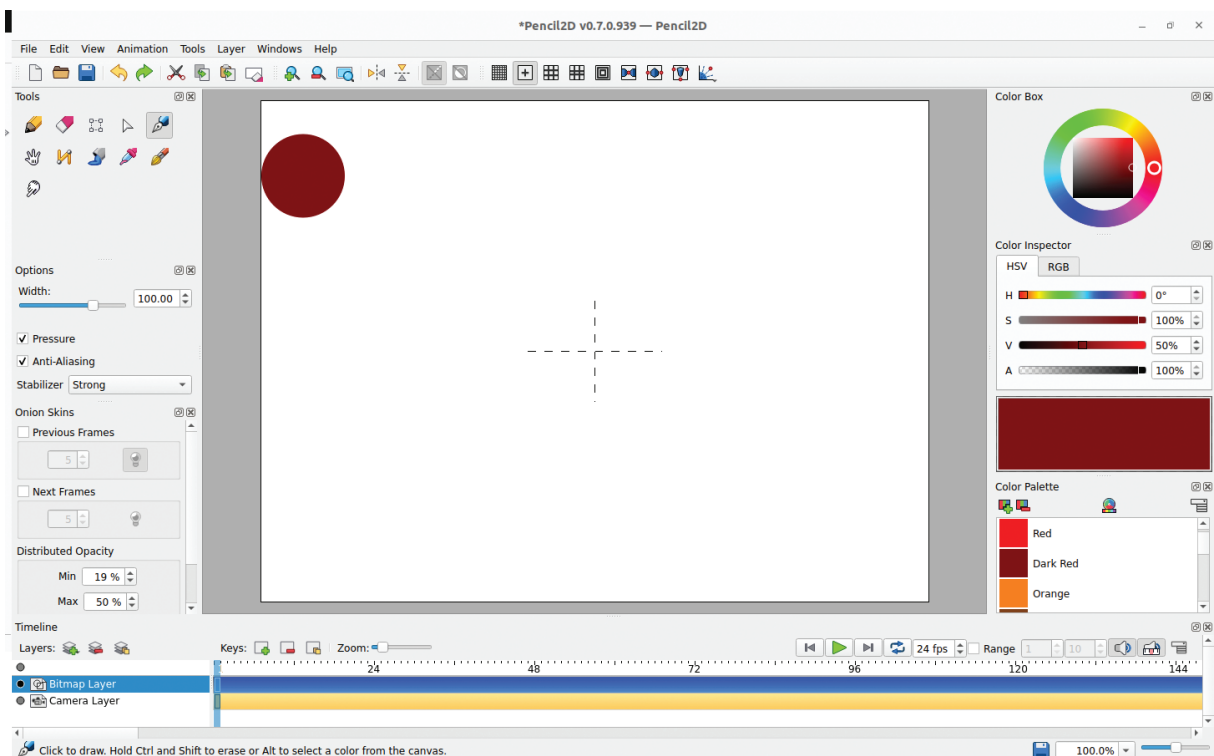


Fig. 2.3 When Draw on the Pencil 2D Canvas

Now, click on the play button below the canvas to move the image.

Why doesn't the image move?

It was pointed out that animation can only be created by making different stages of the image move. Therefore, more images will be needed for this purpose. The software also needs the ability to arrange each such image separately. This is technically called a frame.

Here, we have drawn the image only in the first frame. Now, do you understand why the image is not moving?

Breathing Life into Images

To add motion to a drawing in Pencil2D, the image from one frame needs to be added to multiple frames. For this, the concepts of Duplicate Frame and Add Frame can be used.

The Duplicate Frame option is used to copy an existing frame that contains an image. On the other hand, Add Frame creates a new frame where a new drawing can be made.

Here, we are creating animation by adding new frames using the Add Frame option.

Create a new frame in your project (Figure 2.4). Then, in this frame, slightly change the position of the ball according to its movement direction and draw a new ball.

To Create and Remove Frames

- Add Frame - To Create a New Frame
- Duplicate Frame - To Duplicate a Frame
- Delete Frame - To Remove Unnecessary Frames

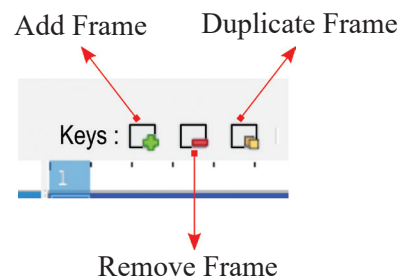
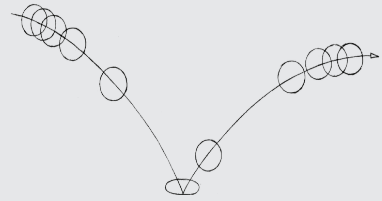


Fig. 2.4 Frame Keys

When drawing the shape of the ball in the new frame, the Onion Skin feature can be used to view images from other frames as well.

Onion Skin in Animation

Onion Skin is a feature in animation software that allows animators to view multiple frames at once. It shows the images from previous and subsequent frames as faded outlines, helping to align objects correctly throughout the frames.



This feature aids animators in determining how much change should occur in each frame and helps in deciding how many frames are needed in each direction.

To do this, the onion skin must be enabled in Pencil2D, and the settings should be adjusted in the Onion Skin box in the main window as shown in Figure 2.5.

To Enable Onion Skin

- To view the previous frames, check the Previous Frame checkbox in the Onion Skin box.
- Then, change the frame number to 2 (you can adjust it to show as many frames as needed).
- To make the previous frames invisible, put a tick mark in the Next Frames check box.
- Then, change the frame number to 2. (Figure 2.6)

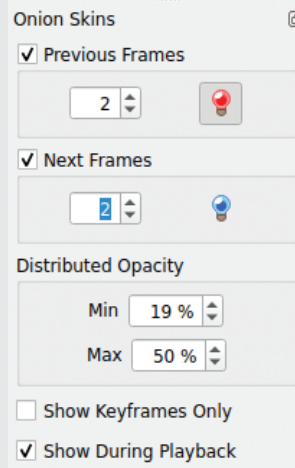


Fig. 2.5 Onion Skin Configuration Window

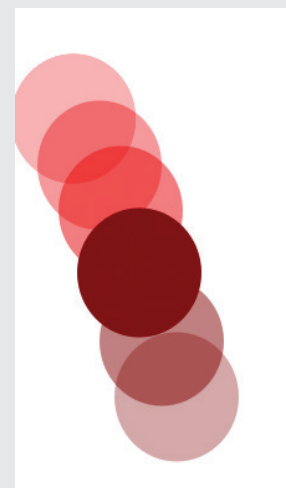


Fig. 2.6 Onion Skin After Configuration

In this way, create enough frames (a total of 24) for the ball to fall and bounce. Then, in each frame, use the pencil tool to redraw the ball in a different position. For assistance, refer to Image 2.7.

Now hide the onion skin and click the Play Button.

Can't you see the movement of the ball clearly?

In this way, the images of an object's movement in each stage are placed in different frames. By making changes to the character's shape, expression, and position in each frame, animation creates the illusion of movement

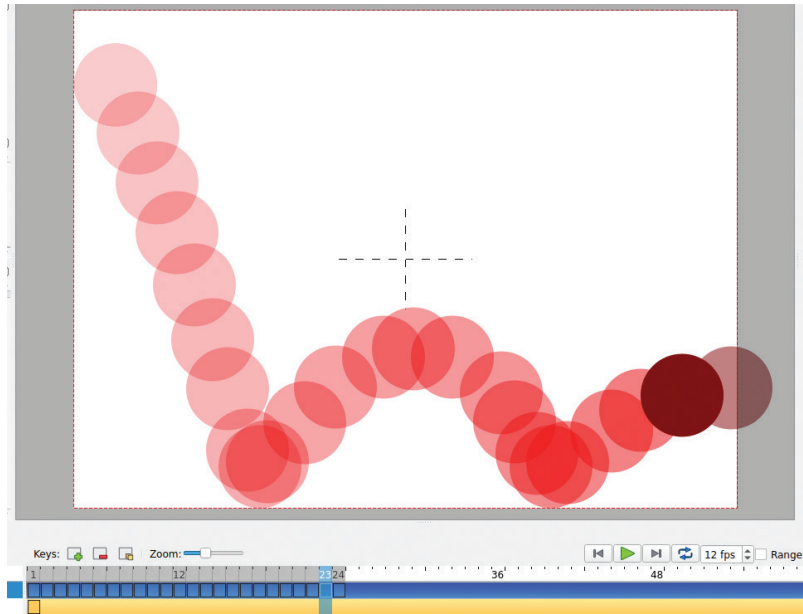


Fig. 2.7 Different Phases of Movement

Now, in the FPS settings window next to the Play button, try adjusting the FPS by increasing or decreasing the number (Figure 2.8) and test the animation. What changes can you observe?

-
-

After setting the appropriate FPS for the scene, don't forget to save the file.

To Save a File

To save the file in Pencil2D, go to File → Save. The saved file will have the extension .pclx.

Making Changes to the Images in the Frames

After playing the animation, do you think that we need to make any changes?

Do you think it would be better if the ball bounced a little higher?

To do so, simply select the image in the frame you want to change and make the necessary changes. To do this, try performing the following steps

FPS

In animation, FPS (Frames Per Second) refers to the number of frames that move in one second. FPS can be used to determine the speed of movement for each character in the animation.



Fig. 2.8 FPS settings window

To Make Changes to the Images

- Select the frame in which the image is to be changed using the Move tool in the toolbox.
- Next, use the Selection Tool to drag and fully select the image that needs to be changed.
- Then, select the Move Tool again and adjust the position of the image (Figure 2.9). (When an image is selected, nodes will appear around it. You can use the Move Tool to drag these nodes and resize the image by increasing or decreasing its size).

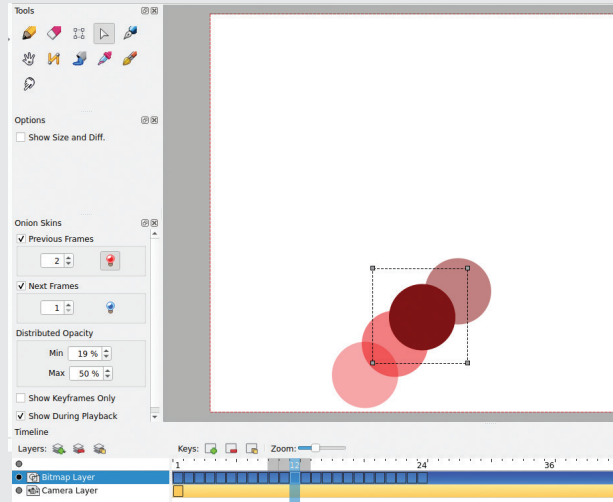


Fig. 2.9 Adjusting the Position of Images

Let's Draw a Background Image

Wouldn't it be nice to draw an image as a background for the animation just created?

The background image should appear in all frames of the animation. Moreover, it should not obstruct viewing or editing the existing images. To achieve this, layers are used.

In Pencil2D, a new Bitmap Layer can be added from the Layer panel on the left side of the timeline, and it can be set as the background for the existing images.

When a new layer is added, it appears above the previously existing layers.

To Add New Layers

In Pencil2D, there are two types of layers for drawing on the canvas, Bitmap Layer and Vector Layer. It is best to draw the background image on only one layer. To create a new layer,

- Select the first frame of the animation.
- Then click Add Layer in the Layers panel of the main window.
- In the window that opens, select New Bitmap Layer (Figure 2.10)

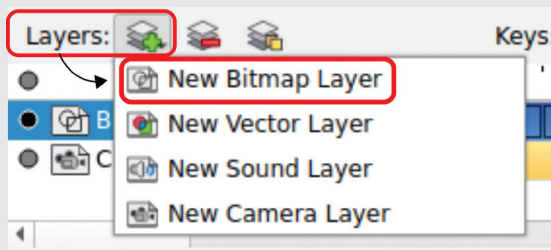


Fig. 2.10 Pencil 2D Layers

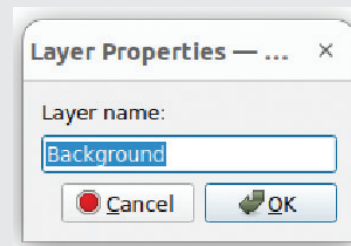


Fig. 2.11 Layer Properties

- In the Layer Properties window that opens, rename the layer to Background and click OK. (Figure 2.11)

Now that we have created a layer named "Background", on this layer, draw a background image as shown in Figure 2.13. This image is drawn using the Brush tool.

To Draw an Image on the Background Layer

To draw the picture as in Fig. 2.12,

- Select the Brush tool from the Toolbox.
- In the Tool Options, set the Brush Style (Width-200, Feather-65).
- Select the color Cyan from the Color Palette. (Figure 2.13)
- Paint on the canvas with a brush and fill it with color.
- Then select the color Dark Green. In the tool options, set the brush to Width-100. Draw and add a group of trees on the canvas.
- Select the color Grayish Orange Yellow to paint the ground. Then, paint the background as shown in the image and complete it.

Since the image drawn on the new layer is visible in all frames, this method is ideal for preparing the background. However, if new frames are created on this layer, the image must be added to each frame separately.

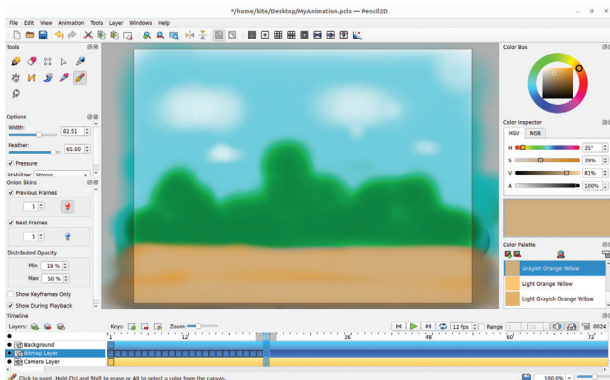


Fig. 2.12 When the Background is Drawn

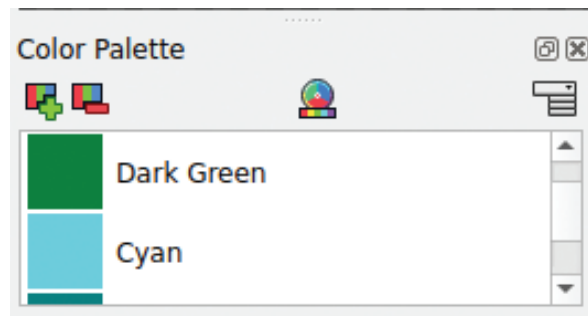


Fig. 2.13 Colour Palette

Layers can be Arranged

To Change the Position of Layers

- Select the Background layer with the background image.
- Place the mouse cursor over the layer.
- Hold down the left mouse button and drag the Background layer to position it below the Bitmap layer below it.

When an image is added to a new layer, the image drawn on the first layer is not visible. What could be the reason?

This happens because the layer created for the background image is placed above the first layer, where the ball image and frames are arranged.

How can this problem be solved? Try it out.

Now save the file, select the Camera Layer and run the animation. The ball will be seen falling on the field and bouncing up. (Figure 2.14)

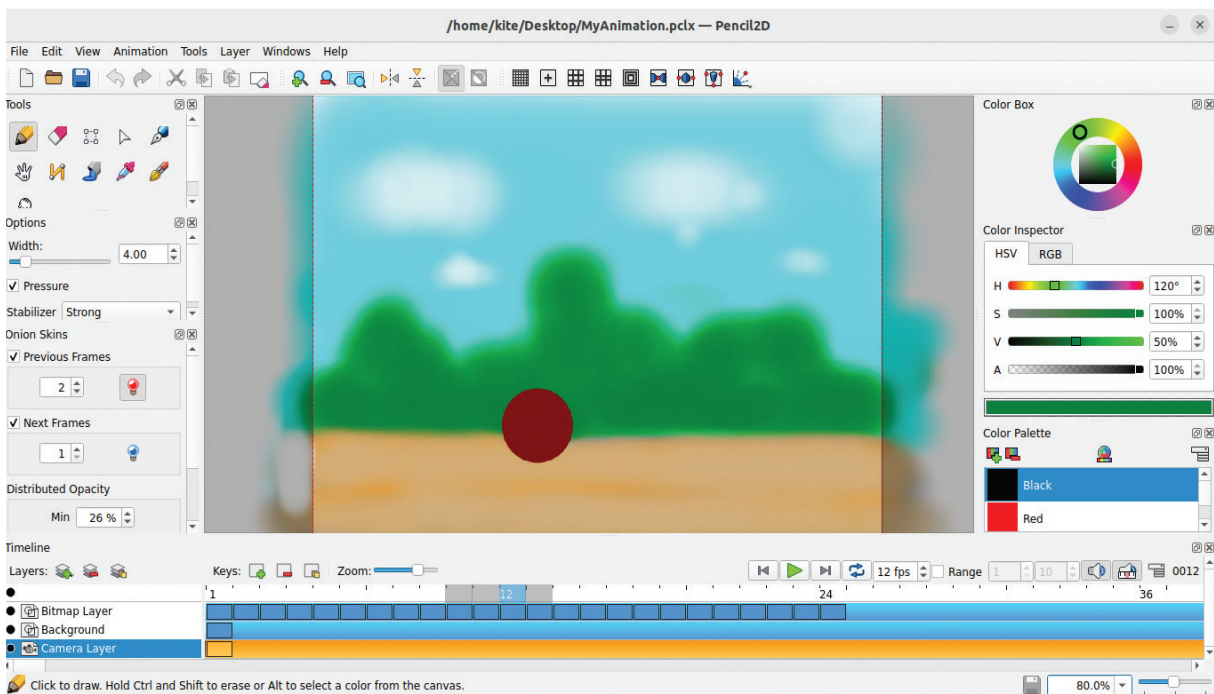


Fig. 2.14 When the necessary Settings for the animation are complete

The file can be exported

Currently, the animation you created can only be played in Pencil2D. To play such files in video players, it needs to be exported to a video file format.

convert the file you created to the MP4 video format.

To Convert the Animation File to a Video

- From Pencil2D, click File → Export → Movie. (Figure 2.15)
- In the window that opens, select a location to save the file.
- Then click OK.

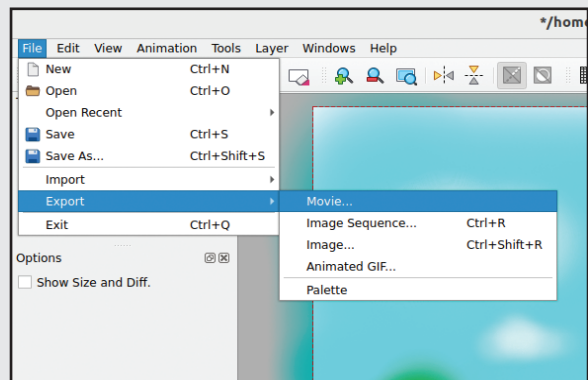


Fig. 2.15 Pencil2D - File Export

Try the exported animation video. You've just finished your first animated movie.

If improvements are needed in the animation, open the saved project file, make the changes, and export it again.

