

Book

1

KODER KIDS

Coding Explorations



ChatGPT



python™
Power Point

vEX CODE VR

Learning PowerPoint, ScratchJr, VEX Robotics, AI, and ChatGPT fun and easy for kids.

www.koderkids.pk

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Preface

Welcome to **Koder Kids Book 1!** This book marks the beginning of an exciting journey into the world of computers, coding, and creativity. In **Book 1**, you'll explore the essentials of computers, create your first animations and artwork using digital tools like **Scratch Jr, Paint, PowerPoint** and some fun with web browsing and AI tools.

Throughout this book, you'll develop important foundational skills that will help you feel comfortable using technology. By the end, you'll know how to **create presentations, and even code your first digital projects**. Each chapter is packed with fun, hands-on activities to make learning enjoyable and interactive.

So, let's get started and discover the amazing things you can create and do with technology!

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Chapter 1: Exploring the Computer

Welcome to Computer World

- Hey there, Koder Kids! 🤖 We will be going through this awesome adventure into the world of computers. Get ready to learn what computers are, what they're made of, and how to use them!



Fun Fact: The word "computer" comes from the word "compute," which means to do math!

1.1 Introduction to Computers

Computers help us with many tasks like writing, drawing, playing games, and finding information.

To get started, let's learn what a computer is made of and how it works.

Definition:

A computer is a machine that helps us perform different tasks by using programs (software) and hardware (parts we can touch).

Explanation:

Every computer has two main parts:



Hardware

These are the physical parts of the computer that you can touch, like the monitor and keyboard.

Software:
Programs inside the computer that help it run, like Paint and Calculator.



1.2 Basic Computer Hardware

Let's take a closer look at the most important hardware parts of the computer:

Monitor:

This is the screen where you can see everything that happens on the computer.



Keyboard:

The part you type on. It has letters, numbers, and symbols.

Mouse:

A small device we move to point and click on things.



CPU (Central Processing Unit):

The "brain" of the computer that makes everything work. It is often in a box near the monitor.

Activity: Identify the Parts of the Computer

Follow these steps to identify the parts of the computer you're using:

1. Find the Monitor: Look at the screen. That's the monitor.
2. Find the Keyboard: The part you're using to type is the keyboard.
3. Find the Mouse: The small device you move with your hand to click on things is the mouse.
4. Find the CPU: Look for a box near the monitor. This is the CPU—the computer's brain.

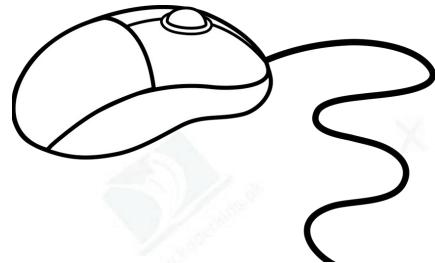


Class Activity 1: Identify the Parts of the Computer

Color the parts of the computer and match each by drawing a line towards correct picture.

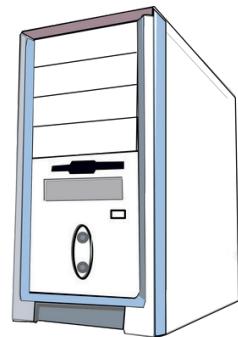
1 Monitor

Find the Monitor. Look at the screen. That's the monitor.



2 Keyboard

Find the Keyboard. The part you're using to type is the keyboard.



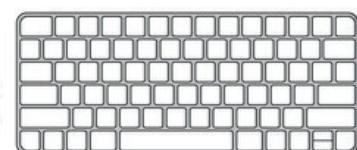
3 Mouse

Find the Mouse. The small device you move with your hand to click on things is the mouse.



4 CPU

Find the CPU. Look for a box near the monitor. This is the CPU—the computer's brain.



Home Activity 1: Draw and Label

Draw a computer and its parts (monitor, keyboard, mouse, CPU).

Draw a computer placed on table.

Color it nicely and bring it to class!

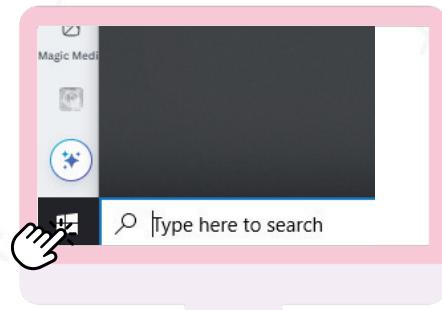
1.3 Using Paint for Simple Drawing

Paint is a program on the computer that lets you draw pictures using different tools like pencils, shapes, and colors.

Class Activity 2: Open and Explore Paint

1 Start Menu

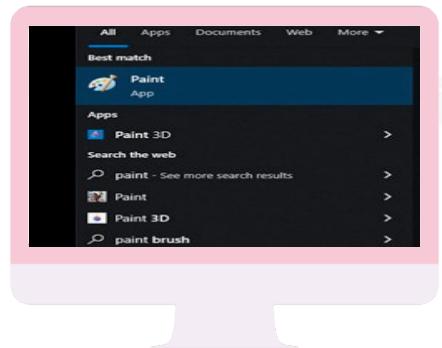
Click/tap the Start Menu (Windows icon) in the bottom-left corner of your screen.



2 Type Paint

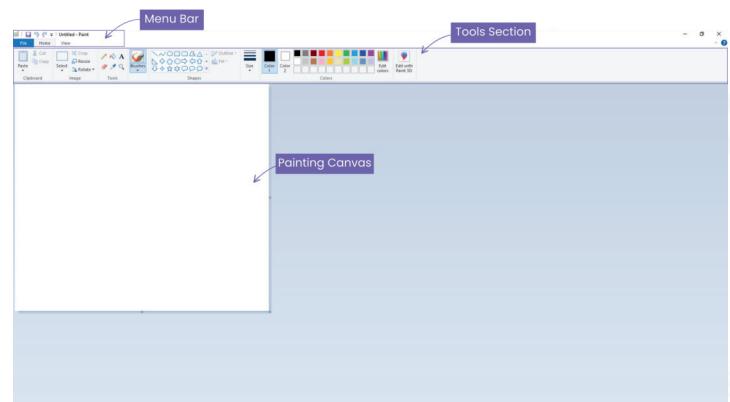
Type paint and click on paint App

Let's Get Creative! You can draw in Paint:



3 Paint interface

- Painting canvas
- Tools Section
- Menu Bar

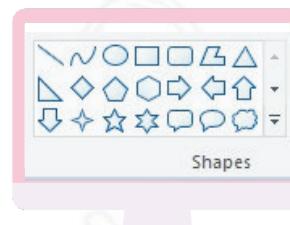


4 Tools Section

Use the text tool to write your name



Use shapes like stars, hearts, and circles



Use the brush for free drawing



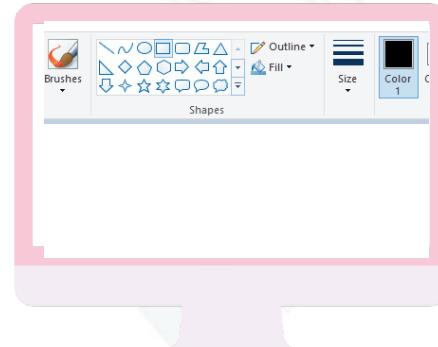
Use color pallet to select color for Brush / Bucket



Class Activity 3 : Draw a Simple House in Paint

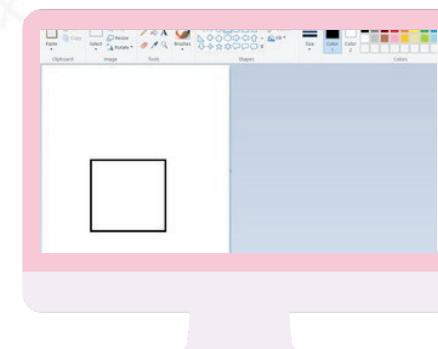
1 Select the Square Shape:

Once Paint is open, in Shapes look for square / rectangle tool. Click / tap on it.



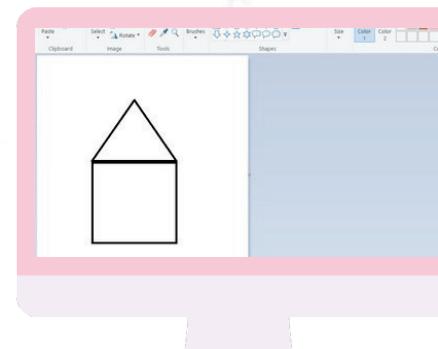
2 Draw the Base of the House:

Select rectangle shape, click and drag to draw base of house.



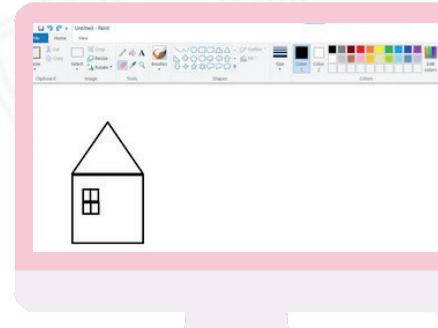
3 Draw the Roof:

Select the Triangle Shape from Shapes. Click and drag to draw a triangle on top of the square for the roof. Match the base lines manually.



4 Add Windows:

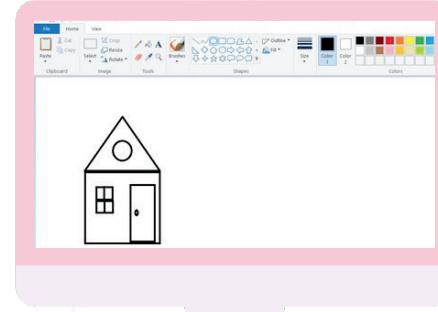
Use the Rectangle Tool to draw four small squares for the windows.



5 Draw the Door:

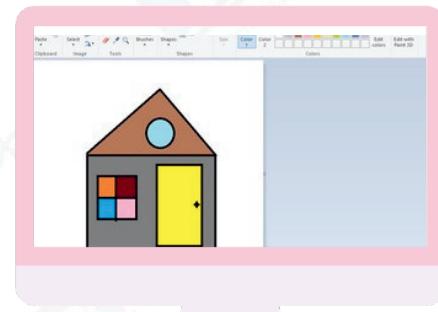
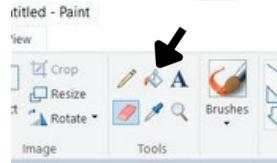
Use the Rectangle Tool again to draw a tall rectangle for the door.

And use circle tool to draw a circle inside roof triangle..



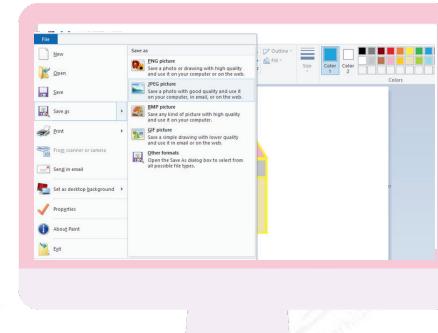
6 Color Your House:

Use color pallet and Bucket tool to paint the house.



7 Save Your Drawing:

- Click the File menu in the top-left corner.
- Select Save As, choose a location to save, and name your drawing (e.g., "My House").
- Click Save.

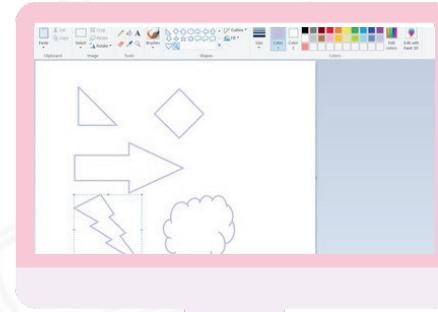


Class Activity (Bonus) Shape Safari

In Paint, find and use 5 different shapes.

Try to draw the shapes.

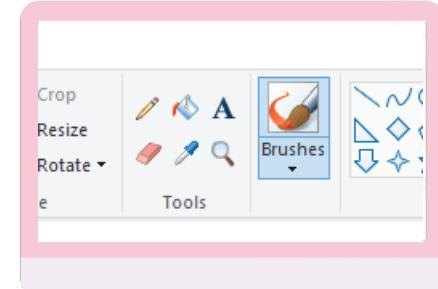
Who can make a rocket or robot?



Home Activity 2: Paint Message

Open Paint and write a message like "Hello, world!" Decorate it with colors and shapes!

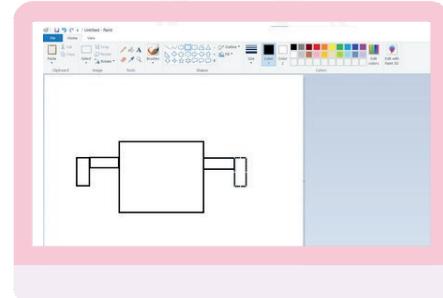
Hint: Use A button.



Class Activity 4 : Draw and Color a Robot

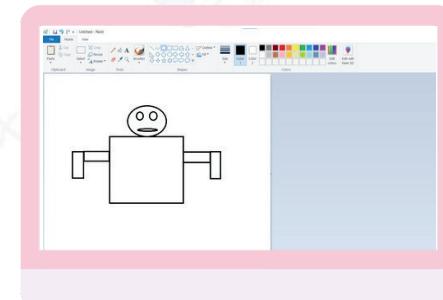
1 Step 1

Open Paint and use rectangles for the robot's body and arms.



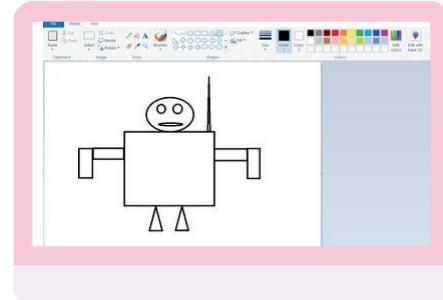
2 Step 2

Use circles for eyes and head.



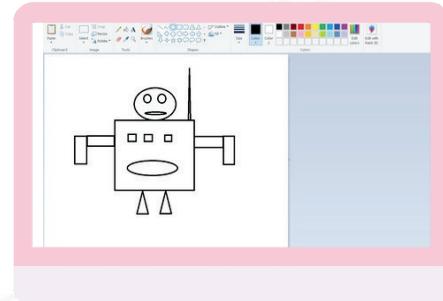
3 Step 3

Use lines or triangle shapes for legs or antenna.



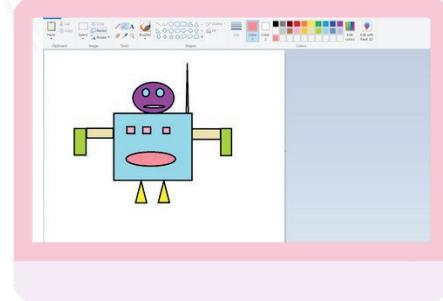
4 Step 4

Add a smile and buttons!



5 Step 5

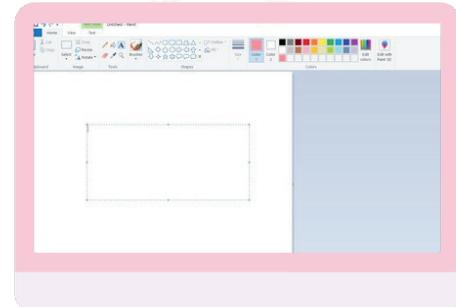
Color your robot and save your robot.