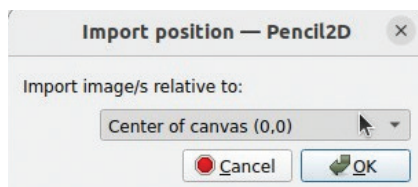
Animating an Image on the Computer

Pencil2D also allows you to create animations using images drawn with other software. Let's try creating an animation of a moving car using the image Car.png provided in School_Resources on your computer. For this,

- Open Pencil2D and click File → Import → Image.
- In the window that opens, open the School_Resource folder, select the image Car.png, and click Open.
- In the next window, set the position where the image should be adjusted to Center of Canvas and click OK. (Figure 2.16)

To Zoom the Canvas

Click on the icon Zoom In/Zoom Out on the function toolbar to change the size of the canvas.



ചിത്രം 2.16 ചിത്രത്തിന്റെ സ്ഥാനം ക്രമീകരിക്കുന്ന വിധം

Now, the image Car.png will appear on the Pencil2D canvas.

- Next, adjust the size and position of the image as needed.
- Once done, press the Enter key to finalize the image in the first frame (Image 2.17).

The Image can be Copied

Movement is possible when the image included in the first frame is included in other frames. For this, the technique called Duplicate Frame is used here. To do this,

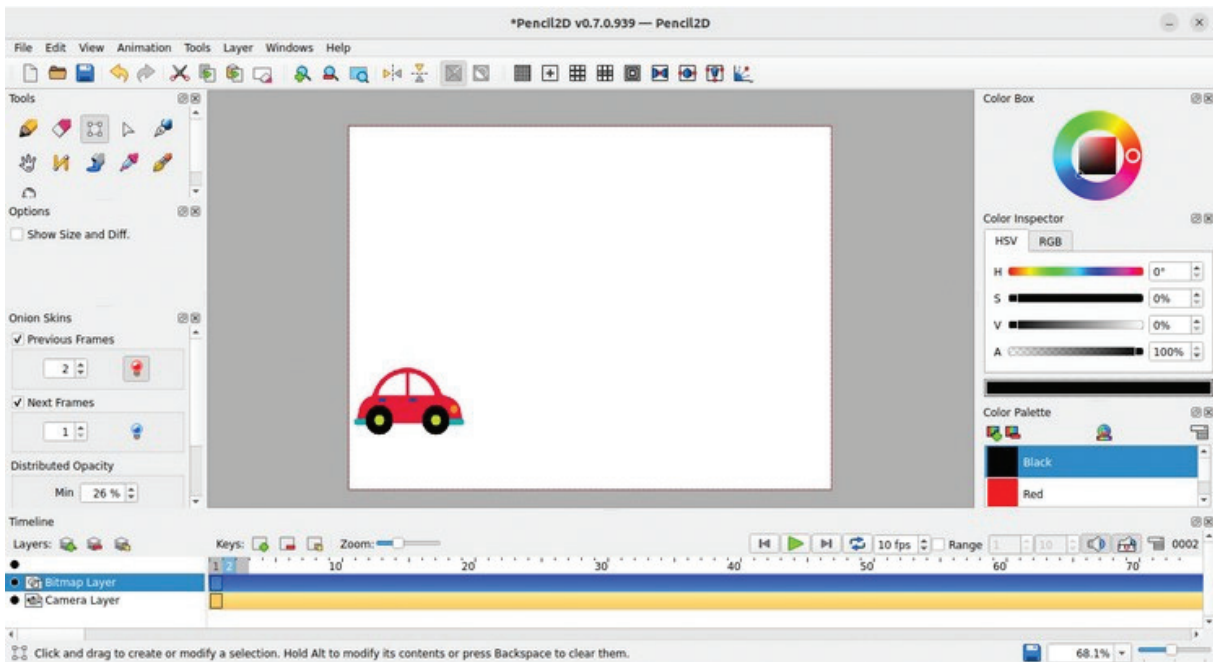


Fig. 2.17 When the Image is Arranged in First Frame

- Select the first frame containing the image.
- Click on the Duplicate Frame key (Figure 2.4). Now you will see that the second frame has been added with the image.
- Now, move the position of the image in the second frame a little further than the image immediately before it.

In this method, create the necessary number of frames for the car to travel and reach the other side, adjusting the position of the image in each frame. To better visualize the position of the next image, it is recommended to enable the Onion Skin feature.

Once the work is complete, save the file and play the animation to check it.

Next, draw and add a background image to enhance the animation. After that, save the file as a video and present it in class.

**Let's Assess**

- What type of software is Pencil2D?
 - (a) Video Editing
 - (b) Graphic Design
 - (c) 2D Animation
 - (d) Audio Editing
- What is the extension of the Pencil2D project file?
 - (a) .pdf
 - (b) .mp4
 - (c) .pclx
 - (d) .ggb

**Extended Activities**

1. Create an animation of a sunrise in Pencil2D software.
2. Enhance the car animation you created by adding a road to it.





Chapter 3

Tuning the Song

“കാക്കേ കാക്കേ, കുടവിടെ?
കുട്ടികളെന്തൊരു കുഞ്ഞുണ്ടോ?
കുഞ്ഞിനു തീറ്റകൊടുക്കാത്താൽ
കുഞ്ഞു കിടന്നു കരഞ്ഞിടും.”

All friends must have sung this song? Do you know who wrote it?

This is a children's poem written by the famous Malayalam poet Mr. Ulloor S. Parameswara Iyer.

He has written several poems for children. Explore and find out which ones they are.

Friends must be familiar with the tune of the poem "Kaakke, Kaakke, Koodevide." Shall we sing it with a musical accompaniment?

Don't you remember that in previous classes, we prepared music and rhythms with the help of software like GCompris, Omnitex, and Thalam?

MuseScore22 on our computer is a software that helps us prepare music. It is used to arrange the notes in the music and organize the melody.

Tuning the Song

Let's get familiar with how to create music using MuseScore.

Open MuseScore22 on the computer. Now, the Start Menu for creating new tunes will be available.

Close this window and enter the main window (Figure 3.1).

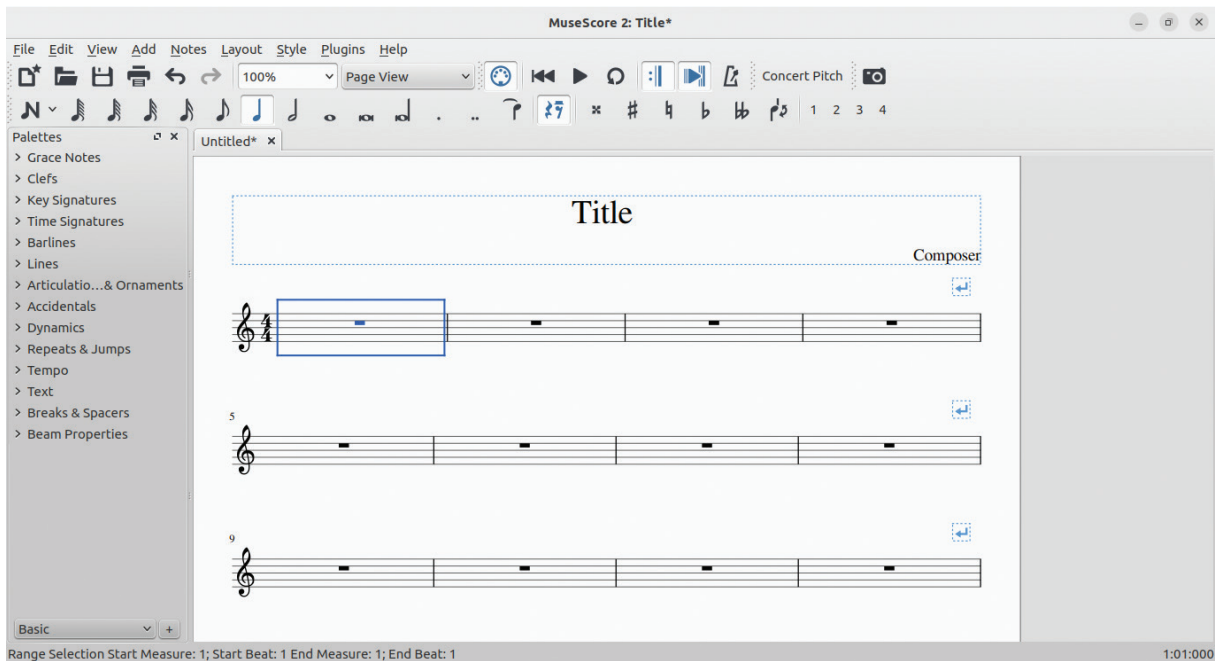


Fig. 3.1 MuseScore22 Main Window

Refer to Figure 3.1. This is where we need to arrange the musical notes.

Select 'Notes' from the menu bar at the top of this window. What do you see?

- Note Input (N)
- Add Notes
-



Fig. 3.2 When a Note is added to a MuseScore22 Sheet

After enabling the 'Note Input (N)' function here, notes (musical tones) can be added to the sheet by clicking on it.

To Deselect

To deselect a note, simply press 'N' on the keyboard.

We are creating the tune for the poem Kaakke Kaakke Koodevide. For this, click on the position of the note added to the sheet in Figure 3.2 and insert the appropriate symbol. (To accurately find the position, hold the Ctrl key and scroll the mouse wheel to zoom in slightly.)

Now, click on the symbol you added to the sheet. (Figure 3.2). Didn't you hear the sound?

Can you name the note we just added?

Now, let's add the remaining notes from Figure 3.3 to the first bar.



Fig. 3.3 Notes to be added to the first bar in the Sheet



Fig. 3.4

MuseScore22 - Play Control Buttons

The first part of the notes has been arranged, right? Now, shall we listen to it?

For that, click the 'Play Back' button on the toolbar. The same button can be used to stop playback.

You have heard the first tune we created using MuseScore, haven't you? Now, let's arrange the remaining notes of the poem.

For this, arrange the notes as shown below (Figure 3.5).



Fig. 3.5 Notes to be Arranged

Some new symbols will also need to be used to add the notes in the second bar, won't they?

Each symbol represents the duration for which a note should be played. These symbols help us create different melodies.



The 'Notes' in Music

Musical notes are symbols that represent the sounds in a musical composition. 'Notes' can be called the language of music. These symbols help a musician understand how to read and play a piece of music.

Each musical note represents a specific pitch. The basic notes in music are സ, റി, ഗ, മ, പ, ഓ, ന്. In Western music, these notes are represented by the letters C, D, E, F, G, A, B. Friends, Learning to read musical notes will help you to understand music more deeply.

Arrange the notes in the second bar using eighth notes and half notes, as shown in Figure 3.5.

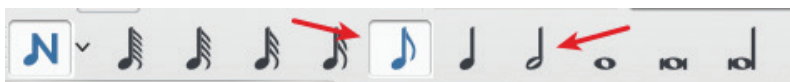


Fig. 3.7 Symbols of Eighth note, Half note

It is now understood that melodies are created by arranging notes based on their position and timing.

Now listen to the melody of the poem 'കാക്കേ കാക്കേ കുടവെടെ...' by arranging the rest of the sounds in the position and rhythm as shown below. (Figure 3.8)



Fig. 3.8 The Melody of the Poem 'Kake Kake Koodevide'

♩	Whole note
♪	Half note
♪	Quarter note
♪	Eighth note

Fig. 3.6 Indications for the Notes

To Delete a Note

To remove a note added to the sheet, simply press 'Delete' on the keyboard. (Or, Note → Rightclick → Del)

The melody of the poem has been created, hasn't it? Now, let's convert the melody into an audio file.

MuseScore22 - To export the file

- Select File →Export.
- In the window that appears, enter the file name and extension.
- To convert the file to an mp3 file, simply add .mp3 to the end of the file name.
- Then click Save.

Let's sing the poem together with the tune we created on the computer.

Now that we've finished singing, let's try creating a new tune for this poem using MuseScore 22.

Let's Create a Rhythm.

We have now become familiar with creating melodies using MuseScore 22. Friends know that music is a combination of both melody and rhythm. In the previous class, we learned how to create rhythm using a computer. Now, open the 'Taalam' software on your computer and create a rhythm pattern by following the instructions given in the image below.

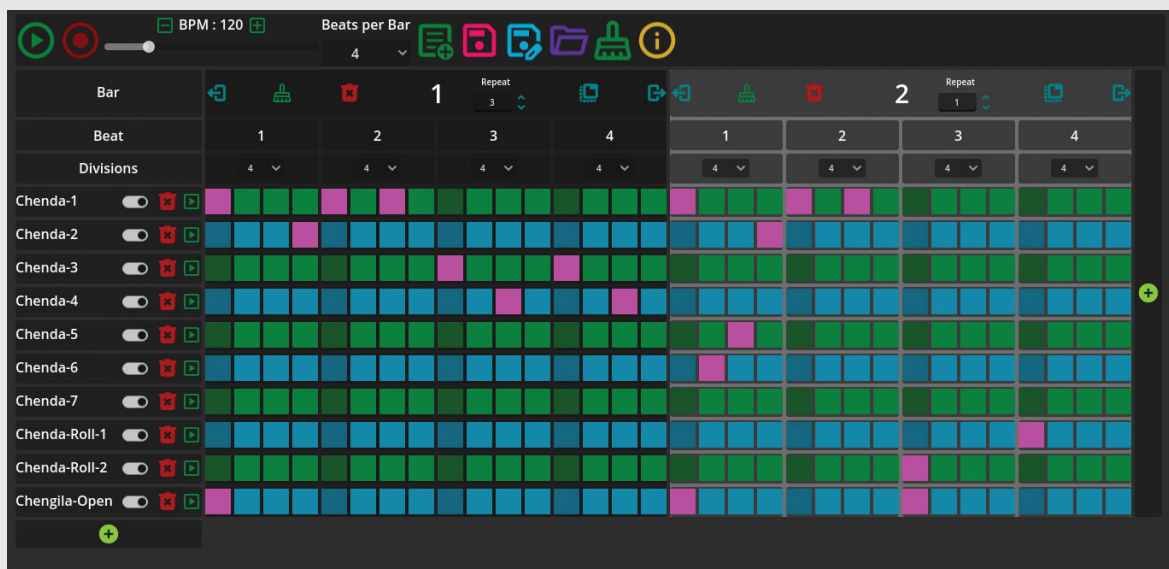


Fig. 3.9 Rhythm Pattern Created in Taalam Software

The rhythm has been created, hasn't it? Now, try creating a rhythm that matches the melody you composed using MuseScore 22.

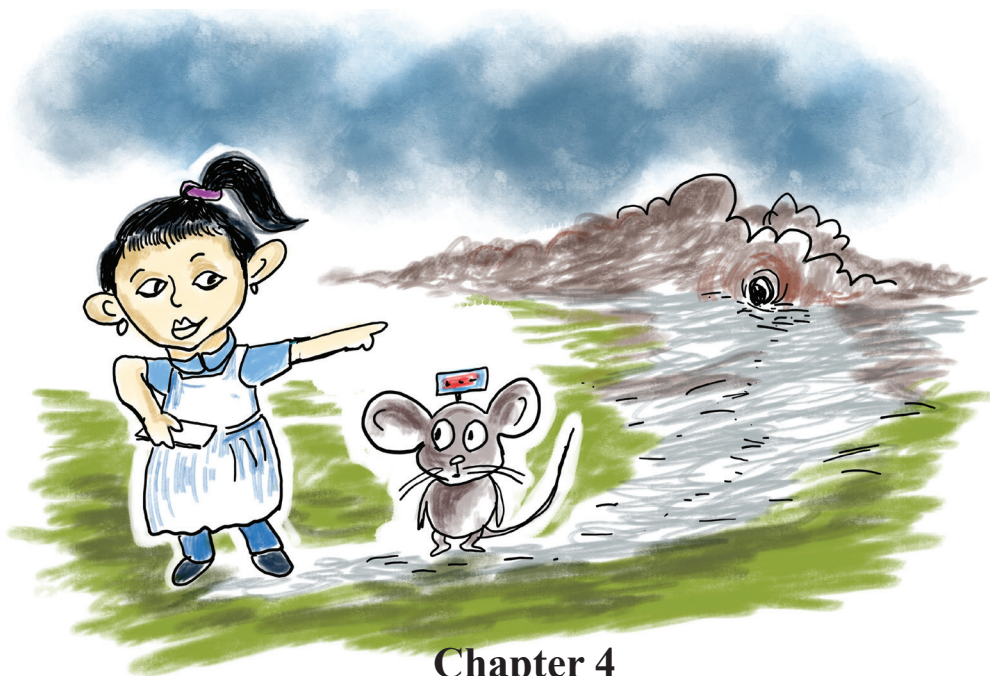
**Let's Assess**

- Which key is used to add music notes in MuseScore 22 software?
 - (a) A
 - (b) P
 - (c) N
 - (d) M
- What is the method for exporting the music notes of a song created in MuseScore 22 as a PDF?
 - (a) Note → Export
 - (b) Edit → Export
 - (c) View → Export
 - (d) File → Export

**Extended Activities**

1. Create the melody of our national anthem, 'Jana Gana Mana,' using MuseScore 22 software.
2. Open the file Song.pdf from the School_Resources folder, compose the song in MuseScore 22, and export it.





Chapter 4

Coding : the matters in the Game

We all love to play games.

Have you ever wondered how game worlds filled with superheroes and cars and bikes racing down the tracks are created?

We have seen how to draw patterns on a computer by giving programming instructions last year. Programming languages are also used to create such games that work on computers and mobile phones. The mobile apps and computer applications that we use regularly for various purposes are also created through programming!

Let's create a computer game using Scratch, the programming language we are familiar with.

Let's Create a Game

A game namely `help_mouse.html` is given in the School_Resources folder on your computer. Open your computer and play this little game and help the little mouse reach its mother.

To Run the Game

- Double click on the file help_mouse.html.
- Click on the flag in the window that opens and start the game.
- You can use the Up, Down, Left, Right arrow keys to move the little mouse.
- Move the little mouse without hitting the walls or falling into the hands of the enemy.

Have you played the game? What did you discover in the game? Complete the Table 4.1 given below.

Action	Activity
When clicked on 	the game starts
When right arrow key is clicked	the little mouse moves towards right
	the little mouse moves towards left
	displays the message Try Again and the game ends.
when the little mouse touches mother	

Table 4.1 How the Game Works

Scratch

Scratch is a programming language used to instruct a computer. In this, instructions are organized into blocks. It is very useful for beginners in programming.

Is the list complete?

Here, we will see how to create such a game using Scratch.

There are mainly two main steps in creating games.

- **Creating the background and adding characters (designing).**
- **Giving instructions on how the background and characters should work (coding).**

Designing in Scratch

Background (Backdrop)

To set the background in Scratch, add the image you need from the library, draw it, or upload it from somewhere else. Images in the library are added using the Choose a Backdrop feature in the Scratch window (Figure 4.1). You can upload images to Scratch and use them as backgrounds from here.

Characters (Sprites)

Sprites are user-controlled images that are included in games and animations created using Scratch. The little mouse, mother, and snake in the game are sprites.

Like the Choose a Backdrop feature, Choose a Sprite (Figure 4.2) is a feature for setting up sprites. You can use this to create the required images or add them from your computer.