Class Activity 5: Create Name card

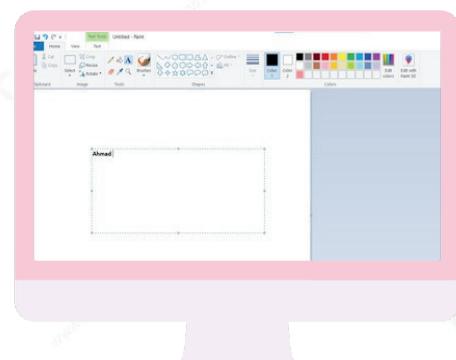
1 Step 1

Open Paint and click the text tool
(looks like an "A").



2 Step 2

Type your first name.



3 Step 3

Select Text. (Ask your teacher how to select text.)

Choose your favorite font and size from text menu.



4 Step 4

Decorate your name with stars, hearts, and colors!



Home Activity 3: Create Your Dream House

Using Paint at home, draw your dream house. Try adding trees, clouds, and even a sun! Save your drawing and show it in class tomorrow.

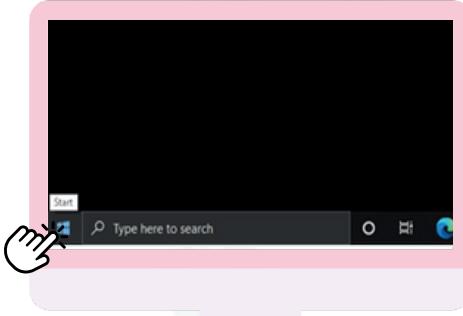
1.4 Exploring the Calculator

Calculator helps us do maths.

Let us start the app.

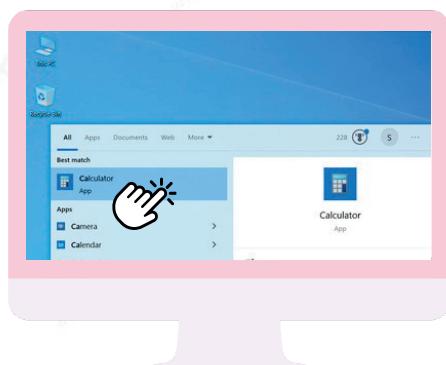
1 Click Windows Icon

Click the Start Menu (Windows icon) in the bottom-left corner of your screen.



2 Type Calculator

Type Calculator in the search bar and click on the Calculator app to open it.

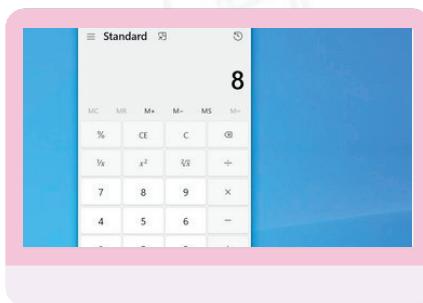


Class Activity 6: Practice Basic Math Operations in Calculator

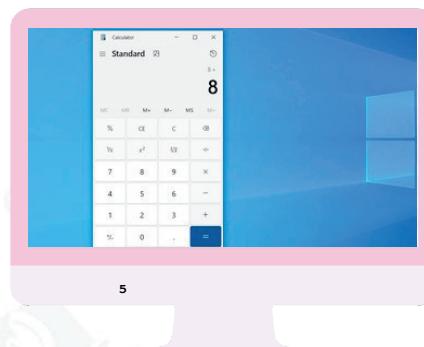
Follow these steps to practice using the Calculator:

1 Addition

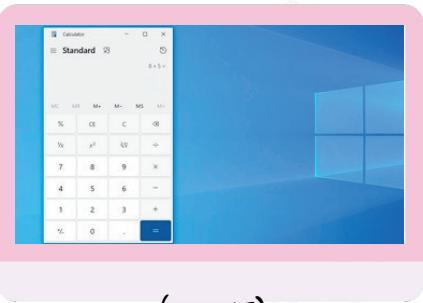
- Enter the first number (e.g., 8).
- Click the + button.
- Enter the second number (e.g., 5).
- Click the = button. The result will appear (e.g., 13).



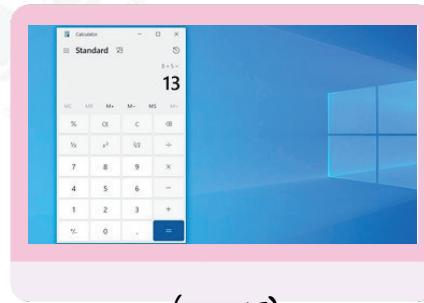
(e.g., 8).



5



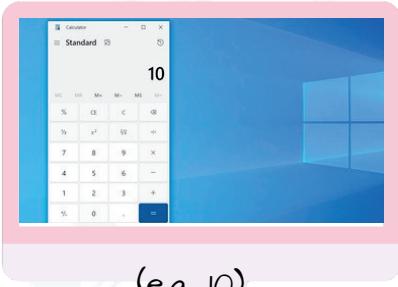
(e.g., 5).



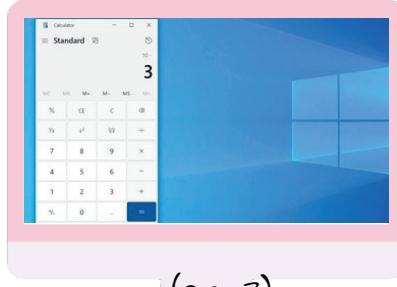
(e.g., 13).

2 Subtraction

- Enter the first number (e.g., 10).
- Click the - button.
- Enter the second number (e.g., 3).
- Click the = button. The result will appear (e.g., 7).



(e.g., 10).



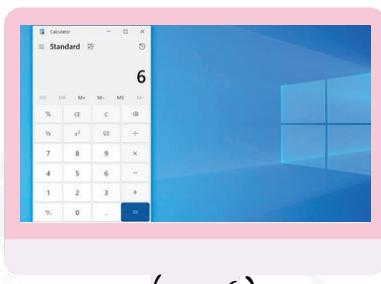
(e.g., 3).



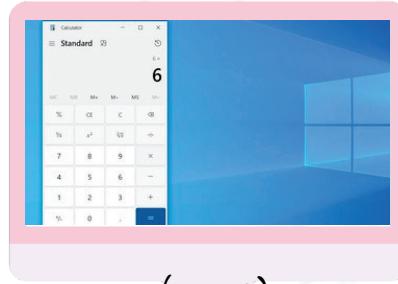
(e.g., 7).

3 Multiplication

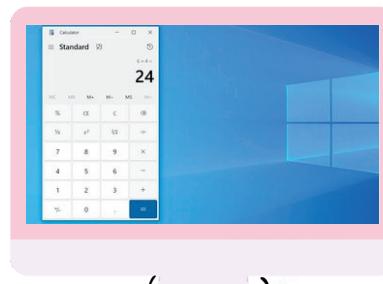
- Enter the first number (e.g., 6).
- Click the × button.
- Enter the second number (e.g., 4).
- Click the = button.
- The result will appear (e.g., 24).



(e.g., 6).



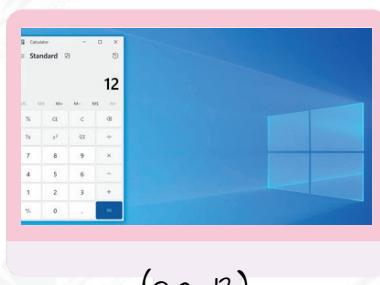
(e.g., 4).



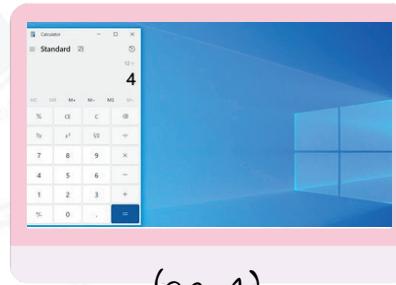
(e.g., 24).

4 Division

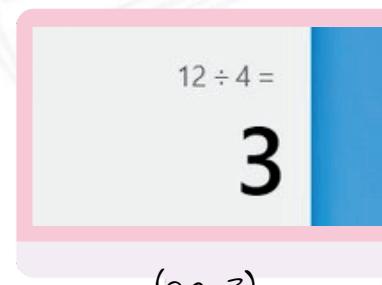
- Enter the first number (e.g., 12).
- Click the ÷ button.
- Enter the second number (e.g., 4).
- Click the = button. The result will appear (e.g., 3).



(e.g., 12).



(e.g., 4).



(e.g., 3).

Class Activity 7: Practice Basic Math in Calculator

Let's try some basic math:

Addition: Type $8 + 5$ and press = (you get 13!)

Subtraction: Type $10 - 3$ and press = (you get 7!)

Multiplication: Type 6×4 and press = (you get 24!)

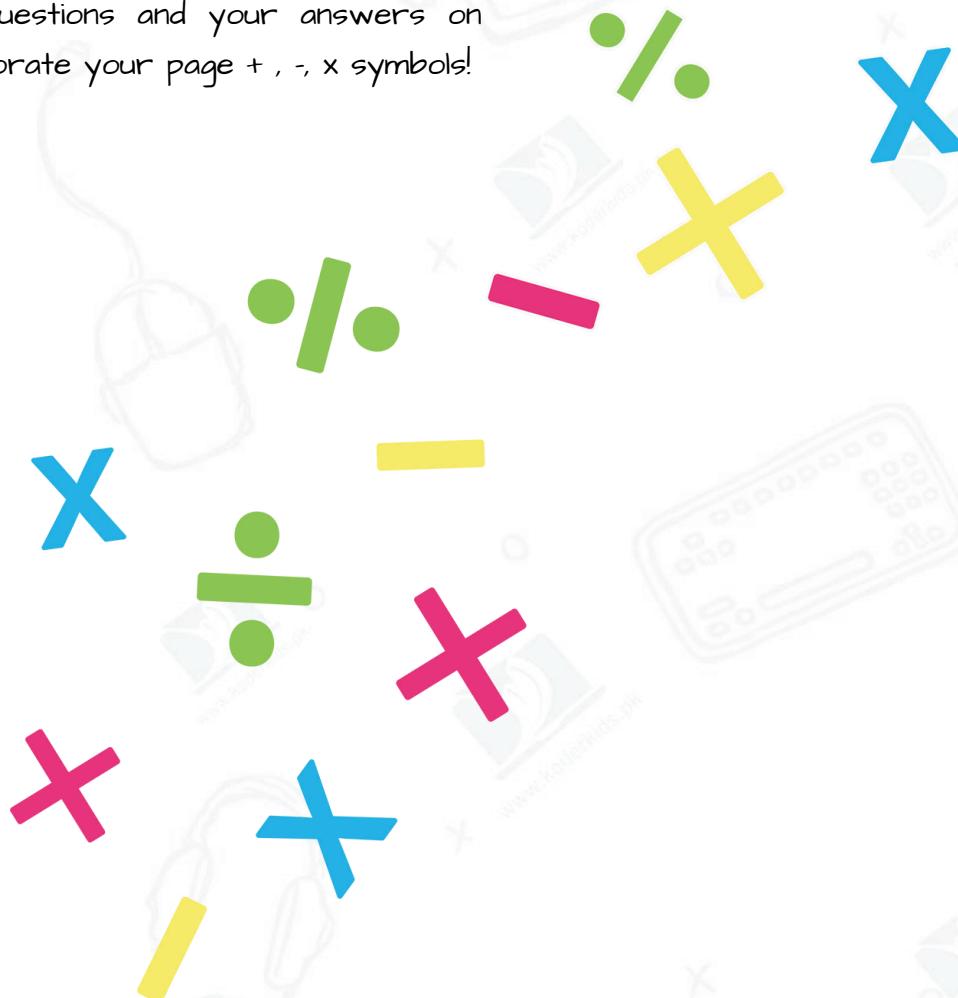
Division: Type $12 \div 4$ and press = (you get 3!)

Home Activity 4: Be a Number Wizard!

At home, try these with Calculator:

- $9 + 6 = ?$
- $15 - 7 = ?$
- $3 \times 5 = ?$
- $18 \div 2 = ?$

Write these questions and your answers on paper and decorate your page +, -, \times , \div symbols!



Fun with Numbers

You can use Calculator for more!

Add up your toys

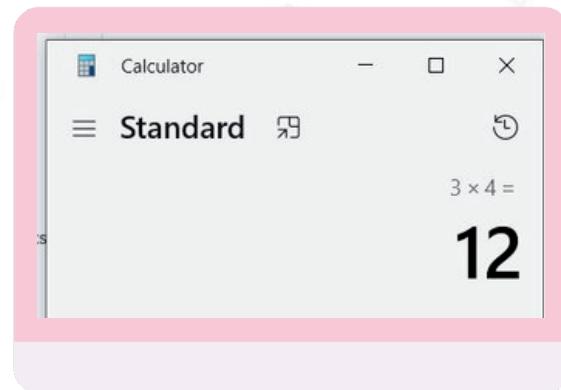
Multiply how many pencils in 5 boxes

Try big numbers like 123 + 456

Class Activity 8: Math Story Time

"If I have 3 computers and each has 4 games,
how many games do I have?"

Solve it with Calculator!



Home Activity 5: Calculator Art

Use numbers like 0, 1, 3, 8 to make faces on
your calculator screen. Show your friends
your number art!



1.5 Chapter Wrap-Up

Great work, Koder Kids! Let's review what we learned:

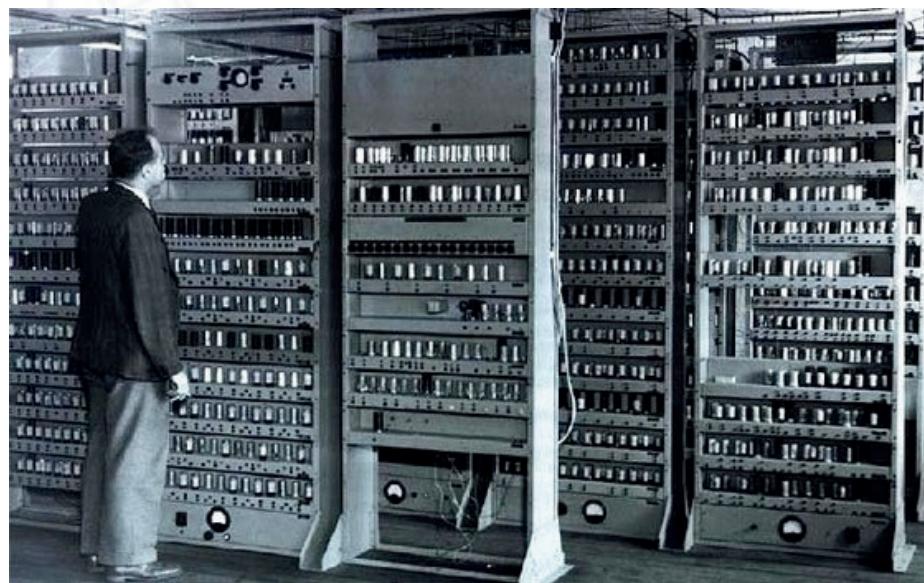
- A computer is a smart machine made of hardware and software.
- Hardware includes parts you can touch like the monitor, keyboard, mouse, and CPU.
- You can draw in Paint and do math with the Calculator!

What We Did:

- Drew houses
- Solved math problems
- Named computer parts

Next Up: We'll start coding with Scratch Jr!

**FUN FACT: THE FIRST COMPUTERS
WERE AS BIG AS A WHOLE ROOM!**



Chapter 2: Introduction to Scratch Jr

Welcome to Coding Fun!

Hey, Koder Kids! 🎨

In this chapter we will dive into the land of Scratch Jr. Here, we don't just play games—we make them! You'll build stories, move characters, and even make them talk. Are you ready to code like a pro? Let's go!

Fun Fact: Scratch Jr was made just for kids like you to learn coding with fun blocks!