To delete a sprite on the stage, simply click on the delete button above its icon. (Figure 4.3)

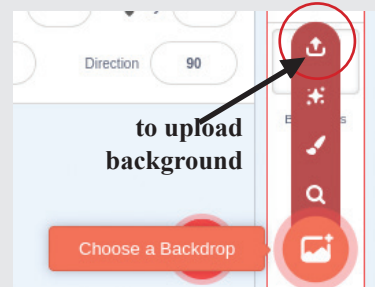


Fig. 4.1 Choose a Backdrop in Scratch

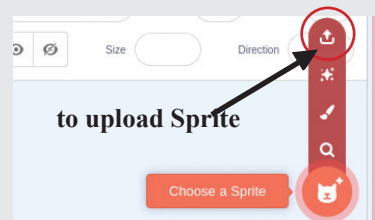


Fig. 4.2 Choose a Sprite option in Scratch



Fig. 4.3 Sprite Icon

Add the Background and Characters

In order to create a game, we first need to include the background and the required characters.

- Open the Scratch program and delete the existing sprite on the stage.
- Use Choose a Backdrop to include the background as a backdrop.
- Use the Choose a Sprite option to add new storylines.

The path that the mouse needs to travel should be set as the backdrop.

There is a folder namely help_mouse_backdrops in the School Resources folder on your computer. From this, include the image of the path that the mouse needs to travel (mouse_backdrop1.png) as the backdrop of the stage (Figure 4.4). Also, don't forget to delete the current sprite on the stage.

To Open Scratch

- press the Super Key of the computer
- Type Scratch3 in the Search window that appears.
- Click on Scratch3 that appears.

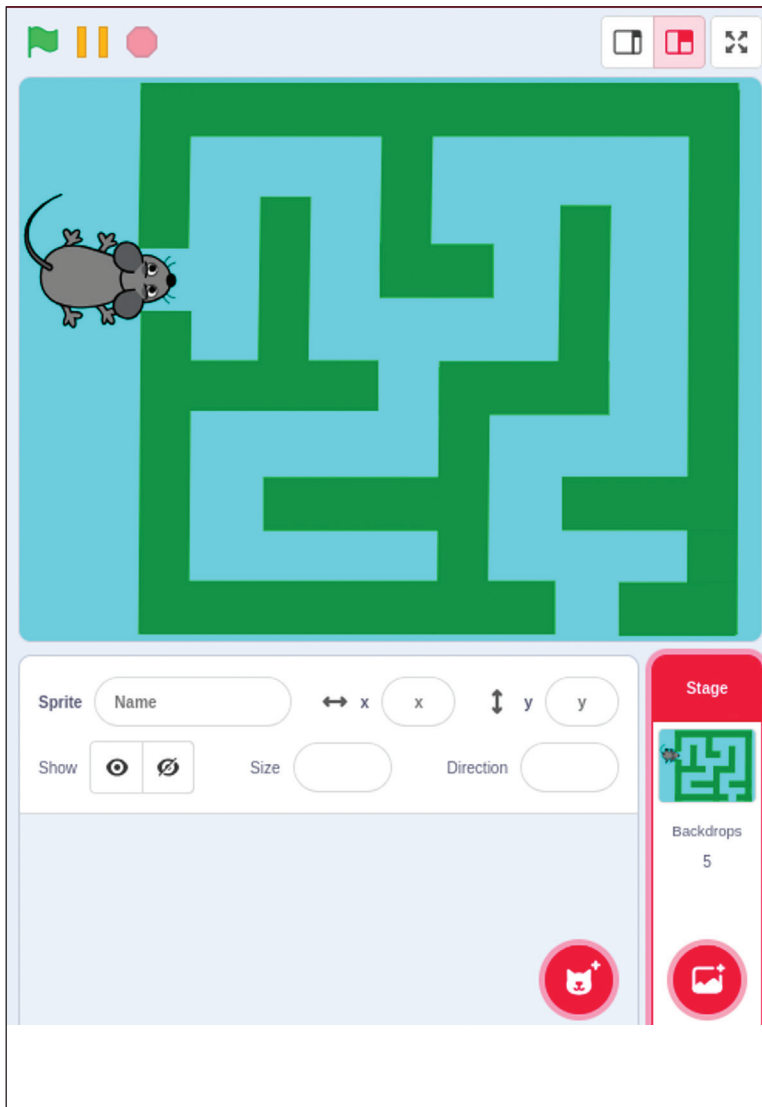


Fig. 4.4 On Setting the Background

Look at Figure 4.4. The background also includes a picture of the mother mouse. Can you guess why another picture was added to this backdrop?

In the game, the mother mouse spends most of its time lying still. So we don't need to control that sprite separately.

That's why the picture namely mouse_backdrop1 of the mother mouse is included along with the backdrop.

But at the end of the game, when the baby mouse hits its mother's body, we will need to control the mother mouse. We will discuss how to handle this situation later.

Now, we shall add the little mouse.

Open the Scratch library using Choose a Sprite option.

From this, find the Mouse1 sprite and include it into the stage. Adjust the size of the little mouse to 30. (Figure 4.5, 4.6).

Give Instructions

So we have set up the background and characters of our game.

Now, as we have completed in Table 4.1, we need to give the coding instructions to implement each of the things in the game.

Let's Move the Little Mouse

Think about the instructions for moving the little mouse.

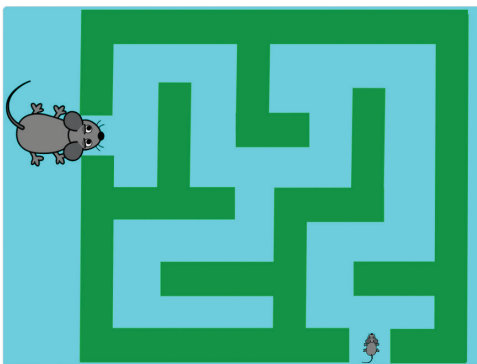


Fig. 4.5 Mouse1 sprite included

- When you press the Up Arrow Key, it should move up.
- When you press the Right Arrow Key, it should move towards right.
-
-

What are the instructions to be given to move the sprite?

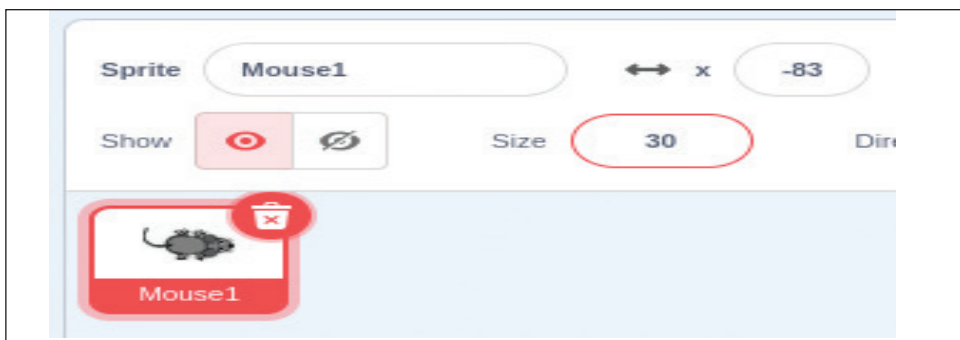


Fig. 4.6 To Adjust the Size of the Sprite

This instruction should be executed only on pressing the Up Arrow. In such cases, use the Move instruction along with the If..then code given in the Control tab.

Now, give the required instructions and try to move the sprite Mouse1 upwards when the Up Arrow is pressed (Figure 4.7). While arranging the codes, you should also consider the following things

- The game should start when the green Flag is pressed.
- Use forever to execute the action whenever the Up Arrow is pressed.
- Give the required instruction to check whether the Up Arrow key is pressed.
- Use the Point in direction technique to change the direction of movement of the sprite.
- The second Costume is used to make the sprite look like it is walking (check the Costume tab).
- Everything that needs to happen when the Up Arrow is pressed must be placed inside If..then block.

Control the Instructions

The Control tab contains instructions on when to run a Scratch instruction and how many times to repeat it.

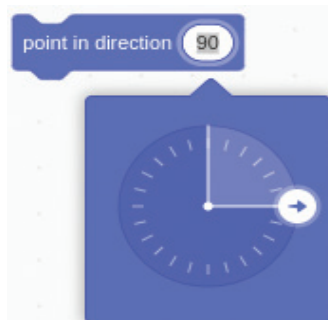


Costumes

Costumes are the different forms of a sprite. These are used to give movement, appearance, and transformation to the sprite.

Direction of Movement of the Sprites

When moving sprites, you can adjust the direction in which they move using the Point in direction block in the Motion section.



Check for the Key Pressed

The code  in the Sensing section can be used to check which key is pressed to perform an action.

Also, the following codes can be used to check whether the Sprites are hitting another Sprite or colour.

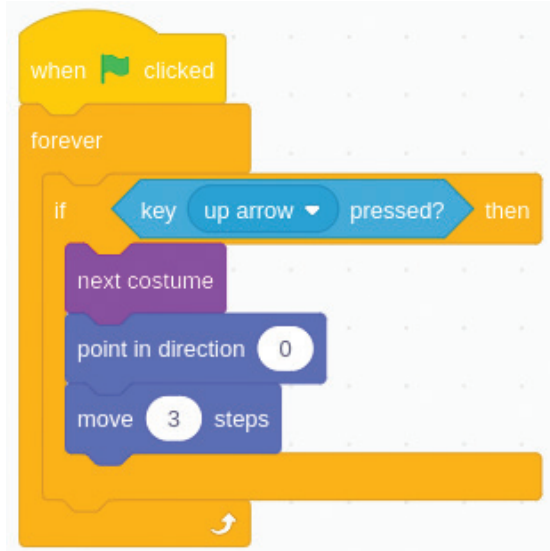
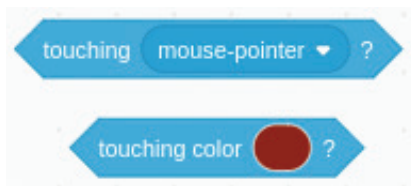


Fig. 4.7 Codes to Move the Little Mouse Upwards

Have you tried running the program by giving instructions?

Now complete the Table 4.2 by including the use of each code included in it.

What will be the code for going towards right ?



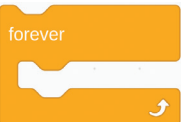
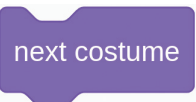
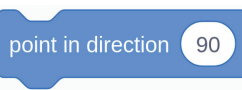
Codes	Uses
	to start the activity when flag is clicked.
	
	
	
	

Table 4.2 Codes and Uses

Is the list complete ?

We have understood how to move the little mouse upwards.

In the same way, give the required instructions to little mouse so that pressing the Down Arrow will move it down, pressing the Right Arrow will move it right, and pressing the Left Arrow will move it left (Figure 4.8).

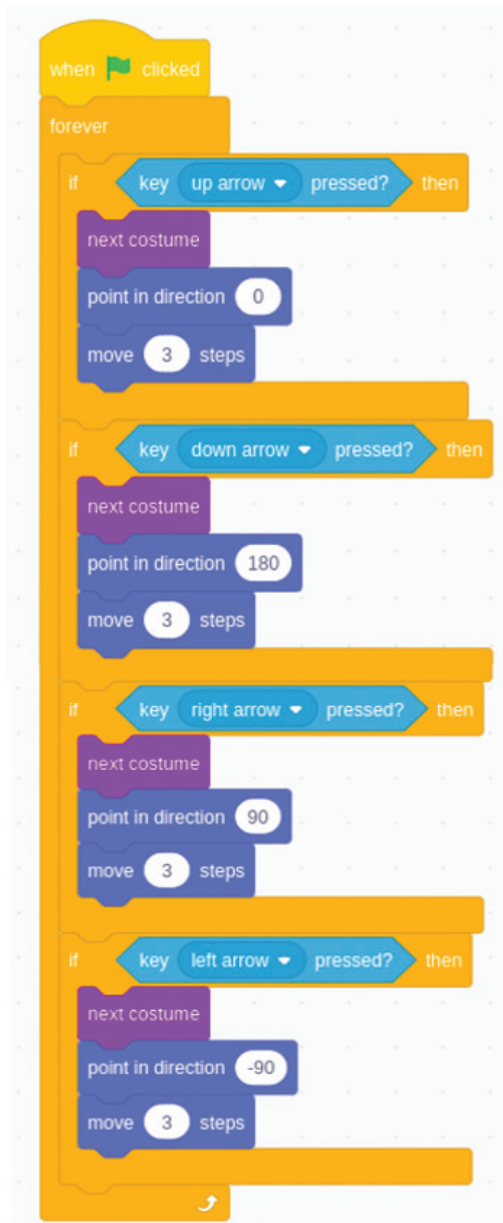


Fig. 4.8 Codes to Move the Little Moves in all the Four Directions



Could you move the Sprite to its mother along the path by giving the required instructions ?

Here, when you stop the movement of the sprite and press the Arrow Key again, it starts moving from the place where it stopped, right ?

Instead, when you start the game by clicking on the flag, the little mouse should come to the beginning of the path.

For this, just set the position where the little mouse should stand as the go to position in the Motion tab. Similarly, you can also adjust Point in direction of the sprite as facing upwards at the start (Figure 4.9).

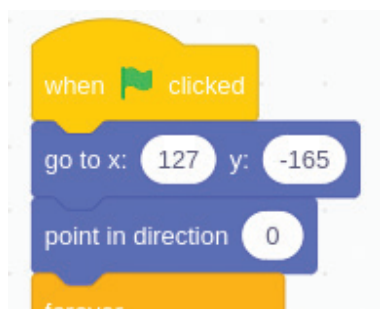


Fig. 4.9 Codes to Adjust the Position of the Sprite

To Adjust the Position of the Sprite

To adjust the position of a sprite, simply move the sprite to the desired position on the stage and use the go to x code in the Motion tab.



When it Reaches Mother

We are preparing a game to get the little mouse to its mother. In the first game we played, the message You Won appears when the mouse touches its mother, and the message Try Again appears when it hits the wall on the way.

When the message You Won appears, the mouse and its mother are seen standing approximately in the middle of the message window.

How to include this type of message in our game ?

The messages You Won and Try Again have been added to two images in the School_Resources folder namely Mouse_backdrop2 and Mouse_backdrop3, respectively.

Use the Upload Backdrop below the stage to include these two images as the backdrop of the stage.

What changes have occurred in the stage when the backdrops are added ?

The last image added is the one that is visible on the stage, right ?

When the game starts, the stage should have a backdrop namely mouse_backdrop1 displaying the path.

To do this, use the code to change the backdrop to mouse_backdrop1 when the game starts (Figure 4.10).

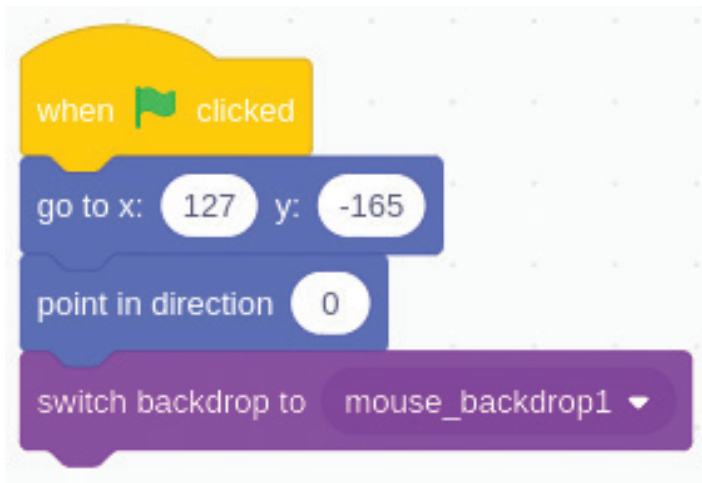


Fig. 4.10 Code to Change the Backdrop

Now click on the flag. Is the first Backdrop seen now ?

In this way, you can complete the remaining steps by giving instructions such as when you win the game (when the mouse hits the mother), the backdrop namely mouse_backdrop2 appears and when you loose the game (when the mouse hits the wall in the path), the backdrop namely mouse_backdrop3 appears. Go through the explanations given below.

- To identify if a colour is touched, a block called touching color is available in the tab section. Use this code by changing the colour in this to the colour of the mother mouse.
- Check whether the mouse hits the mother's body by adding the code touching colour inside the code If.. then.
- When this happens, change the backdrop to mouse_backdrop2 and display the message You Won..
- Also add a message to end the game. (Figure 4.11)

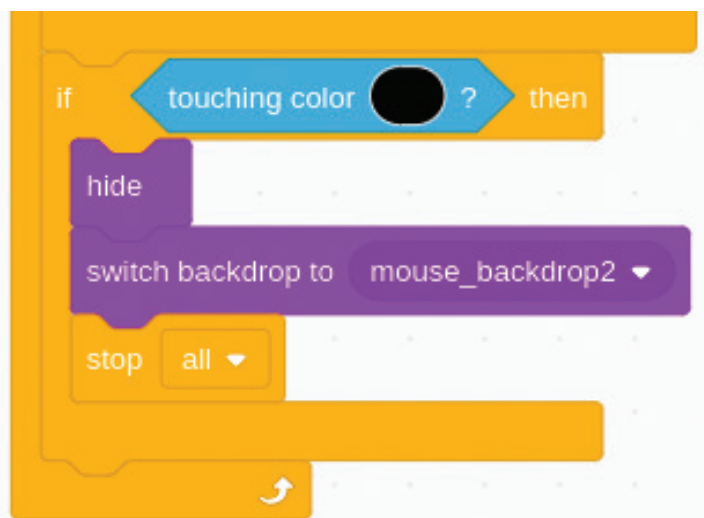


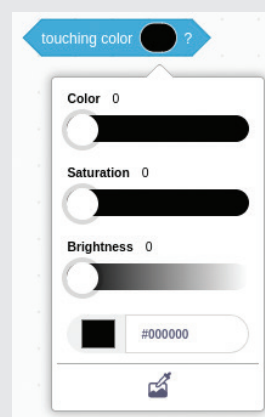
Fig. 4.11 Codes to Display the Message on Winning the Game

To Display the Sprite

If the little mouse is not seen when the flag is clicked, use the code show to display the Sprite.

To Add Colour in Sensing

We need to specify the exact colour while checking whether a sprite has touched a colour or not. To do this, click on the color field in the touching color block and use the color picker tool and click on the desired color.



On Hitting the Wall

Now, you may try to prepare the instructions to end the game when the little mouse hits the wall, and display the message TRY AGAIN.

Have you completed all the stages of the game ? Save the file and store it on your computer.

Have you tried playing the your computer game ? Discuss with your friends how the game can be modified.



Let's Assess

- What is the point in direction to move the sprite to the right on pressing the Right Arrow in Scratch?

(a) 0
(b) 180
(c) 90
(d) -90
- Which block below should be changed to increase the speed of the movement of sprite on pressing the Arrow keys in Scratch?

(a) move_steps
(b) point in direction
(c) costume
(d) position



Extended Activities

1. Modify the game in such a way that the movement of the sprite is obstructed by including the Snake sprite from the Scratch library and including the required codes. The change should be made in such a way that the game ends when the sprite hits the Snake.