2.1 Getting to Know Scratch Jr

Scratch Jr is a fun way to learn coding by creating stories and games with simple blocks. In this section, you'll learn what Scratch Jr is and how it works.

What is Scratch Jr?

Scratch Jr is a coding app where you control characters by dragging and dropping blocks. Each block tells the character to do something, like move or jump.



How Does Scratch Jr Work?

In Scratch Jr, you snap together blocks to create instructions for your characters. You can make them walk, talk, dance, and more by combining different blocks.

Class Activity 1: Scratch Jr Tour

1 Step 1

Open the Scratch Jr app with help from your teacher.



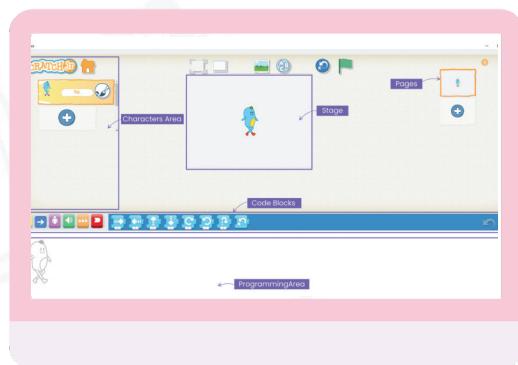
2 Step 2

Tap the house icon to go to the main screen.



3 Step 3

Look at the plus (+) sign, that's how you start a new project.



4 Step 4

Explore where are

- Characters area
- Stage
- Code blocks
- Programming area

Home Activity 1: Meet the Blocks

Ask a grown-up to help you open Scratch Jr at home.

Look for:

Blue blocks (movement)

Purple blocks (talking/looks)

Green flag (to start your code)

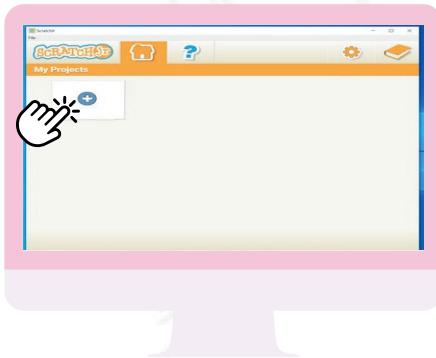
Draw 5 different blocks on a paper and write what it does!



2.2 Creating Your First Project

Let's start your first project in Scratch Jr by adding a character and creating some movement.

- 1 Open the Scratch Jr app on your computer or tablet.
- 2 Click the Home button (house icon).
- 3 Select the plus (+) sign to create a new project.



Class Activity 2: Create a Moving Character in Scratch Jr

1 Add a Character:

When you start a new project, you'll see Tic on the screen. This is your first character. To add a new character, click the blue circle with the Tic on the left side. Choose a character and click the checkmark to add it to your stage.



2 Add Move Up and Down Blocks:

At the bottom of the screen, you'll see blue blocks (motion blocks)

Drag a Right block to the programming area



3 Test Your Program:

Drag green flag and place before Right Block
Click the green flag to see your character move right,



4 Add More Movement:

Drag another Move Right block to the programming area and snap it to the first block.
Test again by clicking the green flag. Now your character will move!



Home Activity 1: Make It Walk

Try adding more Move Right blocks. Can you make your character walk across the screen? Try it and show it to a family member!

You can make your Scratch Jr world more fun by:

Changing the background

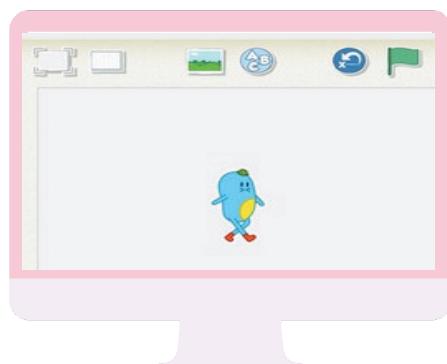
Adding more characters

Using different blocks

Class Activity 3: Decorate the Stage

1 Step 1

Tap the background icon (top-right corner).



2 Step 2

Choose a background like the park, space, or beach.



3 Step 3

Use + button to add another character (a dog, fish, or dragon!).



4 Step 4

Use the Grow or Shrink blocks to change their size.



Home Activity 2: Add a Surprise

Try adding a new character at home and make it say something fun using the purple Say block!

2.3 Moving Characters with Blocks

Now that you know how to make your character move right, let's explore how to make your character move in different directions.

Class Activity 4: Create a Moving Character in Scratch Jr

Open Scratch Jr, start a new project.

1 Add a Move Left Block:

- Click the blue blocks and drag a Move Left block to the programming area.



2 Add Move Up and Down Blocks:

- Add a Move Up block (arrow pointing up) and a Move Down block (arrow pointing down) in the same way. [Do not snap to each other.]
- Click on these blocks one by one and see your character move.



3 Test Your Program:

- Combine / snap the blue Block and add green flag button at start. (To combine, bring the blocks closer) Click the green flag to see your character move right, left, up, and down.



4 Challenge:

Try making your character move in a square by repeating the directions.



Let's have fun with movement blocks by making a race!

Class Activity 5: Coding Race

1 Step 1

Add two characters.



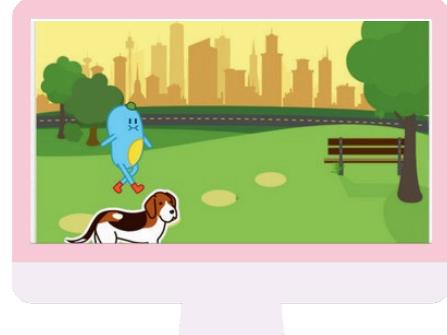
2 Step 2

- Place Move Right blocks for both characters.
- Click on each character to see separate coding / programming area.



3 Step 3

Tap green flag and see which one moves faster.



4 Step 4

Try using more blocks to speed them up!

Home Activity 3: Speed Challenge

Make a character go super far! Stack 5 or more Move Right blocks. Whoosh!



2.4 Creating Simple Animations

Let's use Scratch Jr to create a short animation where your character moves and says something.

Class Activity 6: Create a Talking Character Animation

1 Add a Speech Block

- Click the purple blocks (looks) to make your character talk.
- Drag a Hi Block to the programming area (it looks like a speech bubble).
- Combine it to your green flag.



2 Write a Message:

- Click on the text in the speech bubble block and write what you want your character to say (e.g., "Hello Kashif!").



3 Add a Motion Block

- Drag a Move Right block again and snap it after the speech block.



4 Test Your Animation

- Click the green flag to see your character say something and then move.



Let's make your characters dance or move in fun ways.

Class Activity 7: Code a Dance

1 Step 1

Use Move Up, Down, Left, and Right blocks.



2 Step 2

Add a Say block: "Let's Dance!"



3 Step 3

Combine blocks to make the character wiggle or jump!

Home Activity 4: Dance & Tell

Make your character dance and then say something like, "I love to code!"



2.5 Creating Scenes with Multiple Pages

Your story can have more than one scene—just like a cartoon!

Class Activity 8: New Scene (Multipage)

New Page

Tap the + at the top to add a new page.

1 New Background

Pick a new background.



2 Characters

Add your characters again.



3 Story

Make something new happen on this page!

Class Activity 9: My First Story

1 Step 1

Scene 1: A dragon flies across the sky.

2 Step 2

Scene 2: The dragon lands and talks to a bird.

3 Step 3

Use Say and Move blocks in each scene. Don't forget the green flag!

Home Activity 5: Story time Challenge

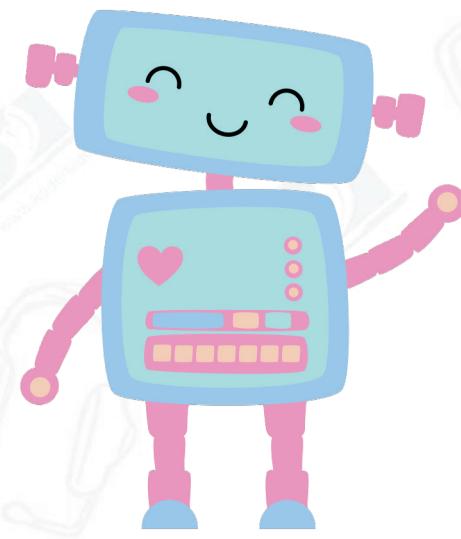
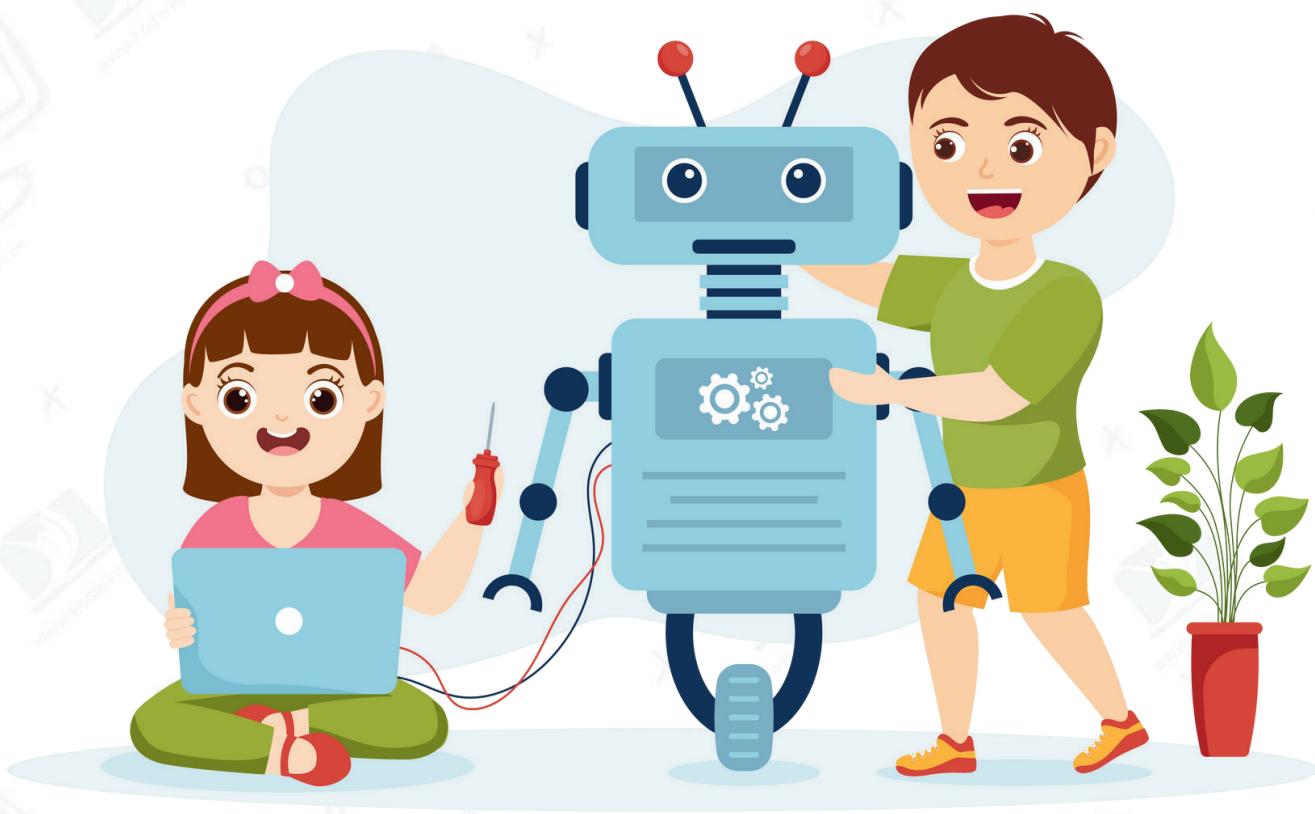
Make a 3-scene story at home. Scene

- 1: Start a journey. Scene
- 2: Something happens. Scene
- 3: The happy ending!



2.6 Chapter Wrap-Up

You did it, Koder Kids! In this chapter, you: Made characters move Built animations Created your first story with multiple scenes! You are now a Junior Coder with Scratch Jr!



Chapter 3

Starting VEX Code VR

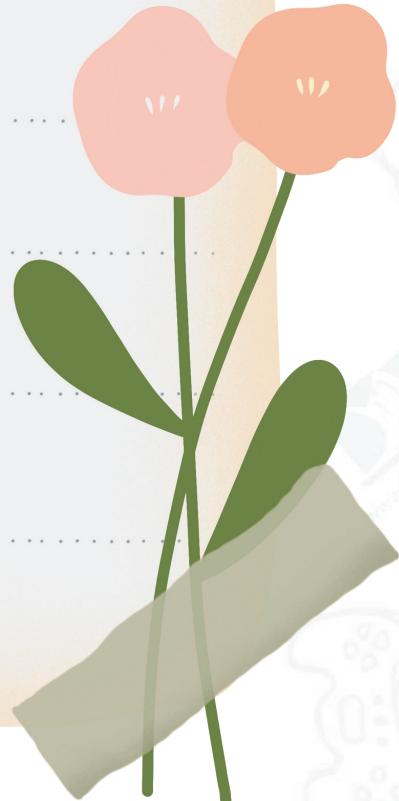
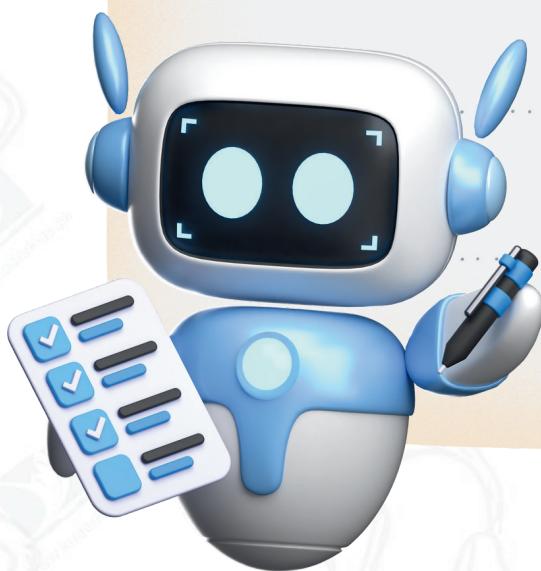
Welcome to Robot World!

Hey, Koder Kids! 🎉

In this chapter we will learn about VEX.

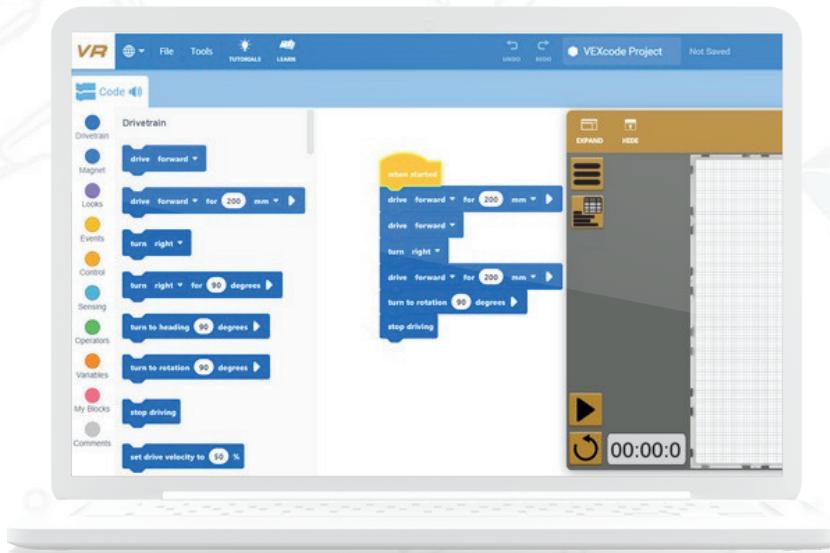
VEXcode VR-a virtual robot playground! You'll learn to make a robot move, turn, and even explore a map. Ready to code like a robotics expert? Let's roll!

**Fun Fact: Real robots are used in space,
hospitals, and even in underwater research!**



3.1 Introduction to VEXcode VR

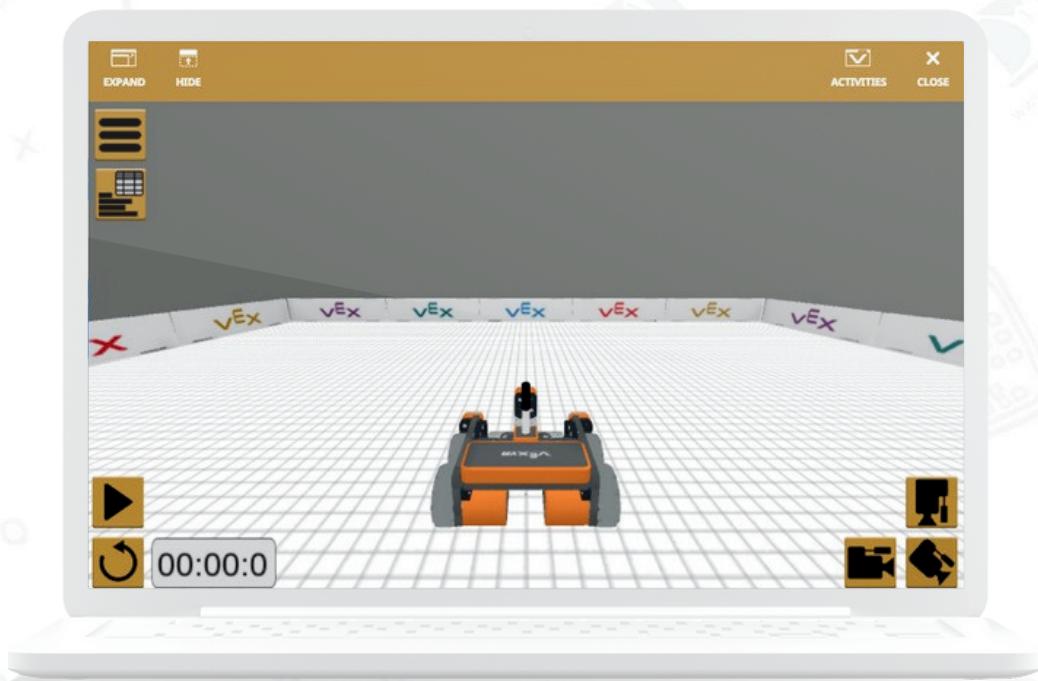
VEXcode VR is a virtual environment where you can program robots. Instead of using a real robot, you will program a virtual robot that you can control with coding blocks.



What is VEXcode VR?

VEXcode VR is an online platform that allows you to program robots using blocks, just like you do in Scratch Jr.

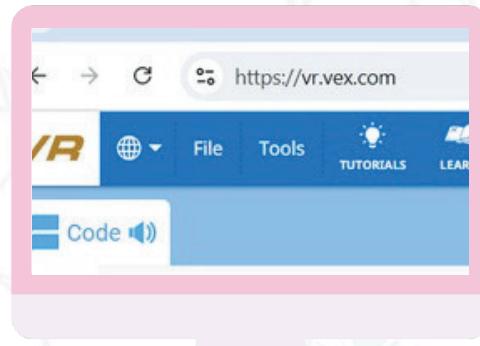
It helps you learn how robots work and how to control them using code.



Class Activity 1: Explore the Site

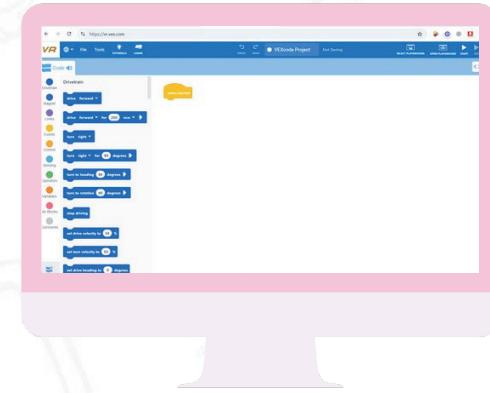
1 Starting VEX

Go to <https://vr.vex.com/>. Get help from class teacher.



2 Interface

Look at the left side (coding area) and right side (robot playground).



3 Playground

Click on the "Playground" button and pick Grid Map.



4 Explore

Move your mouse around to explore!

Home Activity 1: VEXcode VR Safari

Ask a grown-up to help you open VEXcode VR at home. Look for

- Motion blocks (blue)
- Playground button
- Robot on the screen

Draw a picture of the robot and its map!

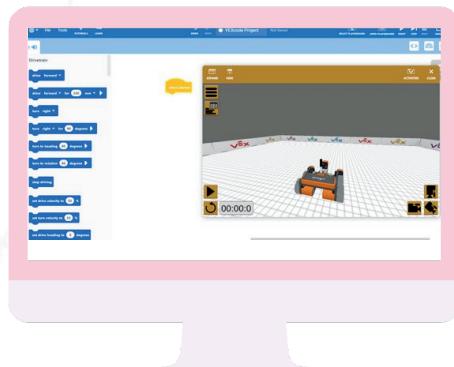
3.2 Moving the Virtual Robot

Let's get started with your first task in VEXcode VR: making your virtual robot move! We'll begin by learning how to control the robot's movements with basic commands like moving forward and turning.

Class Activity 2: Move Robot Forward

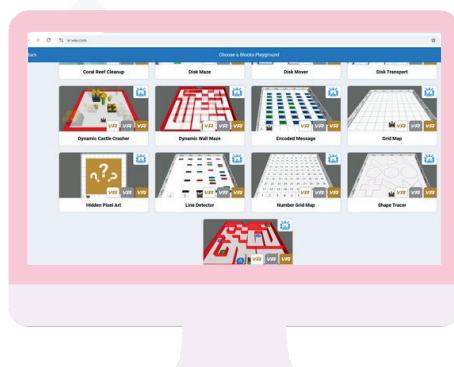
1 Open VEXcode VR:

- Go to the website: <https://vr.vex.com/>.
- Once it loads, you'll see a programming area on the left and a virtual world on the right.



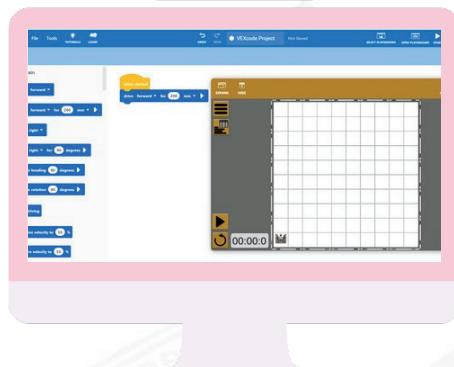
2 Select the Playground:

- Click the Playground button in the top right corner.
- Select the Grid Map to use as your robot's environment.



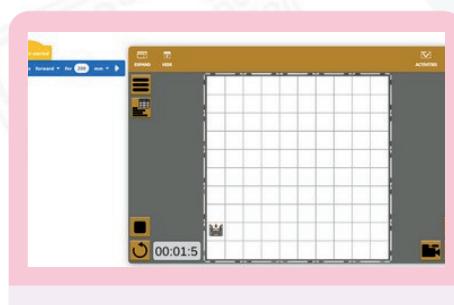
3 Add a Move Forward Block:

- In the programming area, find the blue motion blocks.
- Drag the [Drive Forward for 200mm] block into the workspace.



4 Run the Program:

- Click the green play button to run the program. You'll see the robot move forward in the grid.



Home Activity 2: Long Drive

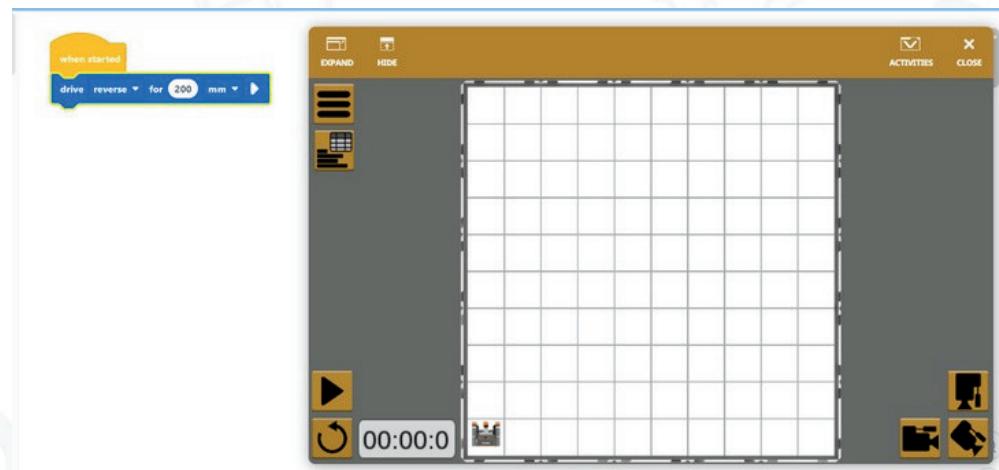
Try different distances: 100, 250, 500. What happens? Write down your favorite distance and draw a robot driving far!

Your robot can also go backward!

Class Activity 3: Drive Backward

1 Step 1

Add Drive reverse for
200 mm

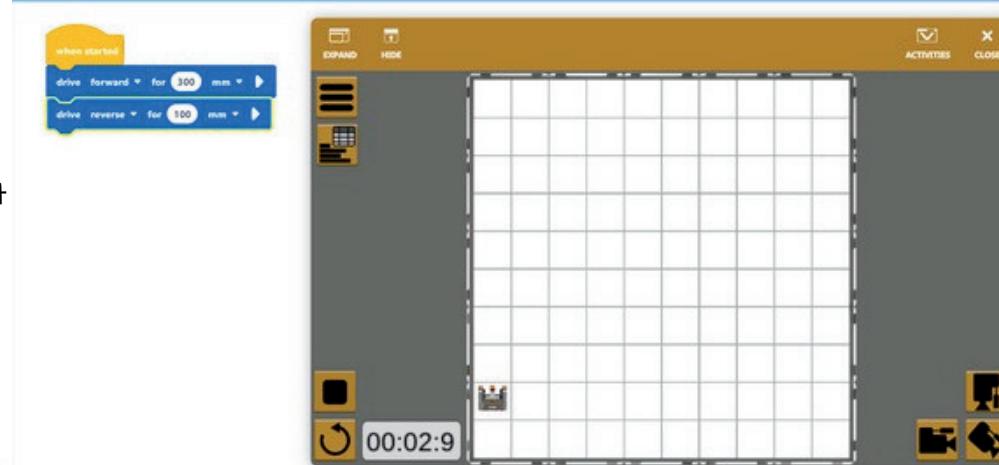


2 Step 2

Run the code

3 Step 3

What direction does the robot
go?



4 Step 4

Now try mixing it Drive
forward 300 mm Drive and
then reverse 100 mm :

Home Activity 3: Robot Zigzag

Try this at home:

Drive forward 200 mm

Reverse 200 mm

Forward again 200 mm Draw the zigzag path it makes!



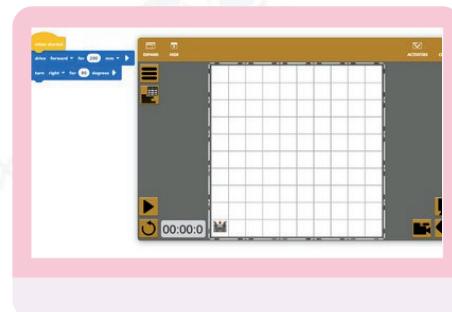
3.3 Programming a Simple Path

Now that you've made the robot move forward, let's add more blocks to create a simple path for the robot to follow. The robot will move forward, turn, and then move forward again.

Class Activity 4: Program the Robot to Move and Turn

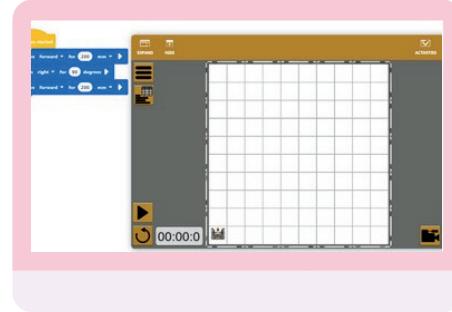
1 Add a Turn Block:

- Add a drive forward block.
- In the blue motion blocks, find the [Turn Right for 90 degrees] block.
- Drag the block into the workspace and place it after the Drive Forward block.



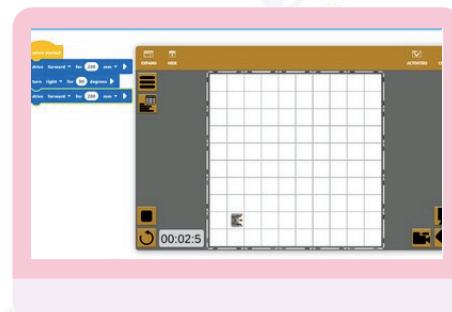
2 Add Another Move Forward Block:

- Drag another [Drive Forward for 200mm] block and place it after the turn block.



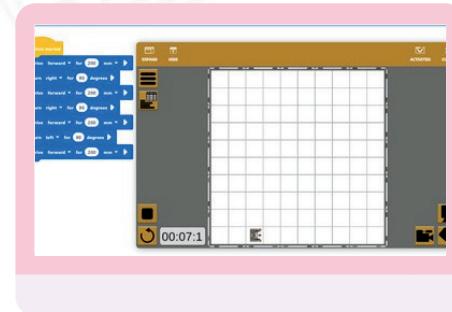
3 Run the Program:

- Click the green play button to see the robot move forward, turn 90 degrees, and move forward again.



4 Challenge:

- Try adding more turns and movements to create a longer path for the robot.



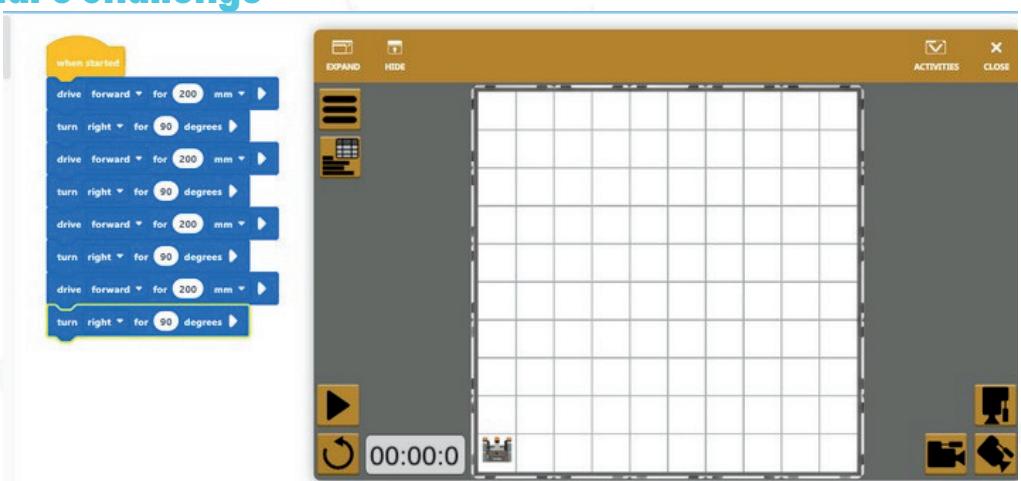
3.3.1 Making a Square

Use your movement and turn blocks to make the robot move in a square!