Chapter 5

The Hunter in the Sky

Astronomy is a field that helps to expand knowledge about the Universe that has always amazed humans, including the night sky, constellations, stars, planets, comets, clouds, and the universe. Since ancient times, it has been customary for travellers to use the constellation the Hunter, seen in the sky to find their way at night.

Have you observed this 'Hunter' in the sky?

All the stars that shine like fireflies in the sky against the darkness of the night are not isolated stars as we usually think. Many of them are huge clusters consisting of millions or billions of stars, or nebulae consisting of stars and giant clouds of gas and dust.

Do you know the names of any constellations other than Orion, the hunter?

It is difficult to observe all the Constellations in the sky with naked eye. However, there are many types of simulation software available today to observe these. One of them is Stellarium, which you have familiarised yourself with in the previous class.



Stellarium

Stellarium is a desktop planetarium software. This software provides a symbolic presentation of various views in the sky. We can observe the sky at any time of day. This is a very helpful software for stargazers.

We shall observe the constellation Orion with the help of the Stellarium software.



Fig. 5.1 Stellarium Window

Tool	Name of the Tool	Use
	Constellation Lines	
		To find the names of the Constellations
		
		
		

Table 5.1 Some of the Tools of the Stellarium Software and their Uses

Figure 5.1 shows the screen after hiding the Ground and Atmosphere in the Stellarium window. Do you know which tools were used to hide the Ground and Atmosphere?

Some of the tools and their details for sky observation in the Stellarium software are given in Table 5.1. Open the software and click on the tools to check their uses and complete the table.

You have familiarised yourself with the tools for watching the stars in the Stellarium software. Now, we shall observe the Hunter using them.

Let's Watch the Hunter

You have understood the shape of the constellation Orion from Figure 5.2. Use the search window in the Stellarium software to find Orion. Also, check the names of the stars in this constellation.



Fig. 5.2 Constellation the Hunter

Search in Stellarium

You know that all the celestial bodies and constellations can be observed in Stellarium software. You can use the Search feature to observe only the ones you need (Figure 5.4). For example - if we want to see the Hunter, click on the Search window tool and type Orion in the window that appears and press enter key.

Don't forget to display Constellation lines, Constellation label, and Constellation art on the screen. You should also exclude Ground and Atmosphere.

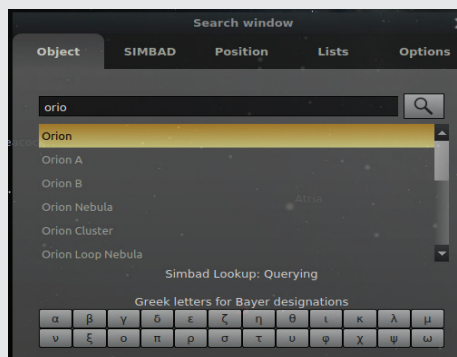


Fig. 5.4 Search Window in Stellarium



The Hunter (behind the name)

The constellation got its name because it is shaped like a hunter. The three bright stars in the middle of it are considered to be the belt of the hunter, and the three stars in a row from the central star in the belt to the south are considered to be a sword hanging from the belt. In the middle of the belt is the nebula called Orion.

We use Orion as a guide. If we draw the sword, the central star in the belt, and the head together, we will get the correct north-south direction. (Figure 5.3)



Fig. 5.3 Hunders -
Main Stars

Have you observed the Hunter? Now, we shall observe some more familiar constellations in Stellarium?

- Scorpio
- Pisces
- Libra
-



Constellations

Constellations or star clusters are parts of the sky where stars are connected by imaginary lines to form the shapes of mythological characters, animals, or objects. About six thousand stars that can be seen with the naked eye are used for this. Almost 48 of the constellations we consider today are traditionally used by the ancient Greeks.

Zodiac

The path that the Sun appears to travel through the starts when observed from Earth is known as Ecliptic. The zodiac or solar constellation is a combination of all the constellations near the ecliptic and is imagined to be in the form of a wheel. (Figure 5.5)



Fig. 5.5 Solar constellation

Zodiac constellations

- | | |
|---------------------------|-------------------------|
| 1. Chingam – Leo | 7. Kumbam - Aquarius |
| 2. Kanni – Virgo | 8. Meenam - Pisces |
| 3. Thulam – Libra | 9. Medam - Aries |
| 4. Vrischinkam – Scorpius | 10. Edavam - Taurus |
| 5. Dhanu – Sagitarius | 11. Midhunam - Gemini |
| 6. Makaram – Capricornus | 12. Karkidakam - Cancer |

Not only stargazing, but also we can see many wonders of the past and future in the sky using Stellarium.

We have learned how to observe solar eclipses and the Diamond Ring phenomenon using Stellarium software in class 5.

Do eclipses occur only to the Sun?

We know that it is not. Like the Sun, the Moon also experiences eclipses.

Shall we try to recreate a past lunar eclipse in Stellarium.

We shall try to observe the Lunar eclipse occurred in Thiruvananthapuram on 08-11-2022 at 14.40. To do this, open the Stellarium software and follow the steps below in order.

To Observe Lunar Eclipse in Stellarium

- Set the location as Thiruvananthapuram using Location tool ().
- Hide Ground () and Atmosphere ().
- Using the Date/Time window () set the same as 08.11.2022, 14.40 hours.
- Find Moon using Search tool ().
- Scroll the mouse wheel to zoom the Moon to required size.
- Activate the Animation tool () and adjust the speed and direction to observe the Lunar eclipse.

Have you watched the lunar eclipse? Take a screenshot of its different phases and save it (use the PrtSc key  on your computer to take the screenshot).

To Set the Location

- Select the Location tool from the toolbar.
- Enter the name of the place in the window that appears. (For example – Thiruvananthapuram).
- Select the row showing this location from the list of locations that appears (Figure 5.6).

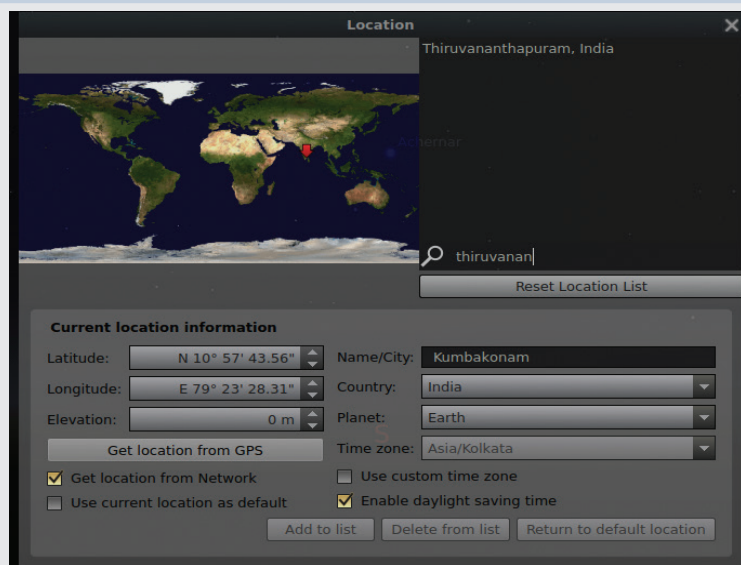
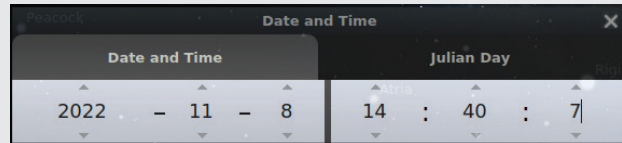


Fig. 5.6 To Set Location in Stellarium

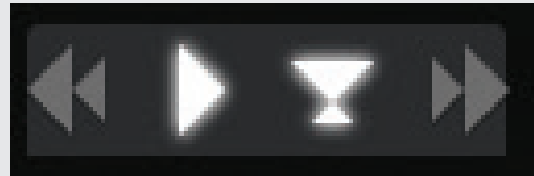
To Set Time

- Select the Date/Time window from the left side to set the time



To View the Simulation Faster - Animation

The Animation tool in Stellarium helps you display the simulation faster in Stellarium. If you click on the arrow symbol in the middle, time moves forward and the animation starts. Each time you click on the double arrow symbol on the right, time moves faster and the animation becomes faster. To slow down, just click on the double arrow symbol on the left.



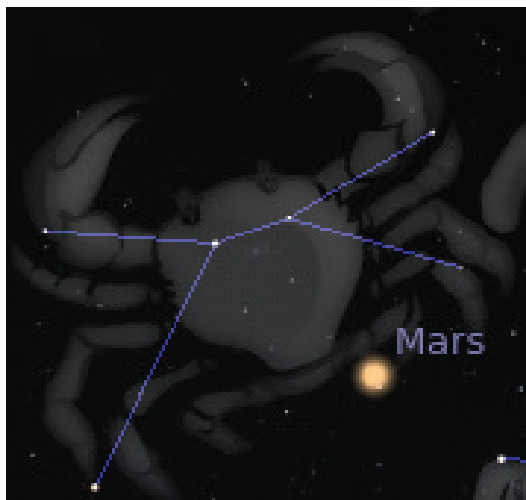
Could you see the simulation of the lunar eclipse from Thiruvananthapuram?

Now, watch the total lunar eclipse from Kochi, Kerala, on September 7, 2025, at 11 pm.



Let's Assess

- Name the Constellation given in the picture below



- | | |
|-----------|------------|
| (a) Virgo | (b) Cancer |
| (c) Aries | (d) Gemini |

- Which among the following is seen in the middle of the belt around the waist of the Hunter ?

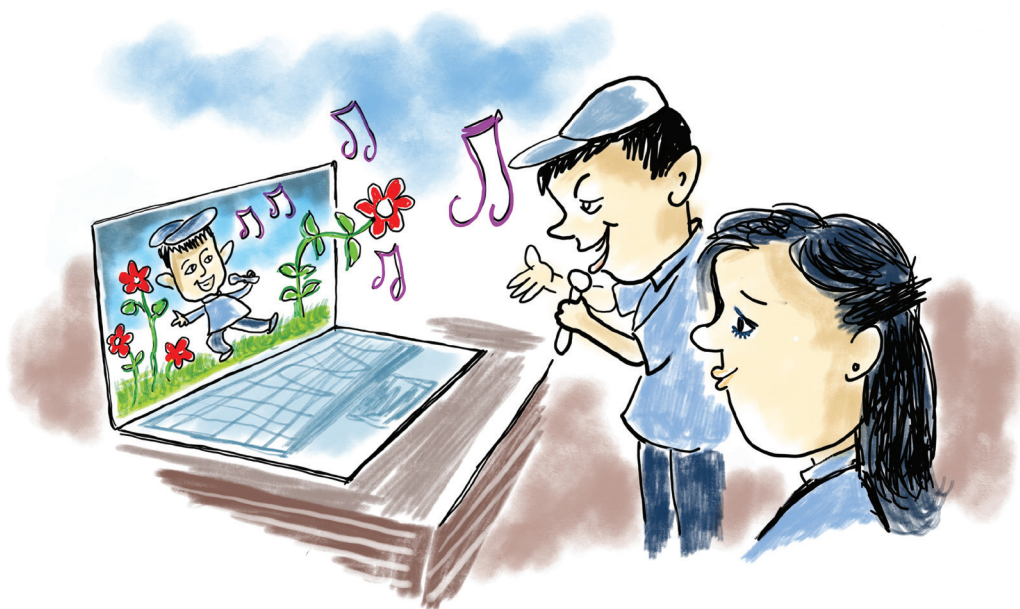
- (a) Thiruvathira (b) Makeeryam
(c) Belatrix (d) Orion



Extended Activities

1. Observe our nearest galaxy, Andromeda, through Stellarium and take a screenshot.
2. Use Stellarium to find out which star group the Pole Star (Pole) belongs to.





Chapter 6

Audio Recording on a Computer

*“Those who hold the blue sky in their eyes,
Those who adorn themselves with garlands of dewdrops,
Those who stand unfading in any heat,
Those who smile even in the darkest night”*

(Translation of **P Madhusudanan**’s poem Manninte Kinavukal)

Look at how beautifully the special characteristics of flowers, which are the sweet dreams of the soil, are presented. You were introduced to this poem, Manninte Kinavukal (Dreams of the Soil) in your Malayalam textbook last year, weren't you?

Didn't you present the poem which describes the various types of flowers seen in our countryside, by singing it in class? This poem, sung and recorded by a student, is given in your School Resources folder on the computer.

Open the folder and try playing the audio file provided as Poem.mp3 by double-clicking on it.

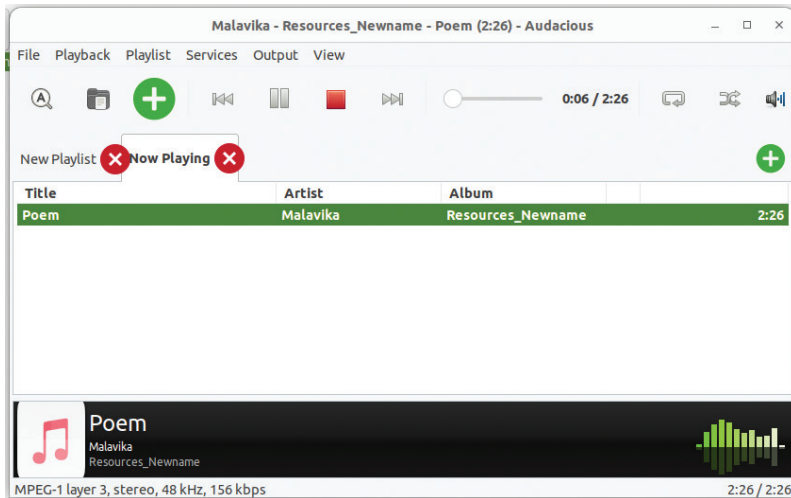


Fig. 6.1 Audacious Audio Player Window

Check which software window the poem has opened in.

We are currently listening to the poem through the  (Audacious) audio player.

Did you notice the Player Control buttons in the Audacious audio player? The shape and function of the player control buttons in most video/audio players are the same, aren't they?

Hover the mouse pointer over each button in the window. You understand their use, don't you? Check if there are any buttons you are unfamiliar with. Then, you can complete the table 6.1 given below.

Button	Usage
	To play the previous audio file in the Audacious library.
	
	
	

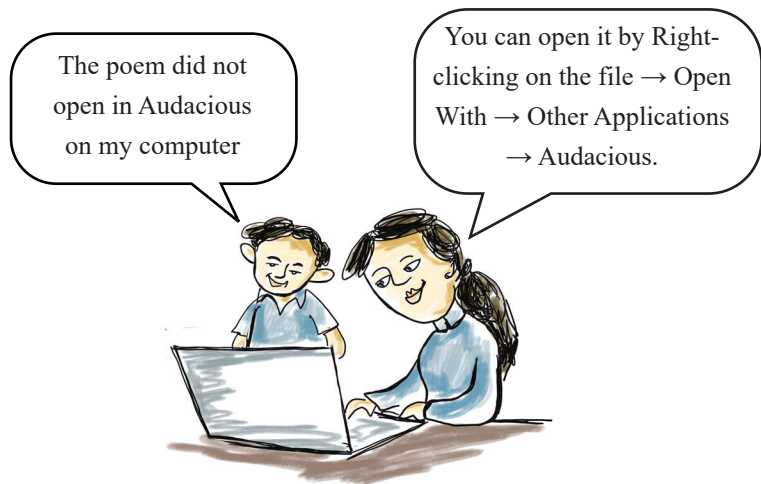
Audio, Media Players

Some freely usable audio/media players are also present on our computers.

Rhythmbox, VLC Player, SM Player, etc., are examples of these.

	To repeatedly play the same audio file.
	To listen to audio files in shuffle mode.
	

Table 6.1 Uses of Buttons in Audacious



Look at Arun's doubt. Don't you also face such problems when playing video/audio files on the computer? In such situations, it is enough to select and give the appropriate application to run the file through Open With → Other Applications.

Player Configuration

When Arun double-clicked on the audio file on his computer, it didn't open in Audacious because the default player for audio files on that computer was not set to Audacious. To make an application the default for opening a file, right-click on the file, and in the Properties window, under Open with, select the application we want (here, Audacious) and then select 'Set as Default'.

You listened to the poem, didn't you?

In the poem we just heard, it would have been more helpful if there was an introductory description as well, right?

How about recording a short description of the poem 'Manninte Kinavukal' in your own voice and adding it as an introduction to this poem?

For that to be possible, we need an audio editing facility. Audacity, which is on our computer, is an excellent audio editing software that can be used for this task.

AUDACITY

Audacity can be used for various tasks such as recording, editing, and file format conversion.

It can export audio to almost all audio file formats, such as Mp3, m4a, AIFF, FLAC, and WAV.



Before Recording

Before recording, we need to check if the audio system on our computer is ready for recording. For this, try the steps given below.

To Adjust Audio Settings on the Computer

- Click on the audio icon (shown in Figure 6.2) on the right side of the computer desktop.
- Click on 'Settings' that appears." (Figure 6.3).
- With this, the Sound Settings window opens.
- Move the volume slider under 'Input Device' and ensure the required input volume for recording (Figure 6.4).
- Then, by checking the Output device (Figure 6.4) and clicking on 'Test' seen next to it, we can conduct a sound check on Front Left and Front Right (Figure 6.5).



Figure 6.2 Sound Icon

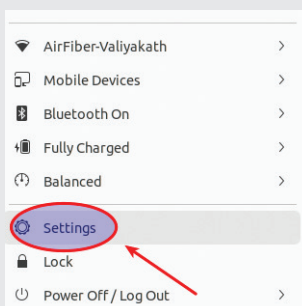


Fig. 6.3 Settings

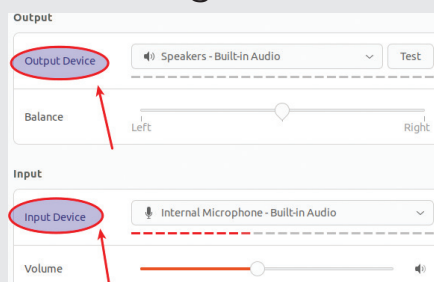


Figure 6.4 Sound adjusting window

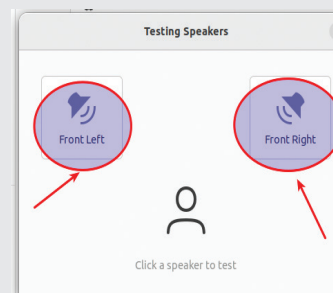


Figure 6.5 Testing Speakers

You have checked the computer's sound settings, haven't you? Now, let's record a short introductory description of the poem in our own voice.

What all should be included in the introduction?

- Name of the poem
- Name of the poet
- Main idea
-

Look at an introductory description prepared by a student named Amina. You will also prepare a description like this in your notebook, won't you?



The name of the poem you are about to hear is ' Manninte Kinavukal' This was written by the poet P. Madhusoodanan. I dedicate this beautiful poem, which describes a handful of native flowers, to you..

Let's Start Recording

Since you have prepared the description, let's do the following steps to record this on the computer.

To Record in Audacity

- Open the Audacity software.
- Press the Record button on the Transport Toolbar. (Figure 6.6)
- Say the introduction clearly (you can see a waveform being drawn in the Audacity window).
- After the presentation is over, press the Stop button to stop recording.

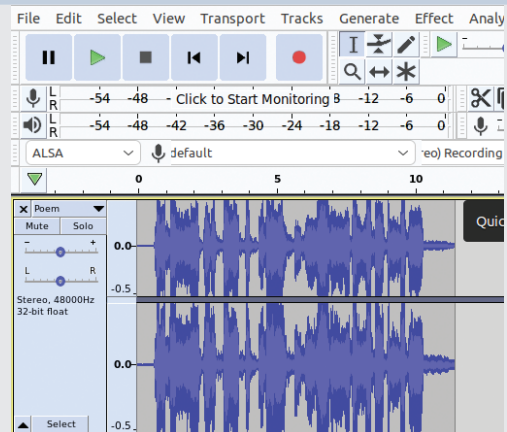


Fig.:6.6 Audacity Window

You have recorded the description, haven't you?

Now, try pressing the Play button. Can you hear what you recorded? Let's save the file now.

The file should be saved using 'Save Project' in the File menu. When saving, the Audacity project file is saved with the extension '.aup'.

If saved as a project file in this way, the file can be opened in Audacity at any time, necessary changes can be made, and it can be saved and stored again.

Remember to save the file in your class folder itself.

Audio Track

Tracks are the space in Audacity for audio editing. They contain the editing control panel and the waveform of the sound. Audacity allows you to add or remove as many tracks as you need.

When recording sound in Audacity, it is usually recorded as a stereo track.

It also has the facility to convert audio files with only mono tracks into stereo tracks.

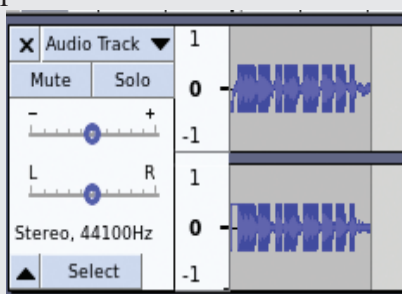


Fig. 6.7 : Audacity track

Sound Mixing

We have now recorded the introduction to the poem. The poem also needs to be added along with it, right?

Moreover, if we add a tambura sound as a background accompaniment to our poem, it will be even more beautiful, right?

An audio file named Sruthi.mp3 has been provided in the School Resources folder on the computer. We can add this file as background music for the poem, can't we?

Waveform

A waveform is a visual representation that shows the rise and fall of a sound.

It is called a waveform because the rise and fall of the sound are depicted like waves.

Instead of the Play and Stop buttons, you can use the Space key on the keyboard, and instead of Pause, you can use the P key.



To Improve Recording Quality

For high-quality audio recording and editing, a recording studio with appropriate facilities, recording equipment, and high-performance computers are required.

Let's see how to add the poem along with the introduction we recorded and mix it with the shruti.

Try the activity given below.

To Include Multiple Files in a Track:

- Import the poem file (Poem_raw.mp3) from School Resources into the currently open project file via File → Import → Audio (this is a file containing only the recorded poem). Now you can see the poem included in a new track directly below. In the same way,
- Import the shruti file (Sruthi.mp3) as well. (Figure 6.8)

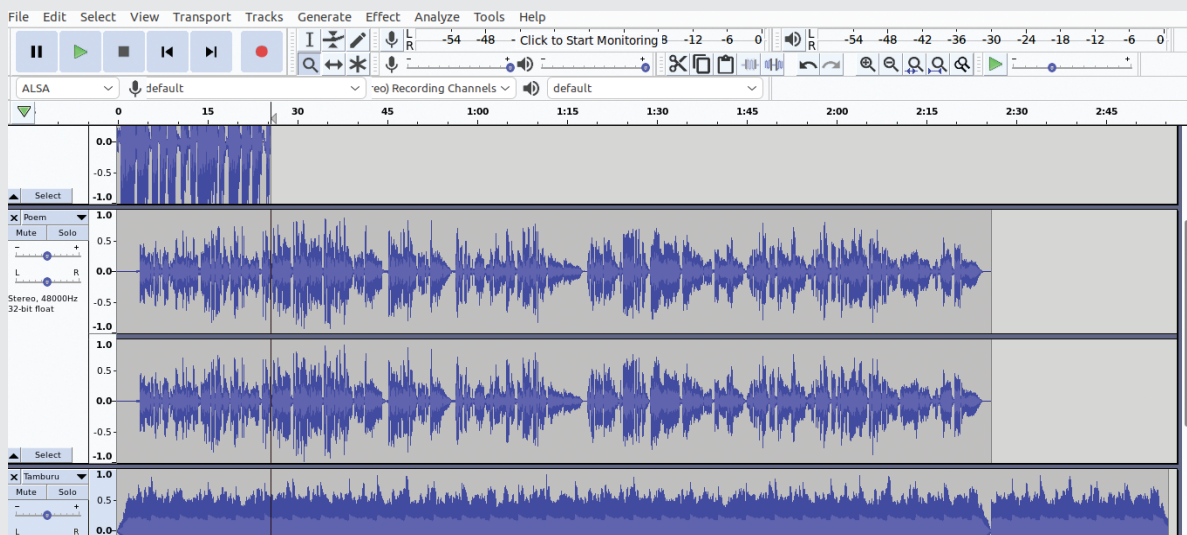


Fig. 6.8: Sound Added to Multiple Tracks in Audacity

Now, in the topmost track, the recorded audio, and in the tracks below that, the poem and the shruti are present respectively. Now, let's precisely adjust the sound in all three tracks and perform sound mixing.

Let's Edit and Improve

Listen to the sound you just included.

The introduction, the poem, and the shruti that we recorded are all mixed up, aren't they?

How do we fix this?

The introduction should be heard first, right? After that, the poem should also be heard. The shruti can be heard in the background while the introduction is being presented.

For this, try arranging the audio clips in all three tracks according to their timing, as shown in Figure 6.9.

When the audio clips are arranged in this way,

- The sound in the first track will play only after the sound file in the first track has finished playing.
- Since the sound in the bottommost track is present from the beginning of the track, this sound can be heard as background music along with the narration and the poem..

The Time Shift tool in the toolbar can be used to move the clips forward and backward.

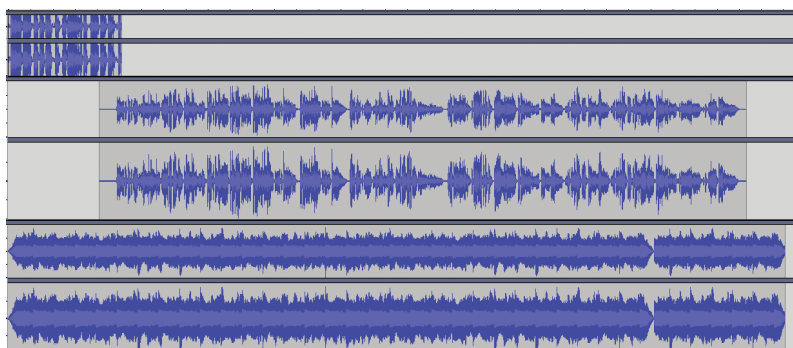


Fig. 6.9: Sound Mixing in Audacity

You have arranged the sound clips in the track according to the order in which they should play, Now play it and see how it is.

The shruti clip in the last track is a bit too long, isn't it?

We can remove the portion after the poem in the third track. For this, select the portion and press the Delete key on the computer. (Figure 6.10)

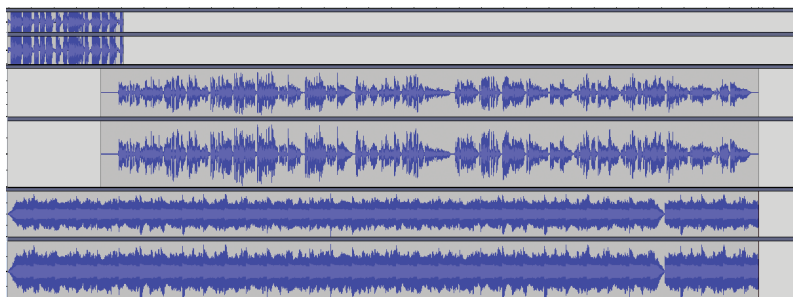
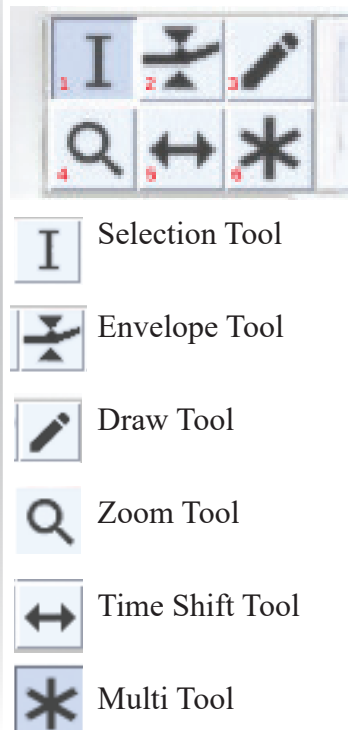


Fig. 6.10: When the Sound in the Last Track is Adjusted to Match the Timing of the Poem.

Editing Tools in Audacity



If you make a mistake while editing, you can use Undo to restore the audio to its previous state



Attention Please...!

Talking on mobile phones and listening to songs while travelling and in public places should be in a way that does not disturb others.

Remember that constantly listening to songs at high volume using headsets can affect the health of your ears...

**Great Opportunities**

Audio editing is a field where excellent job opportunities come seeking if you have the skill and interest.

You can work with good compensation in many jobs like Sound Engineer, Music Producer, Podcast Producer, Radio Jockey, Voice Actor, etc.

If there are parts where you made mistakes while saying the introduction, or unwanted sounds, you will delete them from the track by selecting them, won't you?

Using copy-paste, you can also arrange the clips in the track at the required positions.

**Artificial Intelligence and Audio Editing**

The advent of Artificial Intelligence (AI) is another area that is creating revolutions in audio editing. AI tools capable of mimicking the voices of singers are now available. AI can also create sound tracks for movies and video games.

AI tools are widely used today to create karaoke and to remove noise from a music file. AI plugins that can be used in Audacity are also now available.

Effects

The biggest attraction of Audacity is that you can add effects to sound clips. After selecting the part where you want to apply the effect, you can use the required effects from the Effect menu. Try using each of the effects in the list below and complete Table 6.2.

Effect	Usage
Amplify	
Fade In	From silence to the actual sound gradually.
Fade Out	
Echo	

Table 6.2: Some Audio Effects in Audacity and their Usage

Save the file after applying the Fade In effect at the beginning and the Fade Out effect at the end of the background sound that you added to the third track in your project.

Let's Make it an Audio File

The Audacity project file we just saved needs to be converted to an audio file format if we want to open and play it in audio/media players. For this,

- Select File → Export → Export as mp3 and save the file as mp3.

You have saved the file as mp3, haven't you?

Now, listen to the poem on the computer, which you edited and prepared with introduction in your voice .

Sound Files

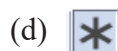
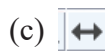
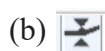
Wav is a file format with high sound clarity. Such files will have a larger file size.

mp3 and ogg will have smaller file sizes and sound clarity compared to wav files



Let's Assess

- Which of the following is the Time Shift Tool?



- mysong.mp3 and mysong.wav are sound files exported and created in Audacity. Which of these will have a smaller file size?



Extended Activities

1. Here is a review prepared by Vishnu about the poem "**Dreams of the Soil.**" Record this using Audacity software and export it to ogg format.
2. Read and record a portion from any lesson in your English textbook with correct pronunciation, feel, and pauses, then convert it to mp3 format and save it on the computer.

Through the beautiful poem "Manninte Kinavukal" the poet describes a number of native flowers. This includes descriptions of a handful of flowers like Mukkutti (Biophytum sensitivum), Jamanthi (Chrysanthemum), Kolambi (Ruellia tuberosa), Paneerpu (Rose), Kurukkuthimulla (Jasminum auriculatum), Chenthar (Hibiscus), etc. The poet describes these flowers as those that can withstand any heat without wilting and smile even in the darkest of times.





Chapter 7

Understanding Fractions

Kiran regularly exercises. As part of this, every day he cycles for $\frac{3}{4}$ kilometres first. Following that, he walks $\frac{1}{4}$ kilometre and runs $\frac{1}{2}$ kilometre. If so, what is the total distance Kiran covers in a day during his exercise?

Can we find the answer to Appu's question?

You have already been introduced to numbers like $\frac{3}{4}$, $\frac{1}{4}$, and $\frac{1}{2}$ mentioned above, which are called fractions, in the chapter "Part Numbers" of the 5th class Mathematics textbook.

Look at the pictures given below. Note down in the boxes below (Figure 7.1) what the coloured portions in these represent.

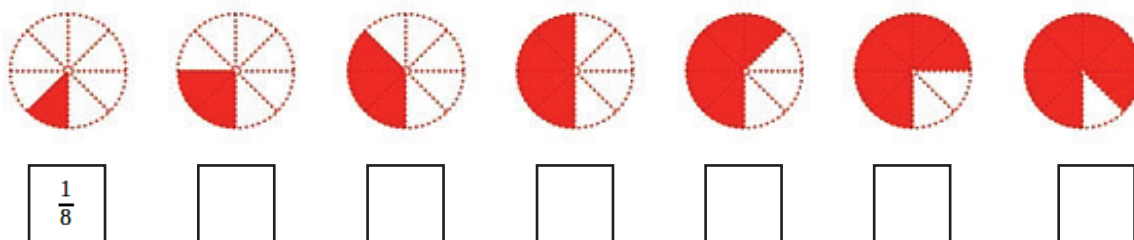


Fig. 7.1 Representation of Parts and the Fractions they Denote

Now, represent the parts of the pizza given below in this way.

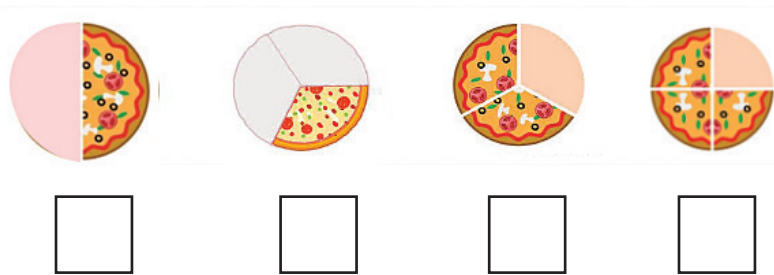


Fig. 7.2: Pizza Slices and the Fractions they Represent

Don't you remember doing activities like this last year? You have already understood that when representing fractions, the numbers written on the top are called the numerator, and the numbers written below are called the denominator.

Know Fractions Closely

JFraction Lab (JFractionLab) is a software that helps to practice activities related to fractions. Open the JFractionLab software on your computer and see what all activities are there in it.

In this software, you can see different activities related to fractions (Figure 7.3).

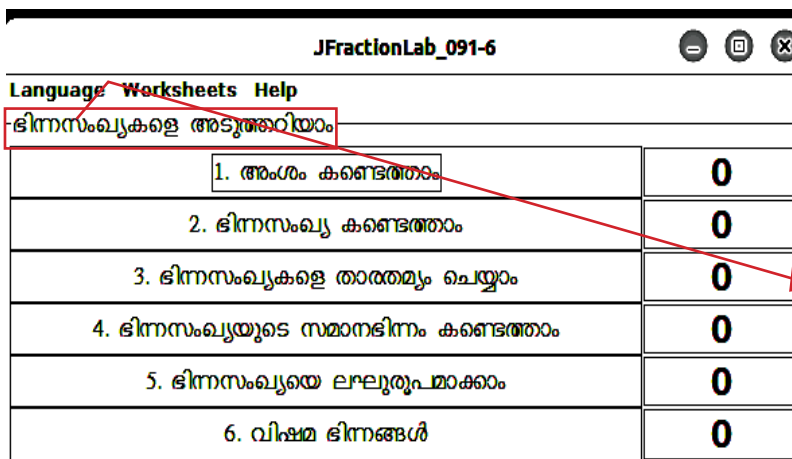
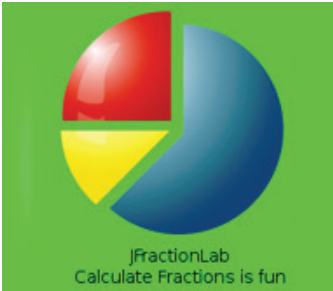


Fig. 7.3 JFraction Lab Window

Haven't you seen the list of activities in JFractionLab? Among these, the first item is "Clicking the numerator".

JFractionLab



JFractionLab
Calculate Fractions is fun

JFractionLab is a free and open-source educational software program. The games included in it help to understand various concepts related to fractions through illustrations.

- Language

 - German
 - English
 - Spanish
 - French
 - Italian
 - Polish
 - Malayalam
 - Portuguese
 - Greek



Figure 7.4 illustrates this option when the JFractionLab software is opened.

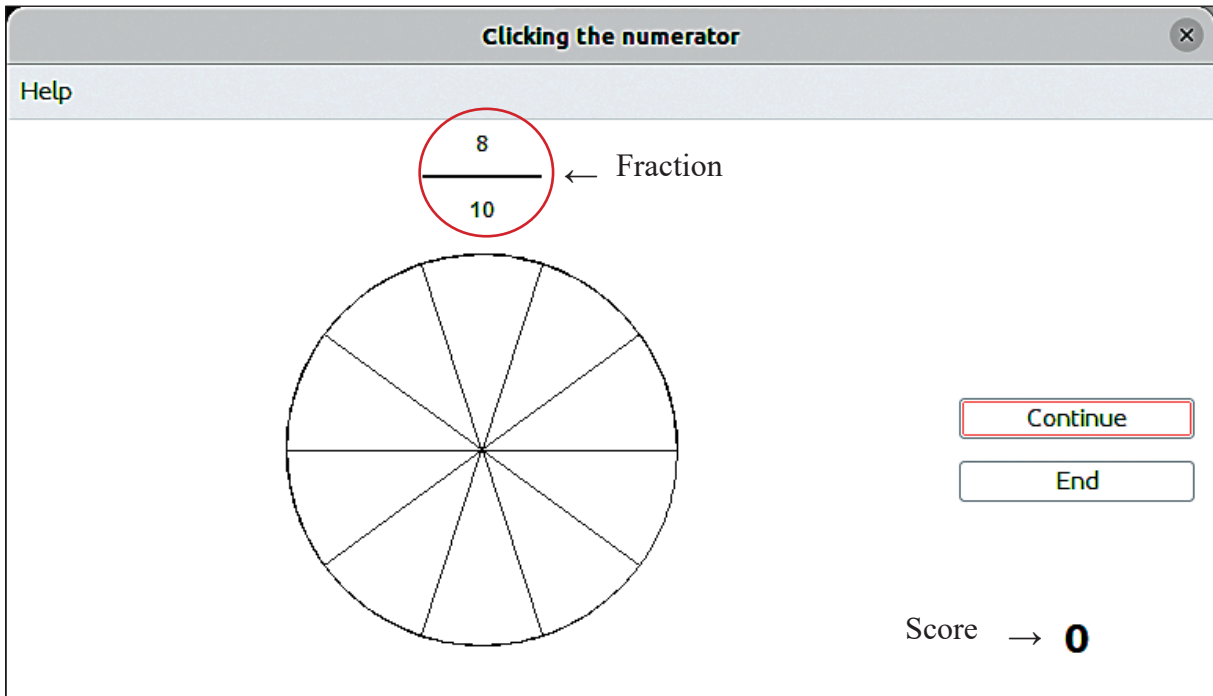


Fig 7.4 JFraction Lab Window

Proceed by Providing the Correct Answer

You can proceed to the next activity in JFractionLab only if you give the correct answer for each activity. The answer may sometimes be numbers or symbols

Open this activity and note down below how many parts the given circle is divided into.