Class Activity 5: Square Challenge

1 Step 1

Drive forward 200 mm



2 Step 2

Turn right 90 degrees

3 Step 3

Repeat 4 times

4 Step 4

Watch the robot return to the start!

Home Activity 4: Maze Designer

Make your own maze on paper. Then try to write blocks that help the robot get through it in VEXcode VR!



3.4 Testing Robot Movements

Once you've programmed your robot to move and turn, it's important to test and refine your code. Sometimes, the robot might not move exactly as you planned, and that's okay! You can always adjust the program and try again.

Class Activity 6: Adjust and Test the Robot's Path

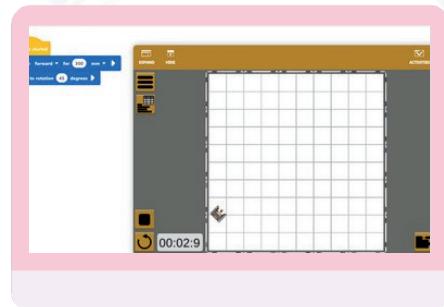
1 Change the Distance:

- In your Drive Forward blocks, try changing the distance from 200mm to 300mm. This will make the robot move farther.
- Click on the number 200 and type 300 to change the distance.



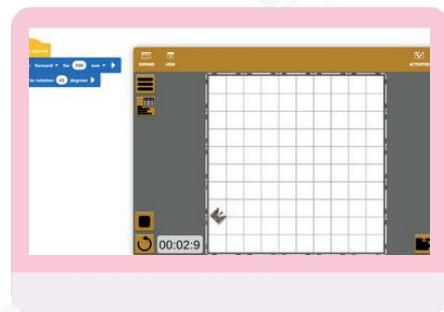
2 Change the Turn Angle:

- In your Turn Right block, change the angle from 90 degrees to 45 degrees. This will make the robot turn less sharply.
- Click on 90 degrees and type 45 to update the turn.



3 Run the Program:

- Test the new movements by clicking the play button. See how the changes affect the robot's path.



3.4.1 Be a Robot Fixer!

Being a good coder means testing your robot often!

Class Activity 7: Fix My Robot!

Your teacher will give you a "broken" code. Find what's wrong and fix it so the robot moves in a square.

Home Activity 5: Maze Designer

Make two versions:

One with correct turns

One with a mistake Show someone the difference!

3.5 Make a Robot Dance!

Let's get creative and make your robot spin and zoom like it's dancing!

Class Activity 8: Robot Dance Party

Your teacher will give you a "broken" code. Find what's wrong and fix it so the robot moves in a square.

1 Step 1

Add turns, drives, and short moves

2 Step 2

Try Turn right 360 and Drive forward 100

3 Step 3

Add pauses or repeats (if available)

4 Step 4

Watch the dance!

Home Activity 6: Music + Robot

Play your favorite song and run your robot program. Dance with it!

3.6 Challenge Time!

Now that you know how to move, turn, and test, it's time for a mission!

Class Activity 9: Treasure Hunt

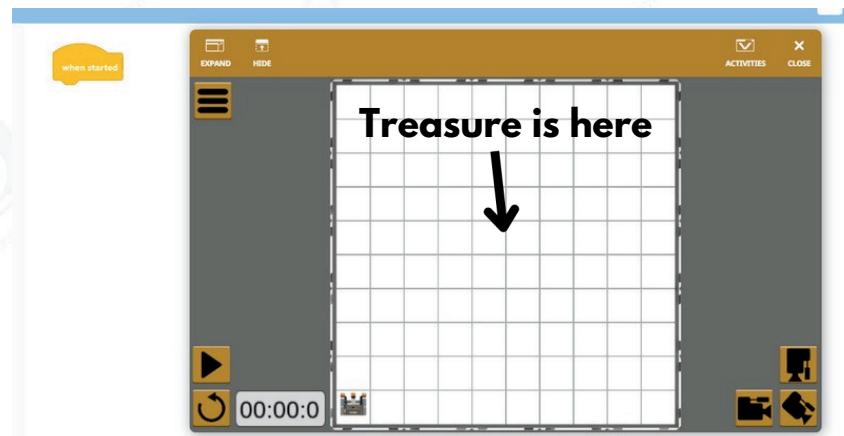
1 Step 1

Use the Grid Map

2 Step 2

Choose a "Treasure Square"

Select one square as
Treasure Square.



3 Step 3

Can your robot find the treasure?

Program Robot to move to Treasure Square.

Home Activity 7: Robot to the Rescue!

Pick a square on the map.

Write the code to get there.

Share your steps with a friend or family member.

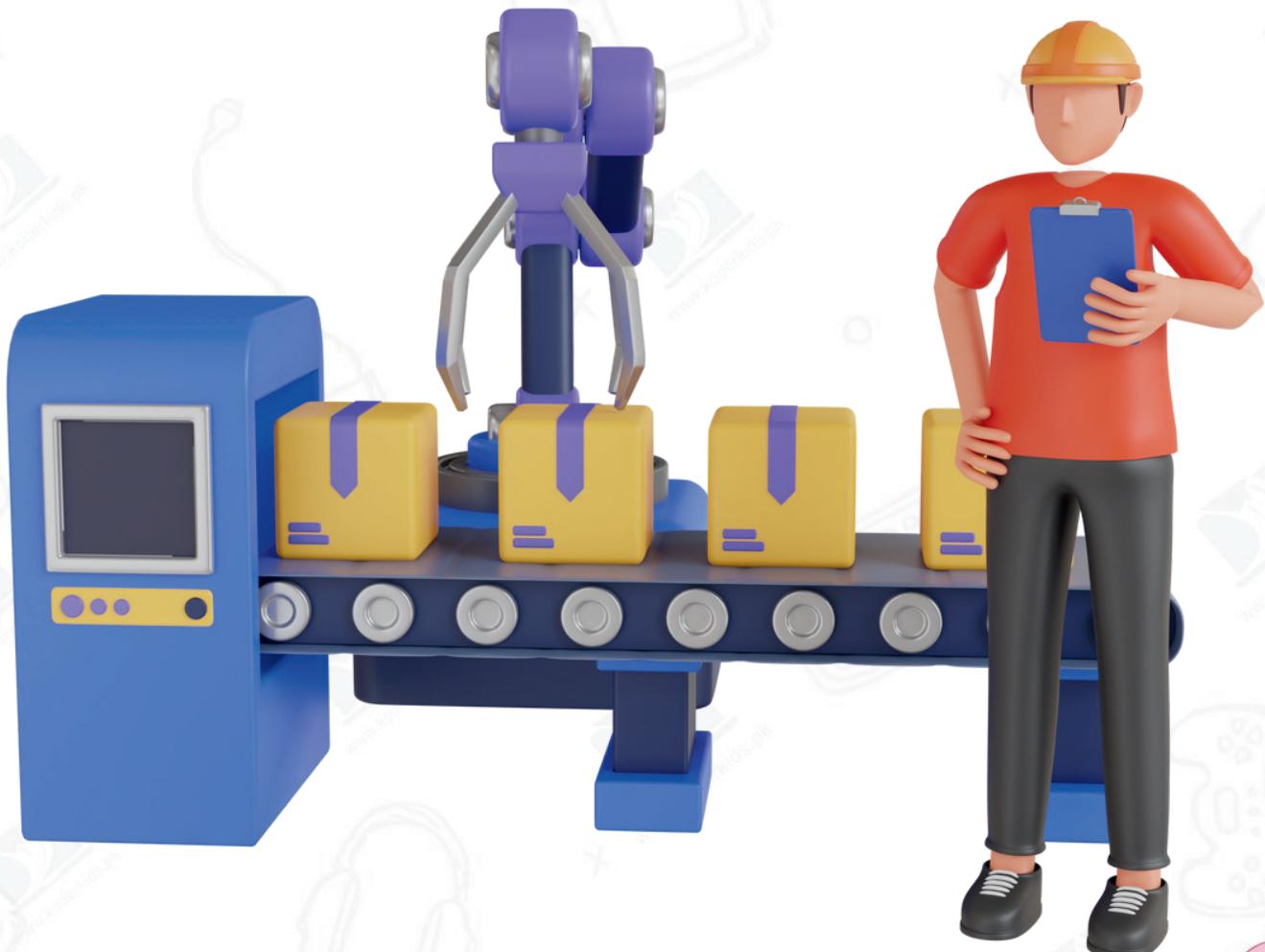


3.7 Chapter Wrap-Up

Great job, Koder Kids! You Learned about
VEXcode VR Made your robot move and turn
Created paths, squares, and dances Fixed
mistakes like a real coder.

Up Next: Python programming!

**Fun Fact: Robots can help
astronauts explore planets far,
far away!**



Chapter 4:

Introduction to Python Programming

4.1 What is Python?

Python is a programming language used to create websites, games, apps, and much more. It's popular because it's simple and easy to read, which makes it a great language for beginners.



Why Learn Python?

- Python is used by companies like Google, YouTube, and NASA.
- It's a great way to learn how to think like a programmer by writing instructions (called code) that the computer can follow.



4.2 Basics of Python

4.2.1 Print function

Syntax `print()` Print function is used to display Text, numbers, etc

We will use print function a lot in this Chapter.

4.2.2 Syntax

Syntax is like magic magic spell.

You have to write the code exactly the right way for it to work. If something is out of place, the computer won't understand, and the program won't run.

For example, in Python:

- Correct Syntax: `print("Hello, world!")`
- Incorrect Syntax: `print("Hello, world!`



4.3 Using Google Colab for Python Programming

To start coding in Python, we will use an online platform called Google Colab. Google Colab allows you to write and run your code directly in the browser without installing anything.

1 Open Google Colab

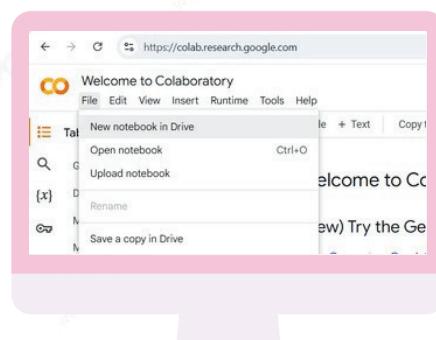
- Go to the website: <https://colab.research.google.com> if you don't have an account, you can sign up for free

https://colab.research.google.com

2 Create a New Python Project:

- Once you're logged in, click on File. Click on "New notebook in Drive". You will see a blank page where you can start writing your Python code.

This page is called Notebook.



4.4 Writing Your First Python Program

The first program you will write is a "Hello, World!" program.

Class Activity 1: "Hello, World!" Program

1 1st Step:

- In the notebook, Type the following code:
`print("Hello, World!")`



2 Run the Program:

- Click the Run button at left of the cell. OR Use Ctrl+Enter
- You should see the words "Hello, World!" appear on the right side of the screen.

Congratulations!
You just wrote and ran your
first Python program.

4.5 Variables in Python

Variables are like *magic boxes* where you can keep your favorite things! You can name the box and put something inside it.



4.5.1 Type of variables

If you put numbers in the box, it becomes a number box (e.g., age = 10).

If you put words in the box, it becomes a word box (e.g., name = "Alice").

Class Activity 2: Let us make some Boxes

1 Example 1: A number box

- In the code cell, Type the following code:

```
age = 10  
print("Age:", age)
```

- Click the Run button at left of the cell.

OR Use Ctrl + Enter

```
+ Code + Test  
In [1]: age = 10  
      print("Age:", age)  
Out[1]: Age: 10  
In [2]: name = "Alice"  
      print("Name:", name)  
Out[2]: Name: Alice  
In [3]: height = 5  
      print("height:", height)  
Out[3]: height: 5  
In [4]: age = 8  
      friend = "Bob"  
      print("My friend", friend, "is", age, "years old.")  
Out[4]: My friend Bob is 8 years old.  
+ Code + Test
```

2 Example 2: A word box

- In the code cell, Type the following code:

```
name = "Alice"  
print("Name:", name)
```

- Click the Run button at left of the cell. OR Use Ctrl + Enter

4.6 More about variables

3 Example 3: Storing your height

In the code cell, Type the following code:

```
height = 5  
print("Height:", height)
```

Click the Run button at left of the cell.

OR Use Ctrl + Enter

4 Example 4: Combining variables in a message

In the code cell, Type the following code:

```
age = 8  
friend = "Bob"  
print("My friend", friend, "is", age, "years old.")
```

Click the Run button at left of the cell.

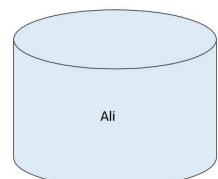
OR Use Ctrl + Enter



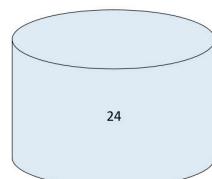
Home Activity 1: Variables

Write a code on a paper showing 2 variables.

Draw the variables on a paper and write its value.



Name



Age

4.7 Mathematics in Python

Python can also help you do math. You can use the print() function to add numbers and display the result.

Class Activity 3: Add Two Numbers Using Python

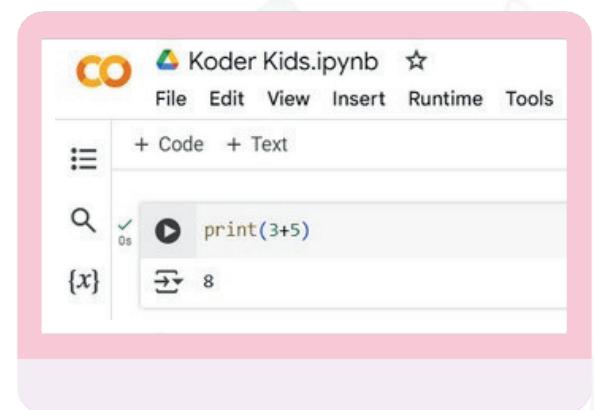
1 Open Google colab. Open new notebook

2 Type the following code:

```
print(3+5)
```

3 Run the Program:

Click the Run button again. You should see results below the code block.



```
Koder Kids.ipynb
File Edit View Insert Runtime Tools
+ Code + Text
0s ✓ 0s
{x} ➔ 8
```

4 Try more math:

Use the print() function to try subtraction, multiplication, and division:

```
print(10 - 4)
print(6 * 7)
print(12 / 3)
```



Home Activity 2: Some mathematics

Add 2 numbers of your choice using calculator.

Add same number using a python script.
See are results same?

4.8 Some more Codes

For practice purpose, run the following codes in your notebooks.

Class Activity 4: More coding practice

1 Example 1: Show a simple message

```
print("Hello, Python!")
```

2 Example 2: Mix of words and variable

```
name = "Charlie"  
age = 12  
print("My name is", name, "and I am", age, "years old.")
```

3# Example 3: Printing a math result

```
result = 5 + 3  
print("The result of 5 + 3 is", result)
```

4 Example 4: Printing a fun pattern

```
print("*")  
print(" ** ")  
print(" * * * ")
```

Home Activity 3: Use print function

Use variables to store

- Your name
- Father's name
- Mother's name

In next code block print line.

My name is _____, My father name is
_____, My mother name is _____.

4.9 Chapter Wrap-Up

You did amazing, Koder Kids! In this chapter, you:

- Wrote real Python code
- Printed messages and numbers
- Used variables
- Solved math problems

Next Up: Time to make awesome slides in PowerPoint!