-

Didn't you notice that the denominator of the fraction displayed in the window is the same number? Now, based on its numerator, you need to colour the circle sections.

Observe the picture and note down below how many parts need to be coloured.

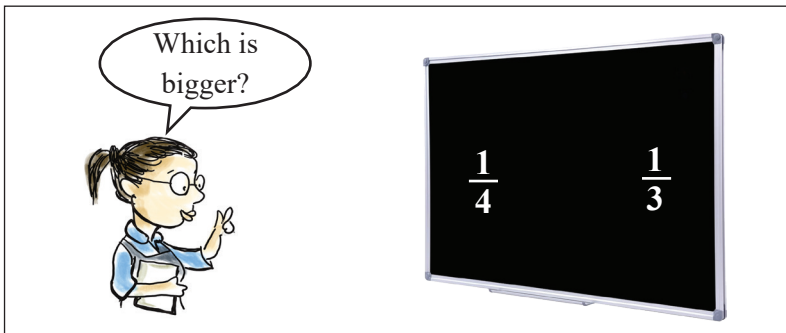
-

Then, click on the circle and colour the specified sections.

You will also notice that you get a score for each correct answer.

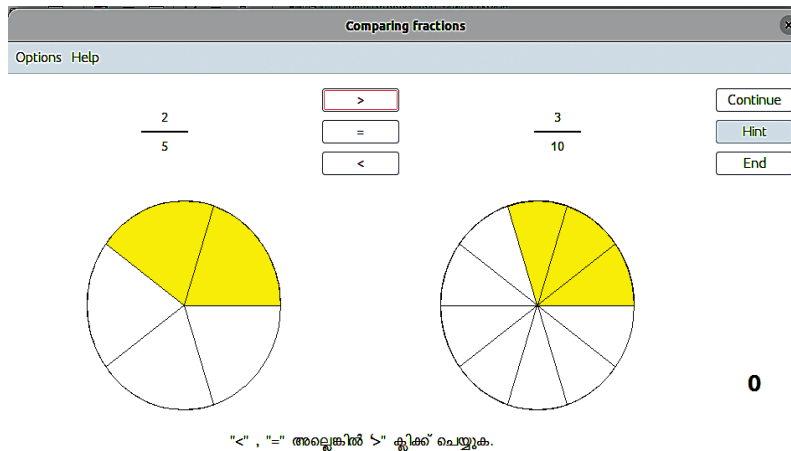
Click on "Continue" in the window and practice the following activities in this section.

Let's Compare Fractions



You have practised all the activities in the section "Clicking the Numerator," haven't you? Now, let's look at the section called "Comparing Fractions," which is the third activity. Observe the pictures and the fractions they represent in the window (Figure 7.5)

Analyze the coloured portion in the circle, find out whether the circle on the left is bigger, smaller, or equal to the one on the right, and click on the appropriate symbol (<, >, =).



Try out the other games in the group, ok



Fig. 7.5 Activity to Compare Fractions

Let's Find Equivalent Fractions.

Look at the coloured portions in the circles in Figure 7.6. It is clear that both have equal parts coloured, isn't it? Now, look at how the fractions representing these are written.

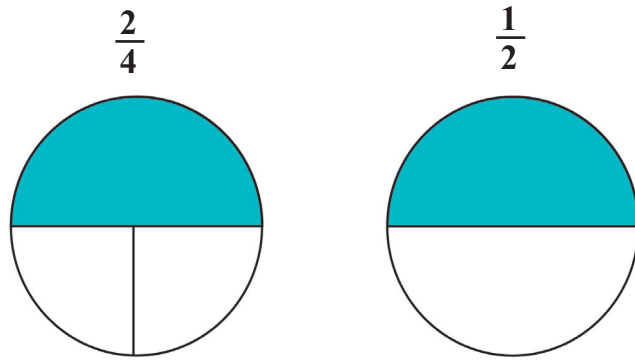


Fig. 7.6 Equal Parts

That is, you can understand that $\frac{2}{4} = \frac{1}{2}$. These are equivalent fractions.

Check if there is an activity related to equivalent fractions in JFraction Lab.

The activity called "Extending Fractions" is for this, isn't it? Open it and see.

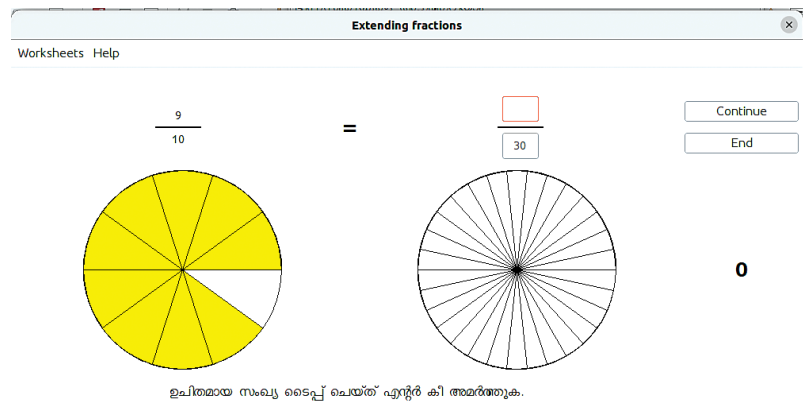


Fig. 7.7 Activity for Finding Equivalent Fractions

In this activity, you have to type the fraction equivalent to the fraction given on the left side in the box on the right side. Find which number is to enter in the numerator by counting the circle parts.

Type the number and press the Enter key.

Complete the other activities in this way.

Let's Find the Simplest Form of Fractions

In Figure 7.6, you saw that the fractions $\frac{2}{4}$, $\frac{1}{2}$ are equivalent, didn't you?

Equivalent Fraction

You can find the equivalent fraction of a fraction by multiplying both the denominator and the numerator by the same number.

Here, if you divide both the numerator and the denominator of the fraction $\frac{2}{4}$ by 2 you will get the fraction $\frac{1}{2}$.

Therefore, $\frac{1}{2}$ is the simplest form of the fraction $\frac{2}{4}$.

There is an activity in JFractionLab to find the simplest form of fractions. Open the activity called "Reducing Fractions" and complete the activity according to the instructions.

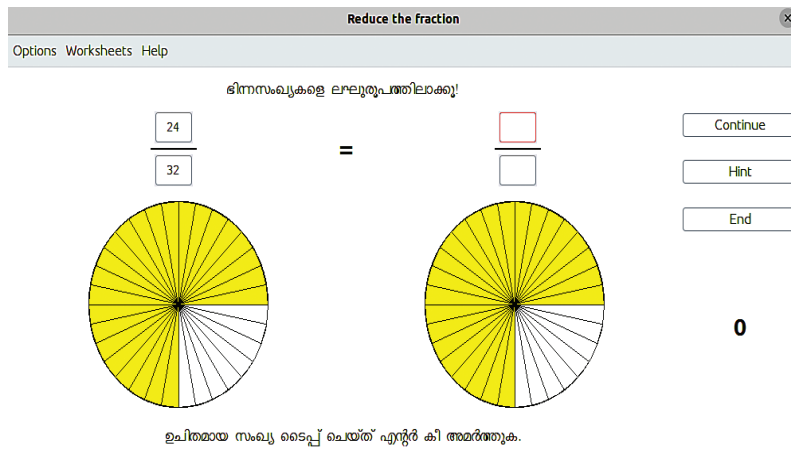


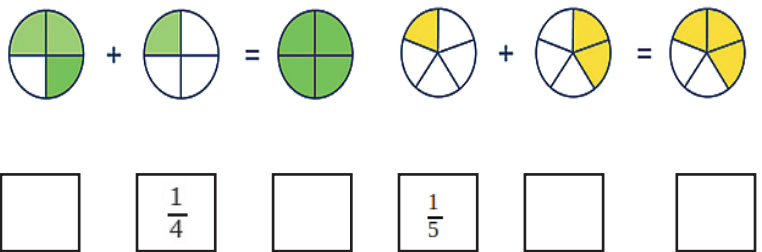
Fig. 7.8 Activity to Find the Simplest Form of Fractions

Simplest Form of Fraction

If you divide both the numerator and the denominator by the same number, you can find the simplest form of that fraction.

While Adding Fractions

Write the fractions representing the coloured portions in the below given pictures in the missing boxes.



Based on the colours given to the circle parts in the picture above, identify the fraction and fill in the boxes.

Observe the characteristic of the obtained answer, and try to understand how to find the sum of fractions, won't you?

What if we practice more through the "Adding Fractions" activity in the JFractionLab software?

Try out the activity as shown below

To Find the Sum of Fractions

- Open the activity called "Adding Fractions" and read the instructions in the first window.

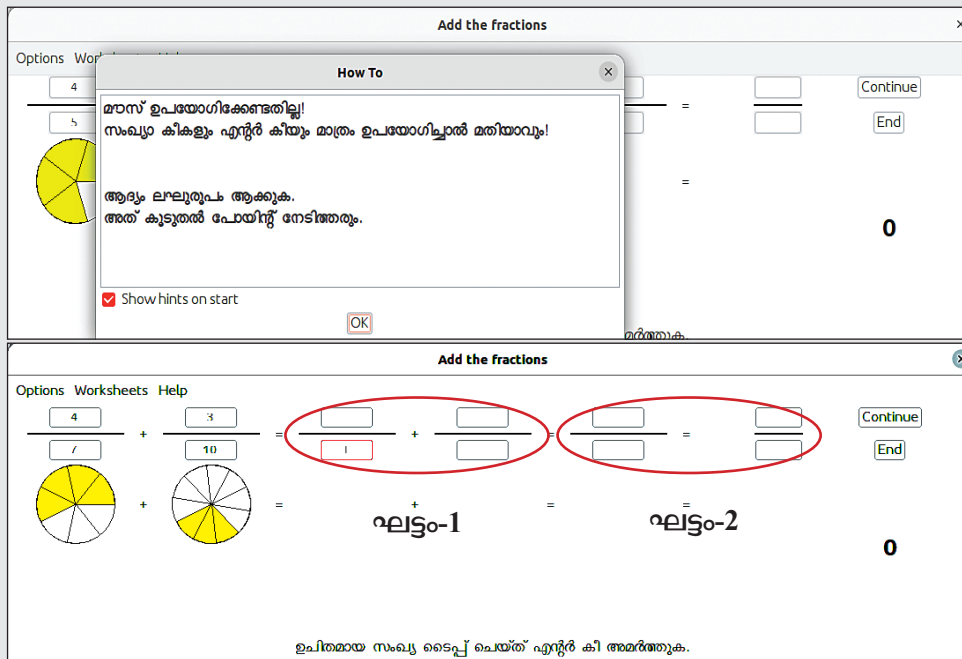


Fig. 7.9 Activity to Find the Sum of Fractions

- Two fractions and the figures representing them are initially displayed.
- The answer needs to be reached in two stages.
- In the first stage, make the denominators of both fractions the same. For this, type the number and press the Enter key.
- Then, enter the corresponding numerators one by one.
- In the second stage, calculate and type the sum of the numerators of the two fractions with the same denominator.
- Find the simplified form of the obtained sum and enter it in the adjacent columns
- If the answer is correct, the comment "That is Correct" appears below.
- Click Continue to do each activity.

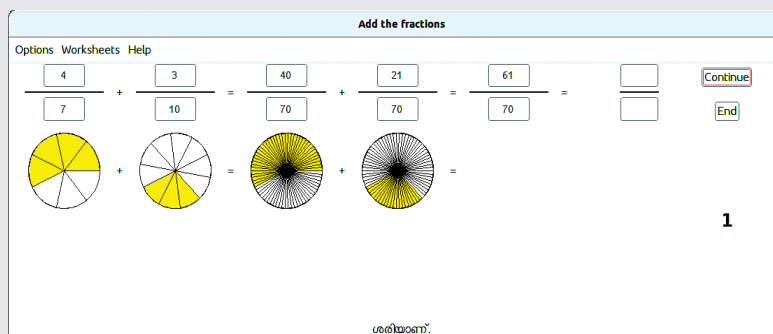


Fig. 7.10 When the Sum of Fractions Obtained

You have practised adding fractions. Now, calculate and see how much distance Kiran travels daily, as mentioned at the beginning of the lesson.

- Distance he goes on Cycle : $\frac{3}{4}$
- Walking distance : $\frac{1}{4}$
- Running distance : $\frac{1}{2}$

Total $(\frac{3}{4} + \frac{1}{4} + \frac{1}{2}) = \dots\dots\dots + \dots\dots\dots = \dots\dots\dots$

The total distance Kiran travelled is double the fraction that was obtained as the sum. Now find its simplest form as well.

Now you practice other fraction-related activities in JFractionLab.

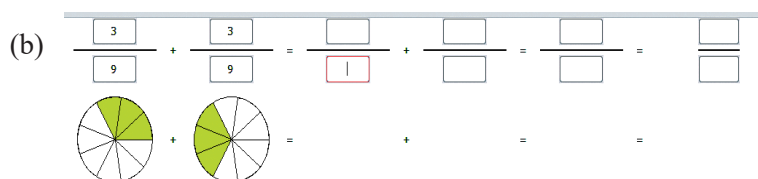
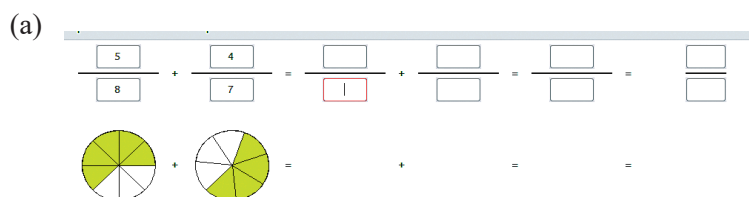


Let's Assess

- Which of the pairs given below have equal parts?



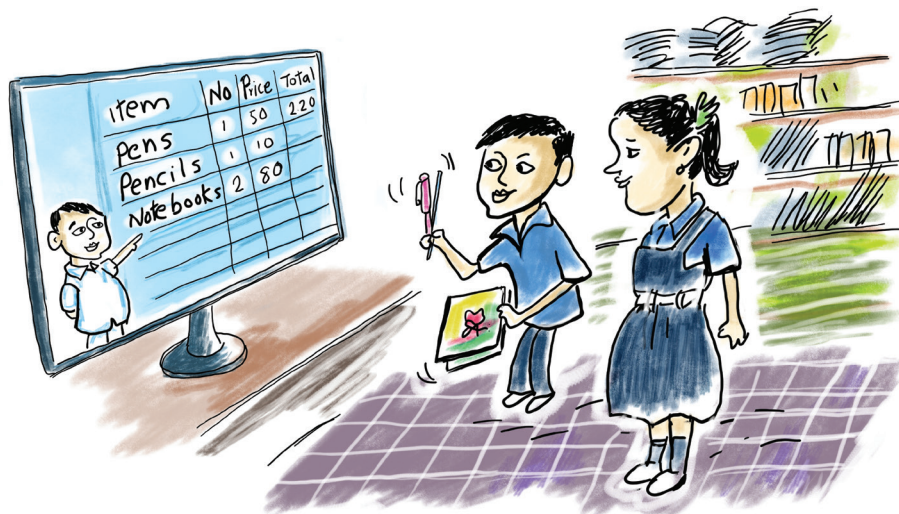
- Some activities from JFraction Lab are given below. Find and write their sum.



Extended Activities

1. Complete all the activities in JFractionLab that involve finding the difference between fractions.





Chapter 8

Let's Use Spreadsheets

The school's 'Student Store' duty is assigned to Ishana and Arun this week. The store has notebooks, pens, pencils, erasers, etc. They keep the record of sales in a notebook. The difficulty of finalizing the store's accounts at the end of the week is a topic of discussion in the class.

Ishana's eighth-grade sister suggested to her that the LibreOffice Calc software could be used to easily record and add up the accounts. Subsequently, with the teacher's help, they decided to use the spreadsheet software to maintain the store's accounts..



Spreadsheet Software

A spreadsheet is an application software that helps to organize, calculate, and analyse data containing numbers and texts in table form. Spreadsheets can also be used to create charts and diagrams based on the data.

It is a large digital table containing rows and columns. Many different sheets can be created in a spreadsheet file. A spreadsheet is also called a worksheet. Examples of spreadsheet software include LibreOffice Calc, MS Excel, Apple Numbers, and Google Sheet.

Let's see how to prepare and maintain the store's sales records using LibreOffice Calc.

Let's Get Familiar with LibreOffice Calc

Open LibreOffice Calc on your computer. The window you get when you open Calc is shown in Figure 8.1. Examine the facilities and techniques in Calc.

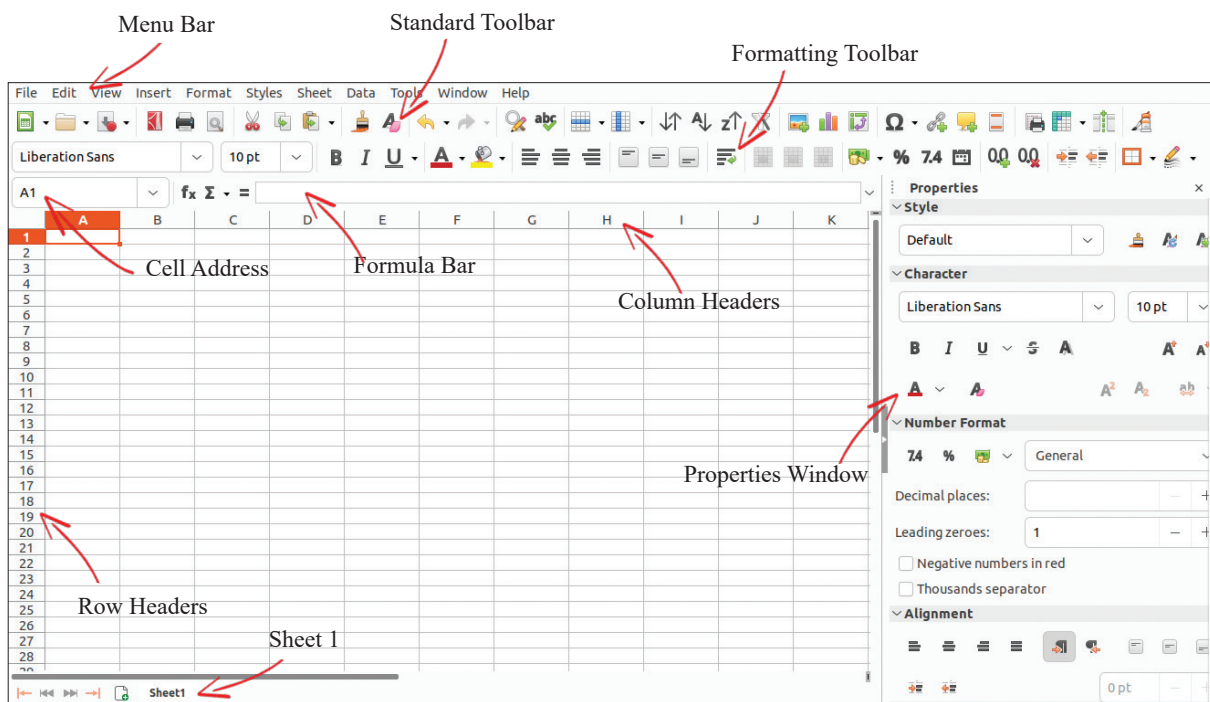


Fig 8.1 Libre Office Calc Window

Rows and Columns in a Spreadsheet

Each sheet in a spreadsheet software is divided into a grid form with rows and columns. The rows are numbered in the order of 1,2,3,4,..., and the columns are represented by the letters A, B, C, D, E,... The rectangular boxes formed by the intersection of columns and rows are called cells.

The name of a cell, or the cell address, is formed by combining the name of the column and the name of the row.. For example, the name of the selected cell in Figure 8.2 is C5. It is named C5 because it is the cell in the part where column C and row 5 meet. The name of the selected cell is written in the Cell Address box above column A (Figure 8.2).

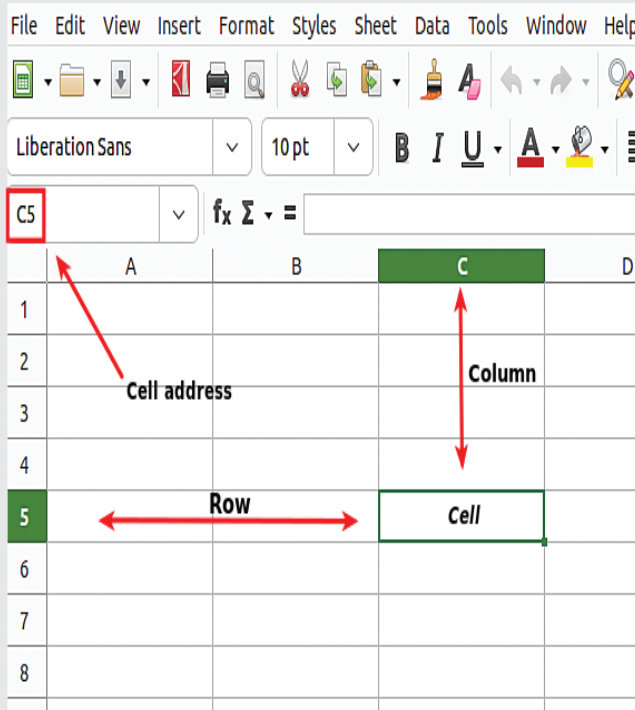


Figure 8.2 Row, Column, Cell in LibreOffice Calc



Tables in Ancient Times

Since ancient times, humans have been recording and storing information in tables - that is, grids of columns and rows. The picture shows a clay tablet used by the Babylonians BC 1800 to store information.



Now are familiarised with the tools and facilities in the Calc.

When you open the Calc sheet, the first cell (A1) is active. Click on other cells and check how the cell address changes.

Figure 8.3 shows the page of the notebook where Arun and Ishana wrote the accounts.

Looking at the picture, find out how many columns and rows should be used when adding this table in Calc.

Serial No.	Item	Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance in stock
1	Pens	220	10	14		
2	Pencils	140	8	15		
3	Notebooks 100 pages	50	18	16		
4	Notebooks 200 pages	50	35	4		
5	Erasers	100	3	18		
6	Marker Pen	50	10	19		
7	White paper (bundle)	50	20	5		
	Total					

Fig. 8.3 Model of Accounts Recorded in the Notebook

For the 7 items for sale in the store, there should be 7 rows, 1 row for headings and 1 additional row for writing the total amount.

What About Columns?

Add Data (Data) in Calc Sheet

Let's see how to add the list written in the notebook to the Calc sheet. The header of each column should be typed in first.

You can start adding data in A1 cell itself.

- Serial Number is to be typed first. Let's shorten it to Sl. No.

- Type in Item (item) in B1, Quantity in stock (the number of each item in stock) in C1, and so on for all the headings. (Figure 8.5)
- To move the selection from one cell to another, simply click the mouse in the new cell. You can also use the Arrow keys on the keyboard to reach the new cell.



Fig. 8.4 Arrow keys

	A	B	C	D	E	F	G	H
1	SL No	Item	Quantity in	Price per It	Quantity So	Total Sales	Balance	Quantity in stock
2								

Fig. 8.5 When Data is Added in LibreOffice Calc

All the headings to be included in the first row in 7 cells are typed.

Are all the things you typed in C1, D1, E1 etc. visible in the included headers? Check if you can see the information included in each cell when you click on each cell. (Fig 8.5)

What is the way to display the contents of the cell permanently?

For this, click on that cell and then click on the Wrap Text tool in the formatting toolbar (Figure 8.6).



Fig. 8.6 Wrap Text tool in LibreOffice Calc

To arrange the contents of all the cells in a column (Column) in this way, click on the column headers. Then the entire column is selected. Then click on the Wrap Text tool.

	A	B	C	D	E	F	G
1	SL No	Item	Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance Quantity in stock

Fig. 8.7 When Wrap Cell is Done

How do you arrange all the cells in a row in this way? Try it.

Different Types of Data

In the table in Figure 8.7, there are records in the form of text and numbers. Data consisting of only text or a combination of text and numbers is called a Label, and those containing only numbers are called Values. In addition, data can be added in the form of formulas in spreadsheet cells.

Don't forget to save the work you have done so far, ok?

Now add the remaining information from the notebook to the spreadsheet. When you add it, note which part of the cell the content is aligned to. (Figure 8.8)

- The text you type is joined to the left side of the cell.
- The number you type

	A	B	C	D	E	F	G
1	SL No	Item	Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance Quantity in stock
2	1	Pens	220	10	14	140	
3	2	Pencils	140	8	15	120	
4	3	Notebooks	50	18	16	288	
5	4	Notebooks	50	35	4	140	
6	5	Erasers	100	3	18	54	
7	6	Markers	50	10	19	190	
8	7	White paper	50	20	5	100	
9		Total Collection					
10							

Fig. 8.8 When the list is added to Libre Office Calc

To Change the Width of Columns

The data in cells B4, B5, etc. in the Item column of the table is not fully visible (Figure 8.8). In such cases, the problem can be solved by increasing the width of the B column. For this, simply click and drag the double-headed arrow that appears when you place the mouse pointer between the headers of the B and C columns. Try to increase the height of the rows in the same way.

B	C	
Item	Quantity in stock	Price per Item
Pens	220	
Pencils	140	
Notebooks	50	

Find the Total of each Item

Let's see how to use Calc to find the amount received for each item and the total amount received.

We know that to find the amount received for each item, we need to multiply the price of the item by the number of sales.

Look at the hints given below to find the total amount received from the sale of the first item, pen.

- The price of one pen is recorded in cell D2 and the number of pens sold in cell E2.

- We know that multiplying the price of one pen by the total number of pens sold will give the total amount received from the sale of the pen. For this we can use the formula $D2 \times E2$.
- The product should be obtained in the F2 cell below Total Sales
- For this, type the formula given below in the F2 cell and enter it.

=D2*E2

Didn't you get the multiplication result in the F2 cell when you entered the formula?

Now select the F2 cell and observe the formula bar. What do you see?

Formula

A mathematical equation used in Calc is a formula. You can type the formula in the formula bar or directly in the cell.

If you enter the formula $=10+5$ in cell A1, then 15 will be displayed in cell A1 itself. If you click on A1, you can also see the formula in the formula bar.

A1			
	A	B	C
1		15	

Formula Bar

A1				
	A	B	C	D
1	SL No	Item	Quantity in	Price per It
2				Quantity Sof
3				

The data in the active cell is displayed in the formula bar. The formula bar can be used to view and edit the values and formulas in the cell

Adding Symbol

In Calc, the Asterisk (*) symbol is to be added between two numbers to multiply them. When you enter the formula in the cell, the symbol (=) should be added before the formula.

Now, there is no need to repeat the same process to see the amount of other items. By using the Fill Handle facility, the formula added in the first cell can be included in other cells.

For this, do the following.

To Use the Fill Handle Technique

- Click on the cell where the multiplication result is obtained (here, cell F2).
- You can see the Fill Handle symbol at the bottom right of the cell.
- Click on it and drag it down to the last cell where the multiplication result is needed (here, F8). Thus the cells will be filled with the sales amount received for each item..

Quantity Sold	Total Sales	
14	140	

Find the Total Amount Received

Now, let's find the total amount received for all items. That is, the total sum of cells from F2 to F8. How do we find it?

Here, the total amount needs to be entered in cell F9 of the ninth row. What would be the formula to use in this cell to find the sum ?

$$=F2+F3+F4+F5+F6+F7+F8$$

When finding the sum of more cells, it becomes difficult to enter the address of each cell in this way, doesn't it?

To overcome this, the technique included in spreadsheet software is the tool called **fx** **Σ** = tool

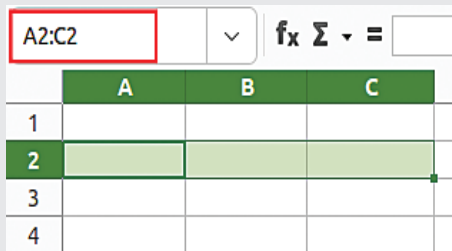
To perform the operation using this tool, after selecting the cell (F9) where the total is to be obtained, simply click on the 'Sum' option in the menu that appears when you click on the **Σ** tool

- When using Sum, the range of cells for which the sum is to be found appears as a function in the respective cell and the formula bar. As you press the Enter key, the result will appear in the respective cell.

Now, try changing the price or quantity of any item. Observe the change that occurs in the result.

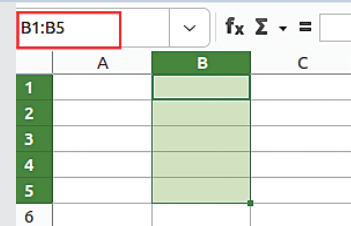
Cell Ranges

A group of more than one cell is called a cell range. Compare selecting 5 cells in the B column (Figure 8.9) with selecting 3 cells in the A, B, and C columns of the second row (Figure 8.10).



	A	B	C
1			
2			
3			
4			

Fig. 8.10 Cell Ranges



	A	B	C
1			
2			
3			
4			
5			
6			

Fig. 8.9 Cell Ranges

Did you notice that in the first one, the range is B1:B5 and in the second one, the range is A2:C2? The cell range is indicated by combining the address of the first cell and the address of the last cell in the selected cells. Example: B1:B5.

Calculate Stock Balance

The total number of items in stock when the store opens each day is given in column C (Quantity in stock). However, it is necessary to find out how many items remain after sales when the store closes. This is essential for storing the items for the next day if needed.

C	D	E	F	G
Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance Quantity in stock
220	10	14	140	
140	8	15	120	
50	18	16	288	
50	35	4	140	
100	3	18	54	
50	10	19	190	
50	20	5	100	

Fig. 8.11 Total Stock

Using the tools you have learned so far, try to find the balance stock in column G. Write the formula used for this in the box given below.

When a Formula is Given

If you make any changes to the data in the cell ranges included in a formula added to the Calc sheet, the result will automatically change accordingly.

Let's Give a Title

Let's complete our spreadsheet activity by giving it a suitable title. We can give the title "School Store Sales Summary," which means a summary of the school Store Sales.

The title should appear at the very top of the prepared sheet, right? For this, a new row needs to be inserted above the first row.

To Add a New Row in Calc

- Which row should the new row be inserted above? Right-click on the header of that row (here, the first row).
- From the menu that opens, click on "Insert rows above." (Figure 8.12)
- Now, a new row will be inserted above the first row, and the row that was previously the first will have become the second. Type and insert the title in the first cell of the new row.

	A	B	C	D	E
1			Quantity in stock	Price per Item	Quantity Sold
2			220	10	14
3			140	8	15
4			50	18	16
5			50	35	4
6			100	3	18
7			50	10	19
8			50	20	5
9					

Fig. 8.12 Insert Rows

Type and insert the title in the first cell of the new row.

	A	B	C	D	E	F	G
1	Sales summary						
2	SL No	Item	Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance Quantity in stock

Fig. 8.13 Title, Before Using Merge Technique

Now, the title is only in cell A1 (Figure 8.13). It should be common to all columns in the sheet, shouldn't it? For this, we can use the Merge function.

To Merge Cells

- Click on the first cell to be merged (here, A1), then, while holding down the Shift key, click on the last cell (G1). (This selects the cells from A1 to G1.)
- Then, click on the "Merge cells"  icon in the formatting toolbar.
- Now the title spans across all the cells. (Figure 8.14)

	A	B	C	D	E	F	G
1	School Store Sales summary						
2	SL No	Item	Quantity in stock	Price per Item	Quantity Sold	Total Sales	Balance Quantity in stock

Fig. 8.14 Title , After Using Merge Technique

Shall we adjust the height of the row containing the title using the method we learned earlier? Also, make the table's title attractive by adjusting the font size and colour appropriately.

Now everyone can easily record and analyze the information in a table using Calc. In this way, many operations can be done and saved in Calc using mathematical equations.

Facilities in Calc Software

Many mathematical operations can be done using LibreOffice Calc. Calc can be used to easily perform operations like percentage, average, etc., and to analyze information by converting it into various types of graphs. You will understand how to do such operations in higher classes.



Lets Assess

- Which of the following is an example of spreadsheet software?
 - (a) LibreOffice Impress
 - (b) LibreOffice Calc
 - (c) LibreOffice Writer
 - (d) LibreOffice Draw
- What is Σ used for in Calc?
 - (a) To add numbers in cells
 - (b) To multiply numbers in cells
 - (c) To merge cells
 - (d) To display all data in cells
- What does the icon  in the Calc formatting toolbar indicate?
 - (a) To merge cells
 - (b) To wrap text
 - (c) To save
 - (d) To bold text
- Formulas in spreadsheets begin with symbol?
 - (a) =
 - (b) %
 - (c) Σ
 - (d) -
- In the formula =SUM(F2:F8) what does the content within the brackets indicate?
 - (a) Columns
 - (b) Rows
 - (c) Cell Range
 - (d) Cell Header



Extended Activities

1. In the prepared spreadsheet, find the sales percentage of each item and record it in column H1.
2. Convert the scores obtained by the students on your bench for the half-yearly exam into a table in LibreOffice Calc as shown below.

Sl.No.	Name	Malayalam	English	Maths	Science	Social Studies	Total Marks	Average





Chapter 9

Aerial Distance

Soorya is thinking about the plane that flew over her house. How does the plane go to each place without getting lost in the sky, even though there are no roads like on Earth?

Haven't you had such a doubt too?

This is made possible with the help of digital maps that accurately record the location of each region of the Earth.

Let's see how places are marked on digital maps and how distances between places are found?

The Marble application on our computer is a software that helps in such activities. Let us do these activities using Marble.



MARBLE

Marble is a virtual globe software. It shows three-dimensional shapes of the Earth and some other planets.

Marble is also used to calculate the air distance between two places, plan travel routes, find the latitude and longitude of a place, and explore three-dimensional landscapes.



MARBLE

Let's Get to Know Marble

The window displayed when opening the Marble software is shown in Figure 9.1. By clicking and dragging the globe with the left mouse button, you can view it from all sides. Clicking with the right button allows you to rotate it left or right. The globe's size can be adjusted using the mouse scroll wheel or the zoom tool in the window.

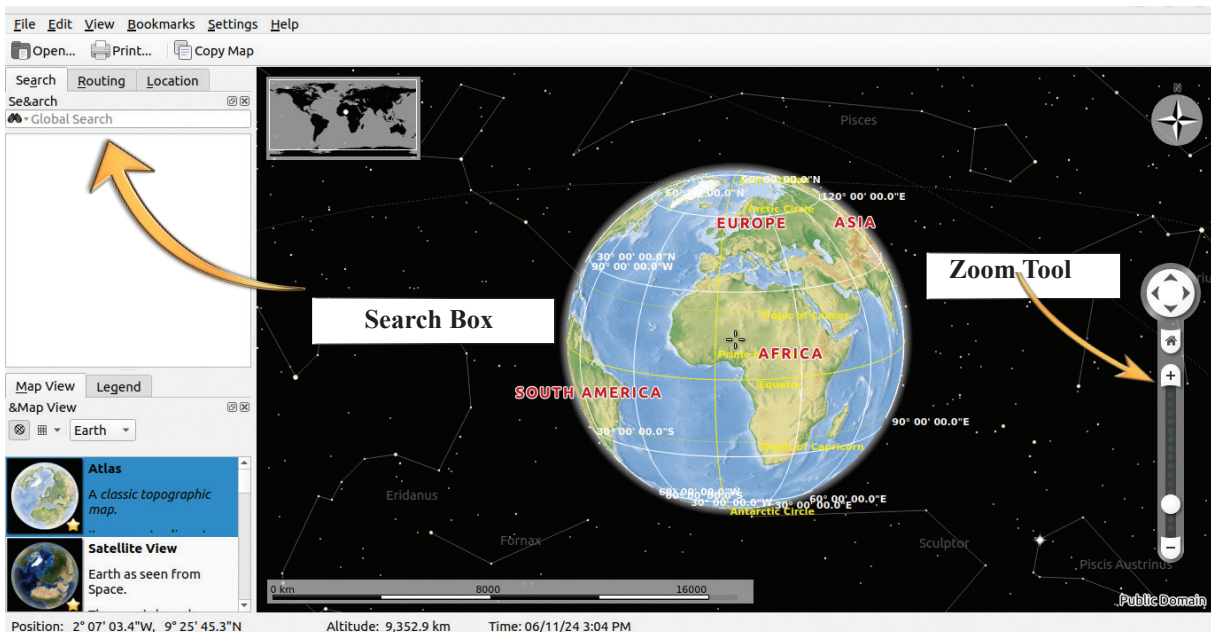


Fig. 9.1 Marble Window



Latitude and Longitude

You'll notice two types of lines on the globe: lines running from top to bottom connecting the poles, and horizontal lines encircling the globe. These imaginary lines on the map help us pinpoint the exact location of any object or region on Earth. The vertical lines are called latitude lines, while the horizontal ones are known as longitude lines.

Find Capital City of a Place

How do you locate a specific place in the Marble software?

Let's take our state capital, Thiruvananthapuram, as an example.

To find it, open the Marble software and follow the steps below (see Figure 9.2)

Finding a Location Using Marble Software

- In the Marble window, click on the "Search" tab on the left side. In the text box that appears, type the name of the place you want to find (e.g., Thiruvananthapuram) and press Enter.
- Use the slider to zoom in on the globe until the location is clearly visible.