**Fun Fact: Python is used to
make video games, websites,
and even space programs!**



Chapter 5:

Creating Your First PowerPoint

5.1 Introduction to PowerPoint

PowerPoint is a program used to create presentations. You can use it to show pictures, text, and even videos. In this chapter, you will learn how to create a simple presentation with slides, text, and images.



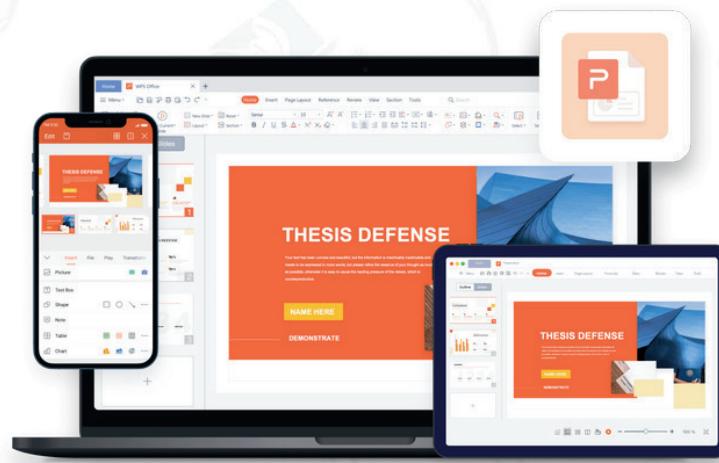
What is PowerPoint?

- PowerPoint helps you present your ideas visually using slides. Each slide can have text, images, and more, and you can show them one after another to create a full presentation.



Why Use PowerPoint?

PowerPoint is a great tool for school projects, showing your ideas to a group, or creating fun slideshows for your friends and family.

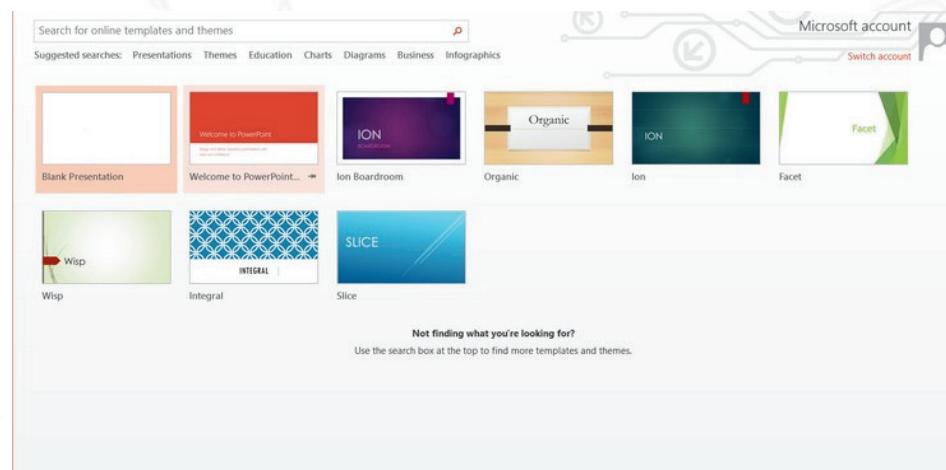


5.2 Designing Your First Slide

Let's get started by designing your very first slide in PowerPoint!

How to Start Paint 1:

- Click the Start Menu (Windows icon).
- Type PowerPoint in the search bar and click the PowerPoint app to open it.
- Click Blank Presentation to start a new project.



Class Activity 1: Create Your First Slide

1 Add a Title:

At the top of the blank slide, you will see Click to add title. Click there and type the title of your presentation (e.g., "My Favorite Things").



2 Add a Subtitle:

Under the title, click Click to add subtitle and type your name (e.g., By [Your Name]).



3 Change the Font:

- Highlight the text you just typed.
- Go to the Home tab at the top and choose a new font from the font dropdown menu.
- You can also make the text bold, italic, or change its color.



4 Add a Background Color:

- Right-click anywhere on the slide and select Format Background.
- Choose a color from the Fill options to change the background of your slide.



5.3 Adding Text and Images

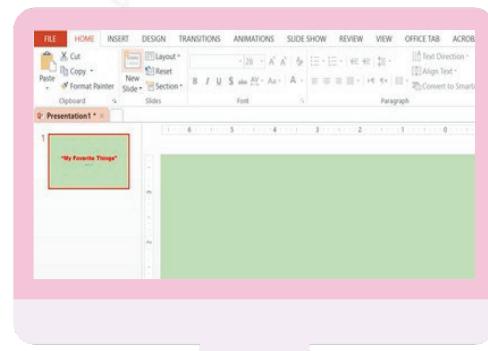
Now that you've created your first slide, let's add some text and images to make it more interesting.

Class Activity 2: Add a Slide with Text and Images

1 Add a New Slide:

In the Home tab, click the New Slide button.

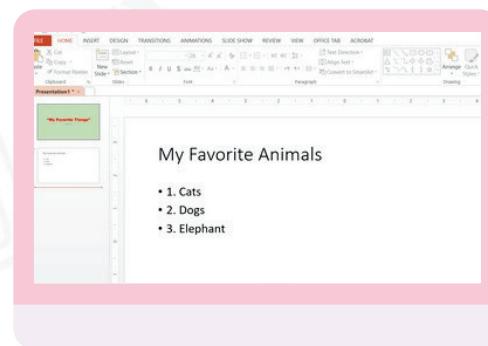
Select the layout called Title and Content.



2 Add Text:

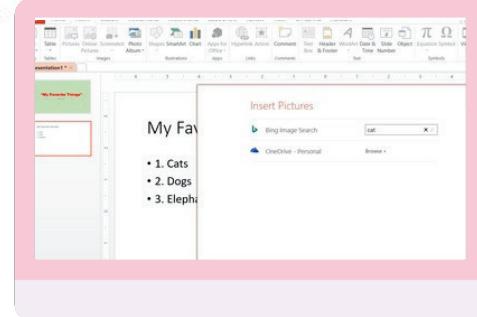
Click Click to add title and type the title for your slide (e.g., "My Favorite Animals").

In the text box below, type a list of your favorite animals (e.g., "1. Cats, 2. Dogs, 3. Elephants").



3 Insert an Image:

- Click Insert in the top menu and then select Pictures.
- Choose Online Pictures to search for images from the internet.
- Search for a picture of your favorite animal and click Insert to add it to your slide.



4 Resize the Image:

- Click on the image you added.
- Drag the corners to make it bigger or smaller, and move it to where you want it on the slide.



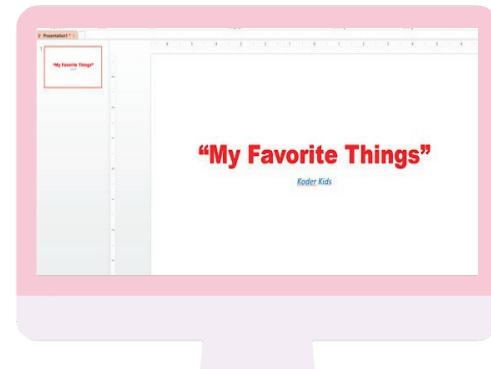
5.4 Creating a 3-Slide Presentation

Now, let's put everything together and create a full 3-slide presentation.

Class Activity 3: Build Your 3-Slide Presentation

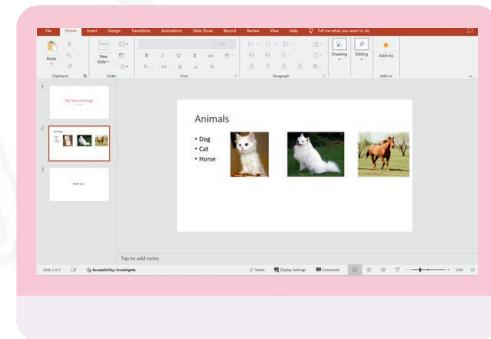
1 Slide 1: Title Slide:

This is the slide you created in the first activity. It should have the title of your presentation and your name.



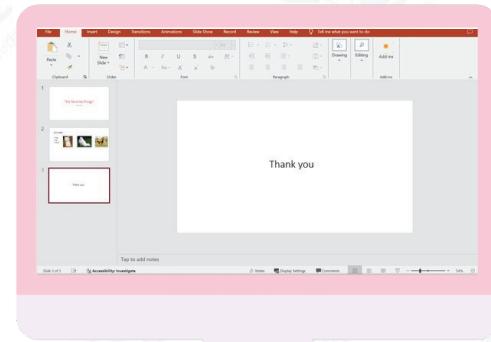
2 Slide 2: Text and Images:

Add text and images about one of your favorite topics. For example, you could list your favorite animals or foods, and add pictures to match.



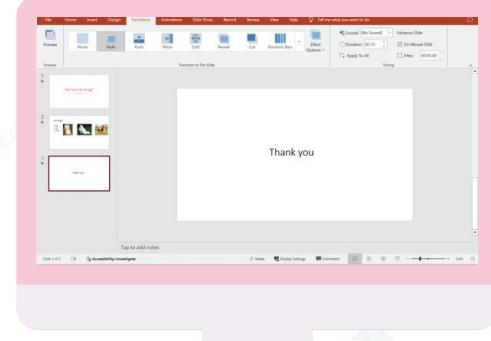
3 Slide 3: Conclusion:

- Create one more slide to finish your presentation. Click New Slide and choose the Title and Content layout.
- Title the slide "Thank You!" or "The End".
- Add a short message to thank your audience for watching.



4 Add Transitions (optional):

- Click the Transitions tab at the top.
- Choose a transition effect (like Fade or Wipe) to make your slides move smoothly from one to the next.

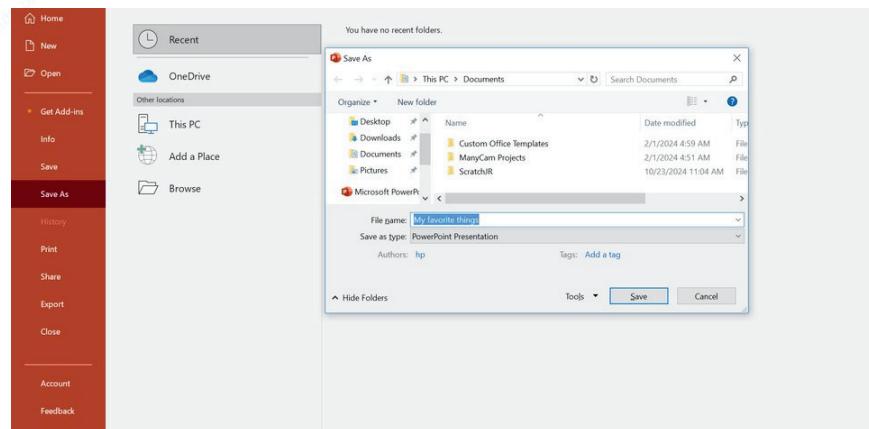


5.5 Saving and Presenting Your PowerPoint

Once your presentation is ready, it's important to save your work so you can present it later.

Steps to Save Your PowerPoint:

1. Click the File menu in the top-left corner.
2. Select Save As.
3. Choose a location to save your file, such as Documents.
4. Name your presentation (e.g., "My Favorite Things") and click Save.



Class Activity 4: Present Your PowerPoint

1 Start Your Presentation:

- Click the Slide Show tab at the top.
- Click From Beginning to start your slideshow.

"My favorite things"

Koder kids

2 Navigate Through the Slides:

- Use the arrow keys on your keyboard to move from slide to slide.

Present your ideas to an audience by explaining what's on each slide.

Thank you

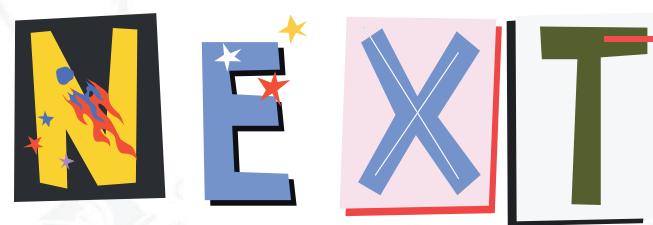
Chapter Wrap-Up 🎉

You did amazing, Koder Kids! In this chapter, you learned:

What is Power Point?

How it is used?

You made a basic -slide presentation.



Now its time to expertise in Scratch Jr.

Chapter 6:

Scratch Jr Story Time

6.1 Building Stories in Scratch Jr

In this chapter, we will use Scratch Jr to create a fun and interactive story. You'll learn how to add characters, change backgrounds, and make the characters interact by moving, talking, and doing actions.



What is a Story in Scratch Jr?

- A story in Scratch Jr is created by using coding blocks to control what the characters do. You can make the characters talk, move around, and interact with each other.

Why Build Stories?

- Building stories in Scratch Jr is a fun way to use your imagination while practicing coding. You can tell your own stories and see them come to life on the screen.

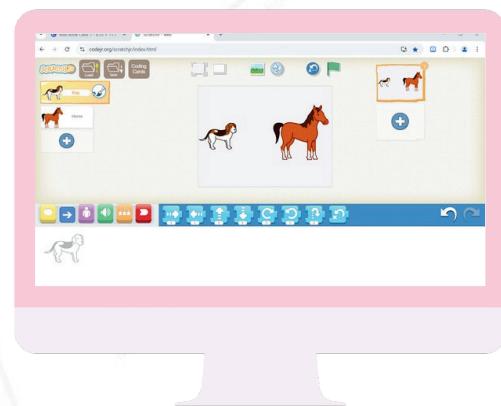
6.2 Adding Characters and Backgrounds

Before we create the story, let's add some characters and backgrounds to make it more exciting.

Class Activity 1: Add Multiple Characters and Change the Background

1 Add a New Character:

- Open Scratch Jr and start a new project.
- Click the blue circle with the cat to add a new character.
- Choose a second character (like a dog or a dinosaur) and click the checkmark to add it to the stage



2 Change the Background:

- Click the background icon in the top-right corner of the stage.
- Choose a new background for your story (e.g. a park, beach, or space).
- Click the checkmark to set the background.



3 Arrange the Characters:

- Click and drag each character to place them where you want them on the stage.



6.3 Making Characters Talk

Now that you have your characters and background, let's make the characters talk to each other.

Class Activity 2: Make Two Characters Talk

1 Select a Character:

- Click on one of the characters on the stage to select it.



2 Add a Speech Block:

- Click the purple blocks (looks) at the bottom of the screen.
- Drag the Say Block (speech bubble) into the programming area.
- Type a message (e.g., "Hello! How are you?").



3 Add a Second Speech Block:

- Click on the other character to select it.
- Add a Say Block for this character and type a reply (e.g., "I'm good, thank you!")



4 Test Your Story:

- Add green flag to start of Say block for all characters. Click the green flag to see the characters talk to each other.



6.4 Moving and Interacting with Blocks

Next, let's make the characters move while they are talking to add more action to the story.

Class Activity 3: Make Characters Move and Interact

1 Move a Character While Talking:

- Select one of the characters and add a Move Right Block from the blue motion blocks.
- Snap it after the Say Block so the character will talk and then move.



2 Add More Movements:

- Add a Move Left Block for the second character after their Say Block.
- You can also add a Move Up or Move Down block to make the character move in different directions.



3 Test Your Program:

- Click the green flag to watch the characters talk and move.



4 Challenge

- Try making the characters walk to each other while they talk.

6.5 Creating Scenes with Multiple Pages

Stories in Scratch Jr can have multiple scenes, just like chapters in a book. Let's create a second scene to continue the story.