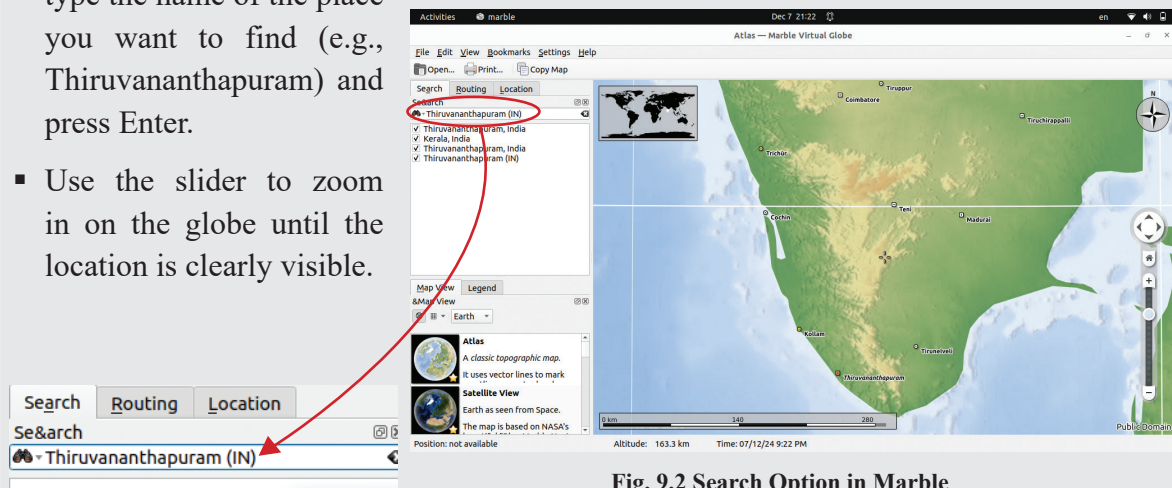


Fig. 9.2 Search Option in Marble

Have you found Thiruvananthapuram ?

Is it only enough to simply see the location on the globe?
Shouldn't we also understand how this place is marked?

We've discussed how a place's position on a map or globe is determined by its latitude and longitude.

Let's see how to find this information in Marble software.

For example, to find the latitude and longitude of Thiruvananthapuram, click on the box next to "Thiruvananthapuram" that shows the location details (see image 9.3). Now, write down the latitude and longitude you found:

- Longitude
- Latitude



Fig. 9.3 To Find Latitude and Longitude



Determining Location

The location of any place on the surface of the earth is determined on the map based on latitude and longitude.

The combination position of these two lines helps us to determine the exact location of a particular place.

You have understood how to find the latitude and longitude of Thiruvananthapuram.

Now, just as you did now, find the latitude and longitude of other places you are familiar with and complete the table given below (Table 9.1).

Place	Latitude	Longitude
Kolkata		
Delhi		
Mumbai		
Dubai		
Sydney		

Table 9.1 Latitudes and longitudes of some places

If we can find the location of any place using latitude and longitude in this way, can't we find the answer to Surya's doubt mentioned in the first part of the lesson?

Measuring Air Distance

Pilots accurately navigate aircraft to each destination along designated air routes with the aid of digital maps and other systems that mark the latitude and longitude of every location.

Apart from latitude and longitude, Marble software can also be used to find the air distance between two places.

Find out the air distance from Thiruvananthapuram to Mumbai using Marble.

Measuring Aerial Distance Between Two Places on a Marble

- Use the search function in Marble to find the starting location for which you want to measure the distance (e.g., Thiruvananthapuram).
- Then, right-click on the box next to the name of that place and click on the “Add Measure Point” option.
- Next, find the destination location by searching for it in the search window (e.g., Mumbai).
- Then, right-click on the box next to the name of that place and click on the "Add Measure Point" option again.
- The aerial distance between the two places will now be visible on the map. (Figure 9.4)

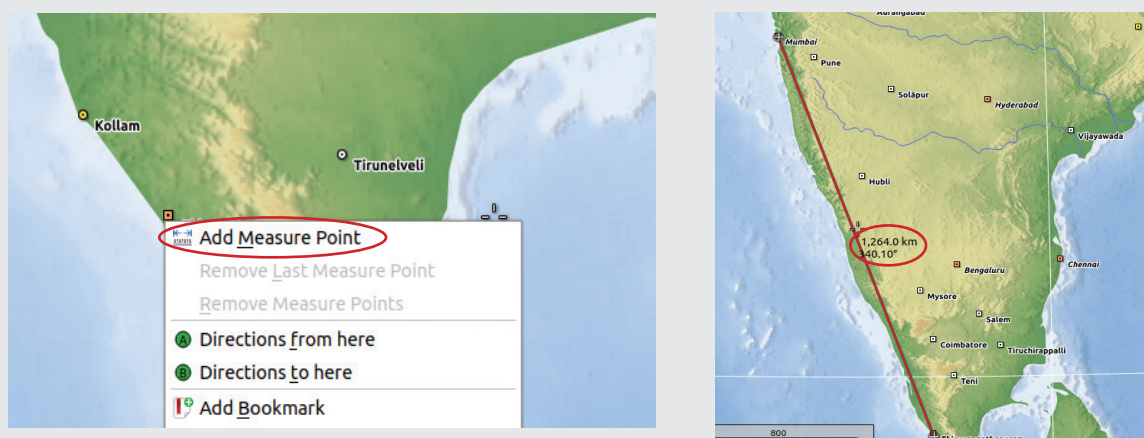


Fig 9.4 To find the astronomical distance between two places

Places	Aerial Distance
Mysore - Delhi	
Salem - Chennai	

Aerial Distance

Air distance refers to the distance travelled in a straight line between two places. This distance is usually measured in kilometres or miles.

Air distance is used by ships and airplanes to determine direction, calculate the distance between places, calculate the distance of stars and planets, and prepare travel plans.

**Let's Assess**

- Find the following places using Marble software and find their latitude (Latitude) / longitude (Longitude).

(a) Pune	(b) Amravati
(c) Nagpur	(d) Hong Kong

- Using Marble, find the aerial distance from any place in your district to Hong Kong.

**Extended Activities**

1. In 1498, the Portuguese navigator Vasco da Gama discovered a new sea route to India by sailing around the African continent. He first landed at the Kozhikode port in Kerala. Use Marble to find the aerial distance of this journey (Lisbon - Kozhikode).





Chapter 10

The English Lab

Have you heard the story of Akku, who overcame her anger and stubbornness through drawing?"

Nisha Teacher is presenting a new story in the E-Cube English Language Lab.

"Who is that, Teacher?" All the children were excited to hear the story.

We have already been introduced to some interesting English stories in the E-Cube Language Lab in previous classes. Let's listen to the story of that stubborn Akku, as told by the teacher.

To Log in to E cube

In the E-Cube Language Lab, the activities for each class are organized into different levels. The activities for the sixth grade are included in Level-3. The username and password for accessing this level are arranged according to each student's class, division, and roll number. Accordingly, the username and password for the first student in class 6A will be 6a1.

Let's Listen to the Story

Akku's story is in the third level. Open the language lab software on the computer and, with the teacher's help, log in to this level. After logging in, listen to the story.

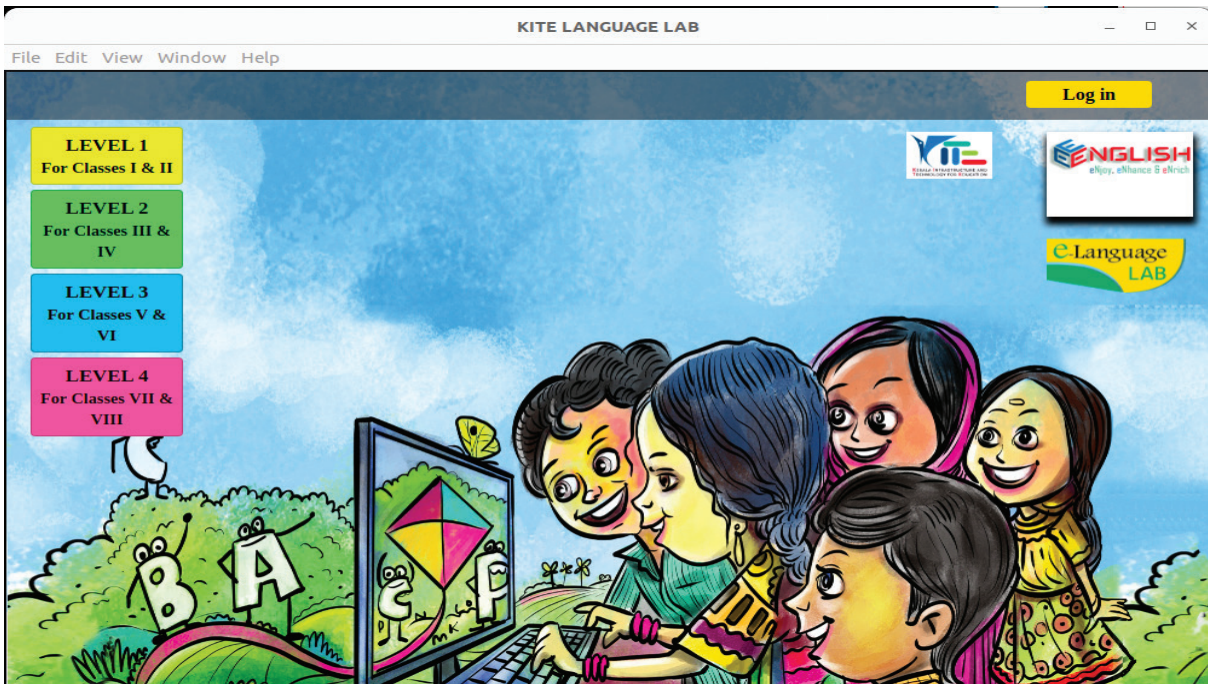


Fig. 10.1 E cube Language Lab – Main Window

To Listen to Akku's Story in the E-Cube Language Lab

- From the window containing the stories that appear when you log in, find the story "ANGRY AKKU".
- Next, from the list below it, click on the link "Play Story (6.2)".
- You can listen to the story from the video window that opens.
- Next, click on the "Listen Story" and "Read Story" links to utilize the facilities for listening to and reading the story (Figure 10.2)

VI ANGRY AKKU

- Listen Story (6.1)
- Play Story (6.2)
- Read Story (6.3)
- Find new Words(6.4)
- Record the Conversation (6.5)
- Choose the Appropriate (6.6)

Fig. 10.2 Activities Arranged in E cube Software

Which is more interesting, watching the story in video form or reading it? Observe the presentations you get when you click on the "Play Story" and "Listen Story" links. We know

that things like expression of emotions, voice modulation, and appropriate pauses, are factors that make the presentation of a story attractive.

English speaking style also incorporates the peculiarities of pronunciation and intonation of words. Remember that repeatedly listening to these presentations will help improve your English speaking as well.

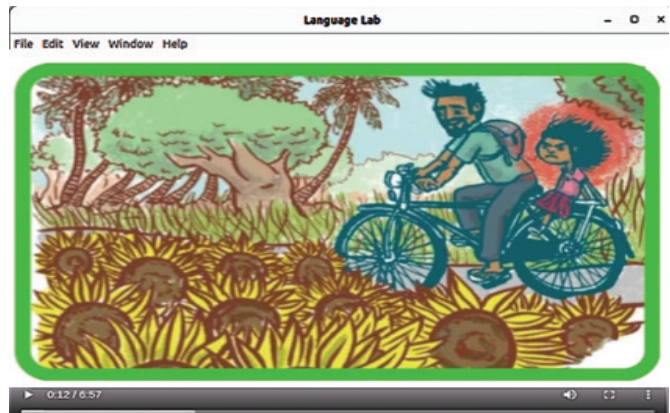


Fig. 10.4 Find New Words Window

Do you understand what the story is through the presentation? If there are unfamiliar English words in the story, click on the link [Find new Words\(6.4\)](#) and see. (Figure 10.4)

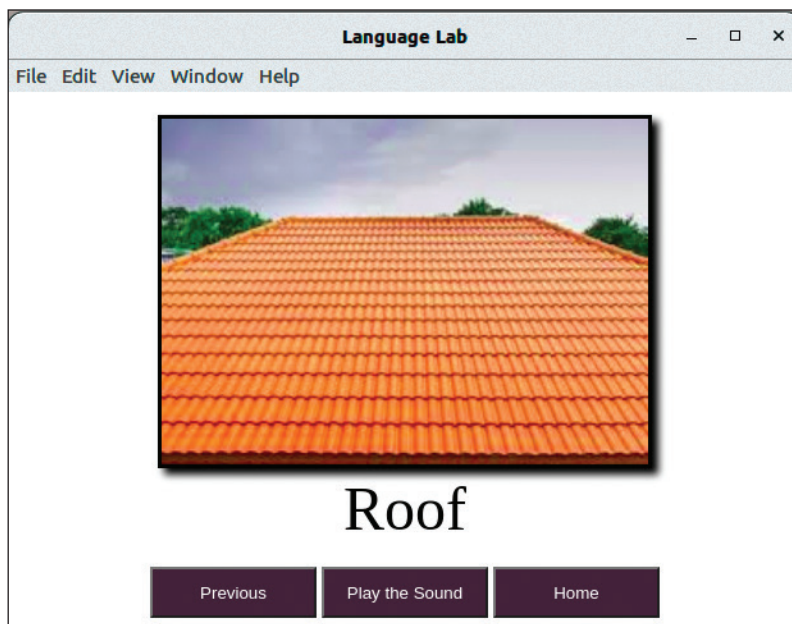


Fig. 10.4 Find New Words Window

Which button should be clicked to hear the pronunciation of the word?



Didn't you like Akku's story? Now try the activity below named 'Choose the Appropriate'.

Choose the Correct Answer.

Here are some statements related to Akku to be completed. Try filling in the missing part.

To do Choose the Appropriate

- Click on the **Choose the Appropriate (6.6)** button.
- Read the statements in the window that opens. (Figure 10.5)
- To fill in the missing part, click on the part you want to fill in.
- Then, select the correct answer from the drop-down menu that appears.
- Once the activity is completed, click "Finish Attempt".
- If you want to try again, you can click "Return to attempt". Otherwise, click "Submit all and finish" to submit the activity to the teacher.
- With this, you will get a window showing the marks for the activity you have done.

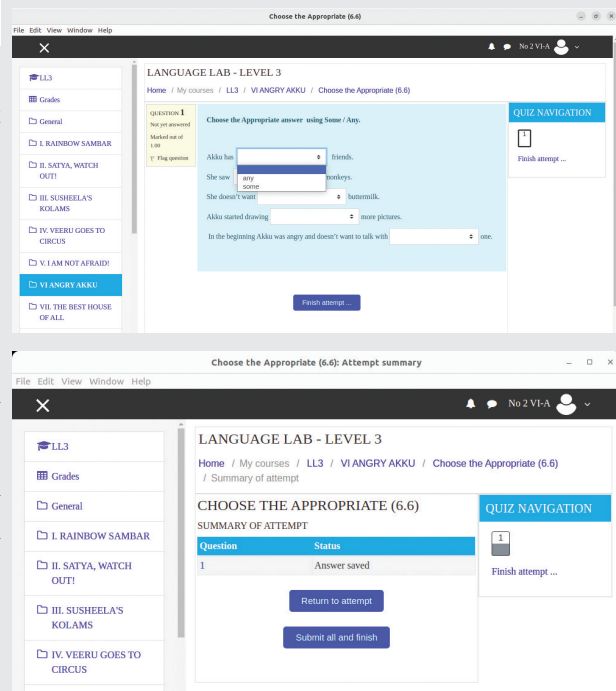


Fig 10.5 Choose the Appropriate Window

You've completed the activity. You've already been introduced to words like Some and Any. These are known as Quantifiers. Write down the difference between them below.

- is used in positive sentences.
- is used in negative sentences and questions.

You understand that one reason for Akku's anger was that Bikku laughed loudly when he saw Akku fall. Do you also get angry when something like that happens? If so, what would you say to them? Try saying it aloud.

To Improve the Activity

Once the activity is completed, you can see the marks (e.g., 10.00 out of 10.00 (100%)) awarded according to your answers. If you want to improve the activity you have completed, click on "Re-attempt quiz". In the window that opens, you can try the activity again.



Language Labs

Language labs are being widely used to improve language learning. Language labs are helpful for acquiring the basic skills of language learning (Listening, Speaking, Reading, Writing). A major feature of language labs is that it is possible to select activities according to each student's learning pace. The E-Cube English Language Lab, developed by KITE for the Department of General Education based on completely free software, can be used to enrich the English language proficiency of students.

Let's Record

To record the conversation between Akku and Bikku, first write the conversation in a notebook.

What all things should be taken care of when recording it, which are different from writing the conversation? Isn't the tone and expression of the voice different when speaking in anger?

Imagine one person as Akku and the other as Bikku, and the two of you together, try recording their conversation on the computer.

To Record the Conversation

- To record, click the **Record the Conversation (6.5)** button.
- In the window that opens, click **Add submission**
- In the Editor window that appears, click the microphone button 
- In the "Record Audio" window that opens, click **Start recording** to begin recording. (Figure 10.6)
- Click the **Stop recording** button to complete the activity.
- To save, click the **Attach recording** button. (Figure 10.7)
- In the window that follows, click the **Save changes** button to submit it to the teacher.

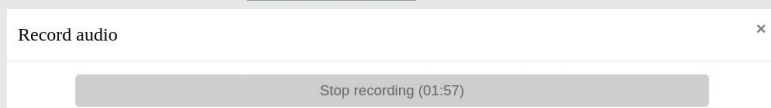


Fig. 10.6 Recording Window

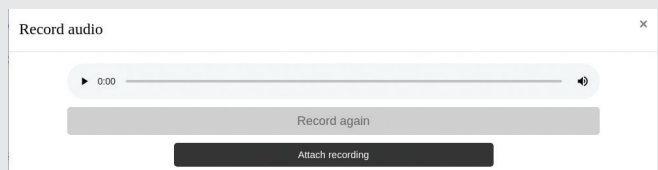


Fig. 10.7 Attach button in E cube

As part of the extended activities in the English textbook, try doing the activities related to other stories in the E-Cube Language Lab.



Let's Assess

- When doing activities in the E-Cube Language Lab, what is the purpose of the microphone button 
 - (a) To record video
 - (b) To record audio
 - (c) To listen to the pronunciation of words
 - (d) All of these
- Is it possible to further improve a recording activity completed in the E-Cube Language Lab?
 - (a) There is no opportunity to improve.
 - (b) There is an opportunity to improve only before saving.
 - (c) There is no opportunity to improve after submitting.
 - (d) There is an opportunity to improve.



Extended Activities

1. In the E-Cube Language Lab, there is a story about a little girl who creates art forms similar to the geometric shapes you learned about in your mathematics textbook. Find the story, read it, and complete the related activities with the help of your teacher.
2. There is an interesting story in the E-Cube Language Lab about the mishap that happened to the fishermen Chikku and Choru. It is titled "My Fish! No, my fish." Read the story to find out what their mishap was. Also complete the related activities along with it.



Notes

This image shows a full page of a handwriting practice worksheet. It consists of multiple rows of horizontal dashed lines spaced evenly down the page, providing a guide for letter height and placement. The background is plain white, and there are no other markings or text present.

Notes

[illegible]

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:

- | | |
|--|--|
| <ul style="list-style-type: none">• 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. | <ul style="list-style-type: none">• 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, rte.cpcr@kerala.gov.in

Website : 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