Class Activity 4: Add a New Scene to Your Story

1 Add a New Page:

- At the top of the screen, click the plus (+) sign to add a new page (scene) to your story.



2 Change the Background:

- Just like in the first scene, click the background icon and choose a different background for the new page.



3 Move Your Characters:

- Your characters from the first scene will appear on the new page.
- Drag them to different positions to match the new scene.



4 Add New Actions:

- Create new dialogue and movements for the characters in the second scene using the same steps as before.



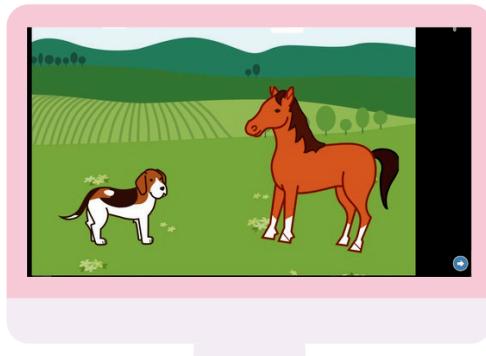
6.6 Sharing Your First Story

Once your story is complete, it's time to share it with others.

Class Activity 5: Share Your Story

1 Run the Story:

- Click the green flag to watch your story from beginning to end.
- Make sure everything works as planned-characters should talk, move, and transition smoothly between scenes.



2 Show It to Friends or Family:

- Invite friends or family to watch your story.
- Click the green flag and tell them the story as it plays out.



3 Save Your Story:

- Click the home button in Scratch Jr to save your project.
- Give your story a name (e.g. "My Fun Story") and click Save.

6.7 Chapter Wrap-Up 🎉

You did amazing, Koder Kids! In this chapter, you learned:

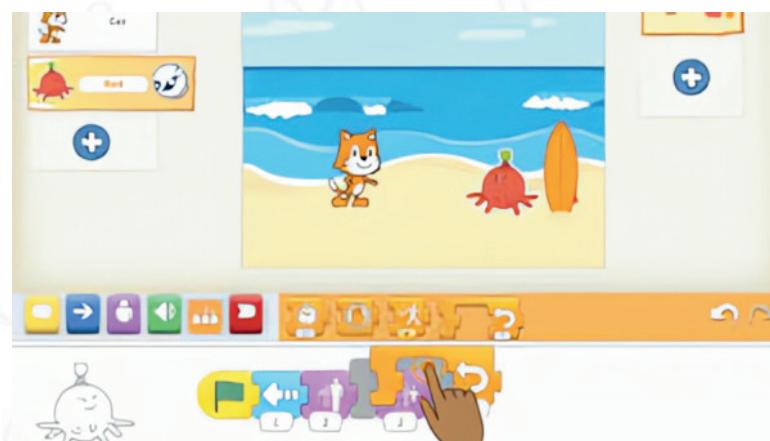
More about Scratch Jr.

Created a multipage story in Scratch Jr.

Well Done.

FunFact:

Scratch Jr helps develop problem-solving skills, creativity, and computational thinking



Next we move to Web Browsing.



Chapter 7:

Introduction to Web Browsing

Welcome to the Internet Adventure!

Hey, Koder Kids! In this chapter we will take you on a super cool journey through the World Wide Web! You'll learn to explore the internet safely, find fun facts about Pakistan, and save your favorite websites. Ready to surf the web like a pro? Let's dive in!



Fun Fact

- The internet connects billions of computers, like a giant digital marketplace, just like Karachi's Empress Market!

7.1 What is the Internet?

The internet is like a huge library connecting computers worldwide. It lets you find information, watch videos, and play games using a web browser, just like you used Paint in Chapter 1!

Definition:

A web browser (e.g., Google Chrome) is a program that takes you to websites. A website is a page with pictures, words, or videos, like a digital storybook.

Explanation:

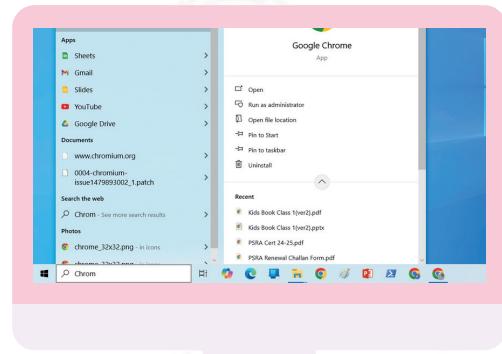
Type a website's address (like www.kiddle.co) in the browser to visit it. Use a search engine like Kiddle (kid-safe) to find things, similar to how you searched for shapes in Scratch Jr (Chapter 2).



Class Activity 1: Open a Web Browser

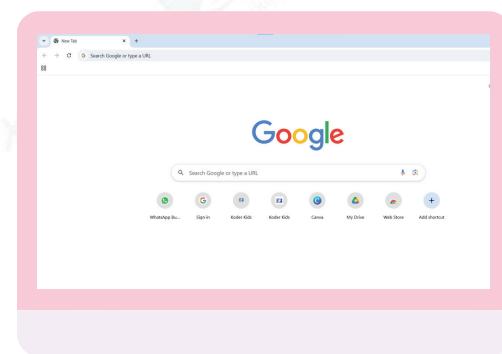
1 Step 1

Click the Start Menu (Windows icon), just like opening Paint in Chapter 1.



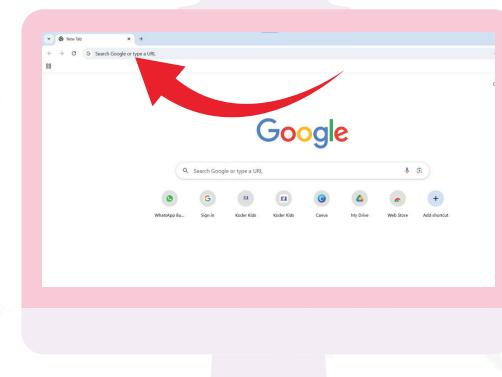
2 Step 2

Type "Chrome" and click to open the browser.



3 Step 3

Look at the address bar at the top—that's where you type a website!



4 Step 4

With your teacher, visit www.kiddle.co and search "facts about Lahore."



Home Activity 1: Draw the Internet

Draw what you think the internet looks like (e.g., a web or a cloud). Add a Pakistani flag to your drawing! Show it to your family.

Bonus Challenge

Search for "Quaid-e-Azam" on Kiddle and write one fact you learned.

7.2 Safe Web Browsing

The internet is fun, but you need to stay safe, like when you follow rules in a Scratch Jr story (Chapter 6)! Always ask a grown-up before going online.

Tips for Safe Browsing:

- Don't share your name or address online,
- Use kid-safe sites like Kiddle.
- Tell a grown-up if something looks strange.

Class Activity 2: Spot Safe Websites

1 Step 1

I. Your teacher will show two websites: one kid-friendly (e.g., www.kiddle.co) and one not for kids.



2 Step 2

Look for clues: Bright colors and simple words mean it's safe!



3 Step 3

Write one thing that makes a website safe.

4 Step 4

Example: Is a site about Pakistani festivals (like Eid) safe? Discuss!

Home Activity 2: Internet Rules Poster

Make a poster with three internet safety rules (e.g. "Ask Ammi or Abbu first!"). Decorate with stars or a crescent moon. Hang it near your computer.

Bonus Challenge

Add a fourth rule to your poster like "Respect others online."



7.3 Searching for Information

A search engine finds things using keywords, like coding blocks in Scratch Jr (Chapter 2).

How to Search:

- Open Kiddle (www.kiddle.co).
- Type keywords (e.g., "Pakistani culture").
- Press Enter and pick a website.

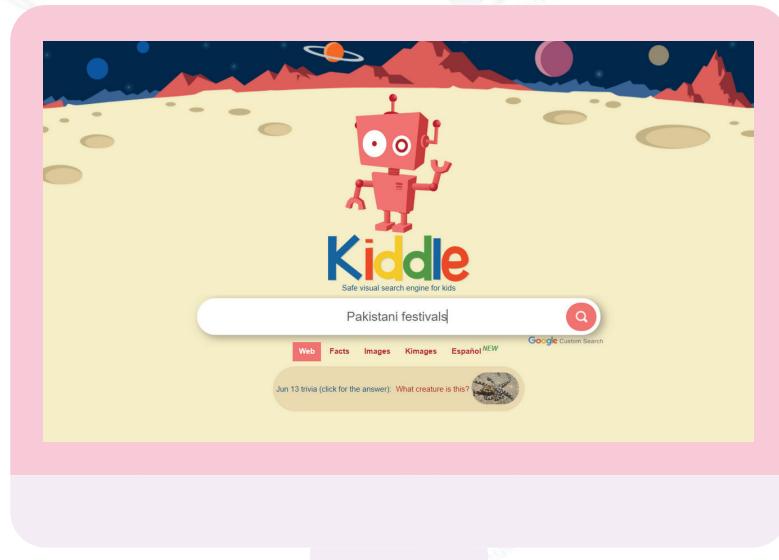
Class Activity 3: Search Safari

1 Step 1

Open Kiddle with your teacher.

2 Step 2

Search "facts about Pakistani festivals."



3 Step 3

Pick one fact (e.g., about Basant or Eid) and share it with the class.

4 Step 4

Link to Chapter 6: How could you make a Scratch Jr story about this festival?



Home Activity 3: Fact Finder

With a grown-up, search for a fact about your favorite Pakistani animal (e.g., markhor) on Kiddle. Draw the animal and write the fact.

Bonus Challenge

Find two facts and make a mini PowerPoint slide (like Chapter 5) to show them.



7.4 Saving Favorite Websites

Bookmarks save websites you like, so you can visit them fast, like saving a Python program in Chapter 4!

How to Bookmark:

- Visit a website (e.g., www.kiddle.co).
- Click the star icon in the address bar.
- Name it (e.g., "Kiddle") and click Save.

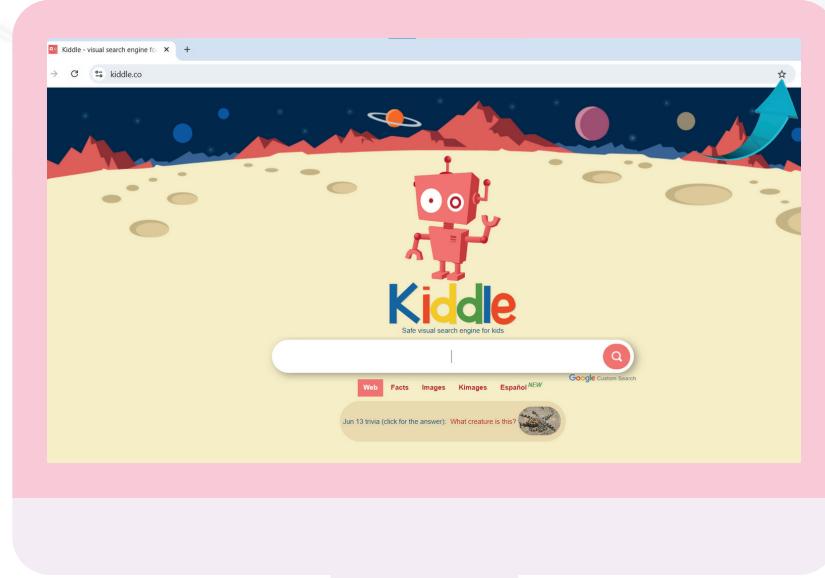
Class Activity 4: Bookmark a Website

1 Step 1

Visit www.kiddle.co.

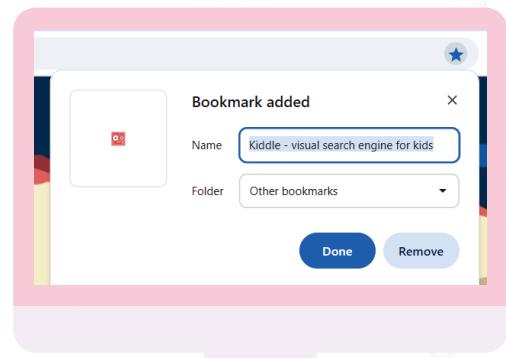
2 Step 2

Bookmark it by clicking the star icon.



3 Step 3

Open the bookmark menu (ask your teacher) and find Kiddle.



4 Step 4

Click to visit it again!



Home Activity 4: Bookmark Treasure

With a grown-up, bookmark two kid-friendly websites (e.g., one about Pakistani stories). Draw a treasure chest with their names inside.

Bonus Challenge

Create a bookmark folder called "Pakistan Fun" and add one more site.



7.5 Chapter Wrap-Up

Wow, Koder Kids! You're internet explorers now! You opened a browser, searched safely for Pakistani facts, and bookmarked websites.

What We Did:

- Visited kid-safe websites like Kiddle.
- Learned internet safety, like in a Scratch Jr story.
- Searched for facts about Pakistan and saved websites.



Next Up: Create awesome art in Canva!

Fun Fact

Pakistan's first internet connection started in 1995, when computers were super slow!

Chapter 8:

Basics of Digital Art

Welcome to the Art Studio!

Hey, Koder Kids! Chip the Computer Chip here, ready to make you digital artists! You'll use Canva to design posters and cards, just like you drew in Paint (Chapter 1) or made slides in PowerPoint (Chapter 5). Let's create something colorful!



Fun Fact

Digital art is used in Pakistani animated shows, like "Burka Avenger"!

8.1 What is Canva?

Canva is a free online tool for making posters, cards, or invitations with pictures, text, and shapes. It's like a digital Paint program!

Definition:

Digital art is art made on a computer. Canva gives you templates (ready-made designs) to start, like a PowerPoint slide layout (Chapter 5).

Explanation:

Pick a template, add text, change colors, or drag in pictures. It's like coding a Scratch Jr scene (Chapter 2) but for art!

Canva

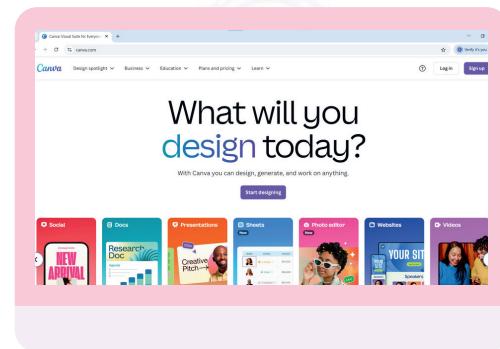
Canva



Class Activity 1: Open Canva

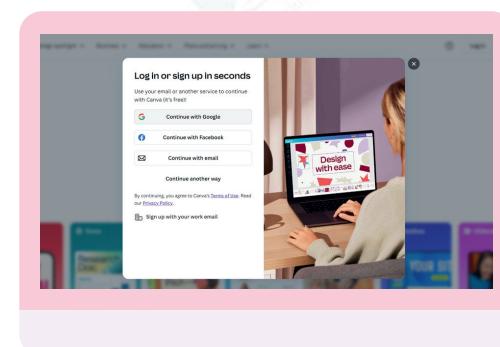
1 Step 1

With your teacher, go to www.canva.com in a browser (like Chapter 7).



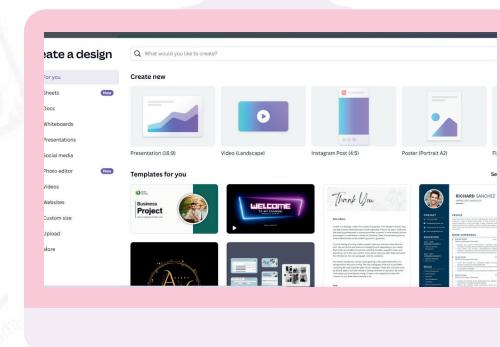
2 Step 2

Click on Sign in and continue with any Google account.



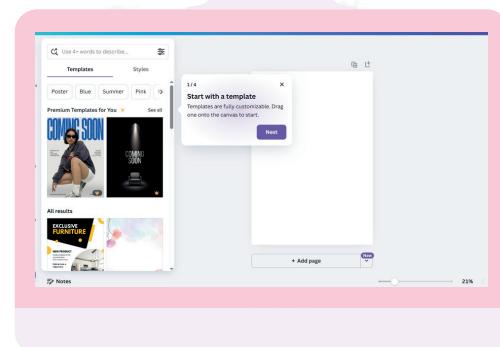
3 Step 3

Click + Button on left hand side, "Create a design" and choose "Poster."



4 Step 4

See the templates and tools? That's your art studio!



Home Activity 1: Dream Design

Open few templates. Try to change text. Try to change size of images etc

Explore as much as you can.

Bonus Challenge

Sketch a second design for Pakistan Day (March 23).

8.2 Creating Your First Design

Let's make a poster for a Pakistani festival, like you animated stories in Scratch Jr (Chapter 6)!

Steps to Create a Poster:

- Choose a template with bright colors.
- Add text, like a title.
- Drag in images or shapes.

Class Activity 2: Make an Eid Poster

1 Step 1

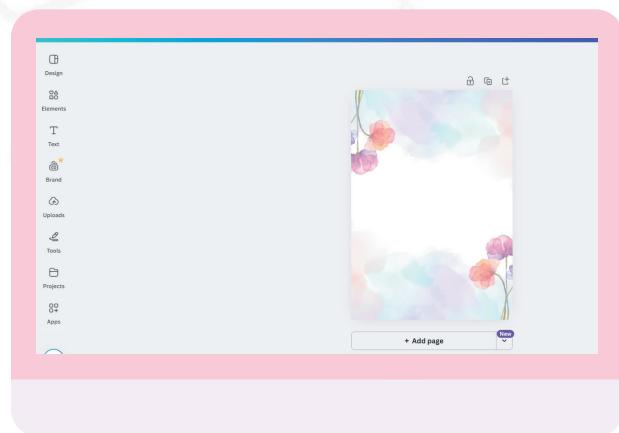
In Canva, select "Poster" under "Create a design."

2 Step 2

Pick a template with stars or lanterns.

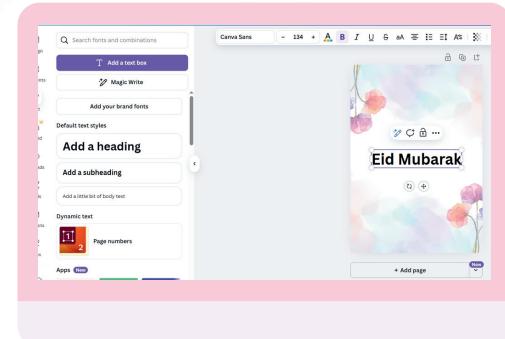
On left hand side, we have a number of tools, elements, text etc

Explore those.



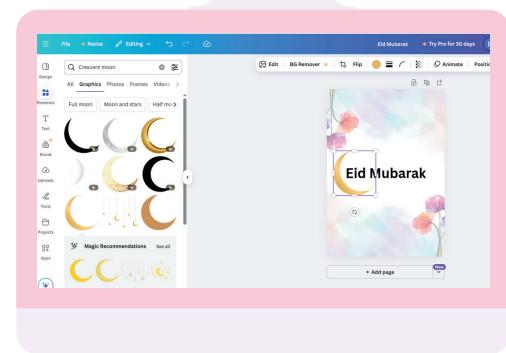
3 Step 3

Using Text, Type "Eid Mubarak!" as the title.



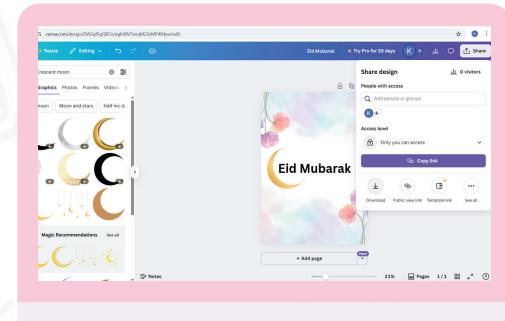
4 Step 4

Click "Elements" and search for "moon" to add a crescent moon.



5 Step 5

Save by clicking "Share" and "Download" (ask your teacher).



Home Activity 2: Poster Power

With a grown-up, make a Canva poster with your name and a Pakistani symbol (e.g., jasmine flower). Show it to your family!

Bonus Challenge

Add a second picture (e.g., a minaret) and import it into a PowerPoint slide (Chapter 5).

8.3 Adding Colors and Shapes

Colors and shapes make your art shine.

Class Activity 3: Shape Party

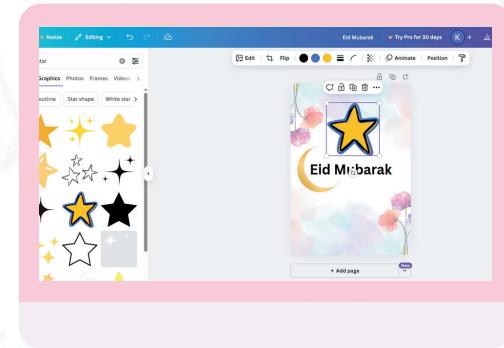
1 Step 1

Open your Eid poster in Canva.



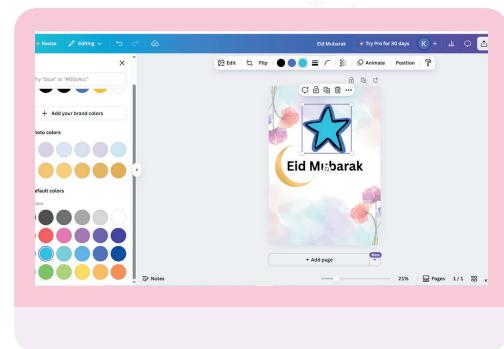
2 Step 2

Click "Elements" and add three shapes (e.g., star, circle, heart).



3 Step 3

Change their colors using the color picker.



4 Step 4

Move shapes to decorate your poster.



5 Step 5

Link to Chapter 1: How is this like drawing shapes in Paint?

Which one is easy. Paint or Canva?

Home Activity 3: Color Splash

Make a poster on Paint and try to make same poster on Canva.

Pakistan Flag OR any other poster you like.

Show both to your parents.

What does they say?

Bonus Challenge

Add a shape pattern (e.g., repeating stars) to your poster.

8.4 Sharing Your Artwork

Share your art like presenting a PowerPoint (Chapter 5)!

Steps to Share:

- Click "Share" in Canva and "Download" to save as a picture.
- Print or show it on a screen.

Class Activity 4: Art Gallery

1 Step 1

Finish your Eid poster and download it.

2 Step 2

Show it to the class (teacher will display).

3 Step 3

Tell one thing you love about your poster.

4 Step 4

Clap for everyone's art!



Home Activity 4: Art Show

Make a Canva card for a family member (choose "Card"). Add a Pakistani touch (e.g., truck art style). Give it to them!

Bonus Challenge

Create a second card for a teacher and email it (ask a grown-up).



8.5 Chapter Wrap-Up

Great job, Koder Kids! You're digital artists! You used Canva to make Eid posters, added shapes, and shared your art.

What We Did:

- Made posters like in Paint and PowerPoint.
- Added Pakistani-inspired colors and shapes.
- Shared our art with friends.



NEXT UP: Discover the magic of AI!

Fun Fact

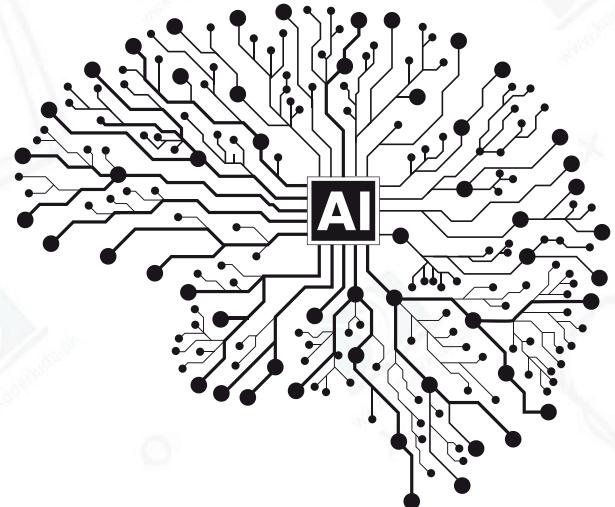
Pakistani truck art uses bright colors, just like your Canva designs!

Chapter 9:

Introduction to AI

Welcome to the AI Adventure!

Hey, Koder Kids! Let us show you artificial intelligence (AI)! AI is like a smart helper that answers questions or recognizes pictures, kind of like coding a robot in VExcode VR (Chapter 3). Let's explore AI with ChatGPT!



Fun Fact

AI helps apps like YouTube suggest videos, even in Pakistan!

9.1 What is AI?

AI is when computers think a bit like people, answering questions or solving problems.

Definition:

Artificial Intelligence (AI) is a program that does smart things, like chatting with you or spotting a markhor in a photo.

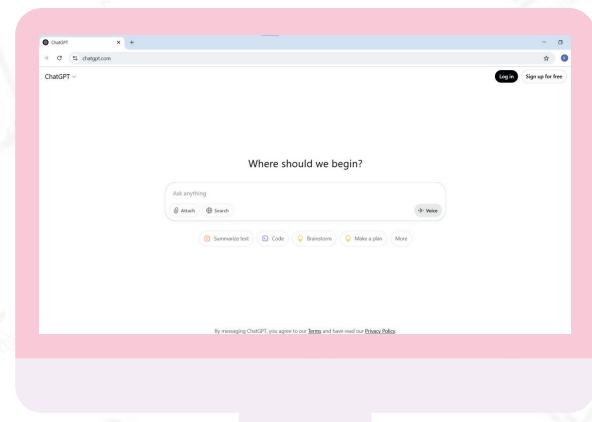
Explanation:

AI learns from examples, like how you learned to code in Python (Chapter 4). For example, if you ask AI about the moon, it finds the best answer!

Class Activity 1: AI Detective

1 Step 1

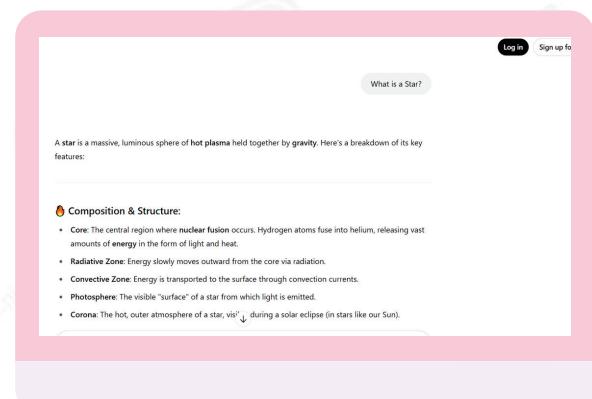
Your teacher will open you a AI chatbot (e.g., a ChatGPT or Grok).



2 Step 2

Ask it: "What is a star?"

It will give you a lot of text. Try to read it.



3 Step 3

Read / Listen to the answer and share one thing you learned.

4 Step 4

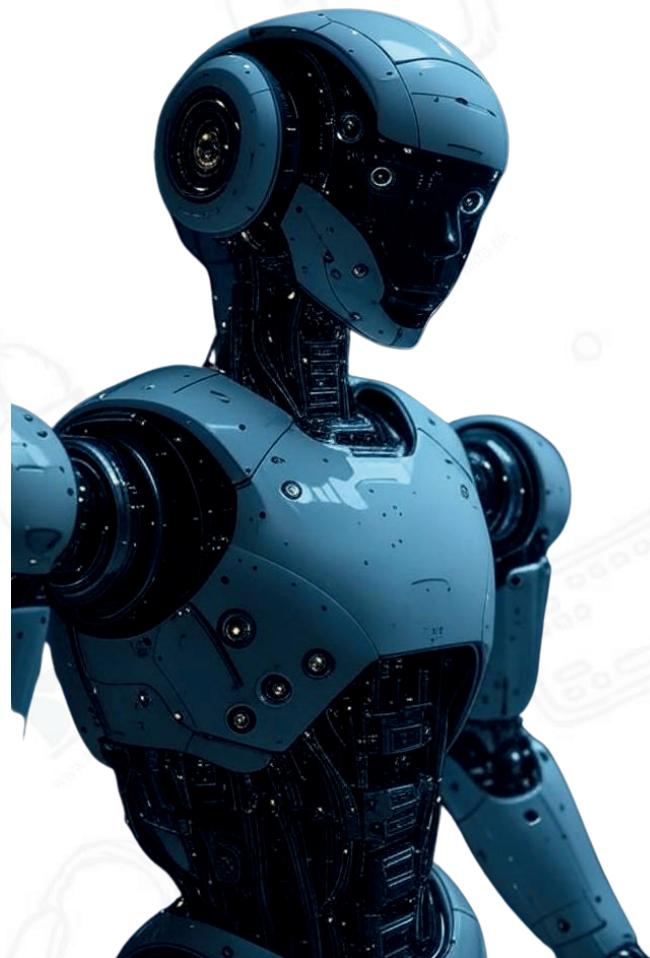
Link to Chapter 7: How is this like searching on Kiddle?

Home Activity 1: AI Imagination

Draw an AI robot helping you (e.g., teaching you about Pakistan).
Write one sentence about it.

Bonus Challenge

Add a Pakistani flag to your robot drawing.



9.2 Exploring AI with Questions

AI can answer questions like a friend, using words you understand!

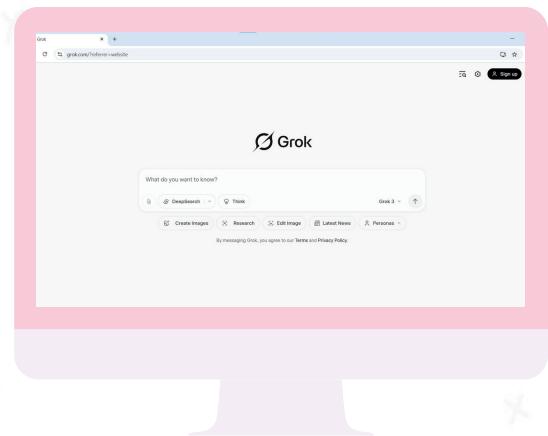
How AI Chats:

- AI listens to your question (called a prompt) and gives an answer based on what it knows, like a super-smart Calculator (Chapter 1).

Class Activity 2: Chat with AI

1 Step 1

Your teacher will open you a AI chatbot (e.g., a ChatGPT or Grok).



2 Step 2

Ask this prompt: "Tell me a fun fact about Pakistani animals."

It will generate a lot of text about a number of animals

See for your favourite one.



3 Step 3

Share the fact with the class (about your favorite animal.)

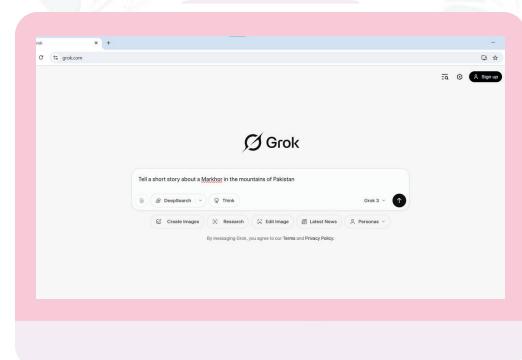
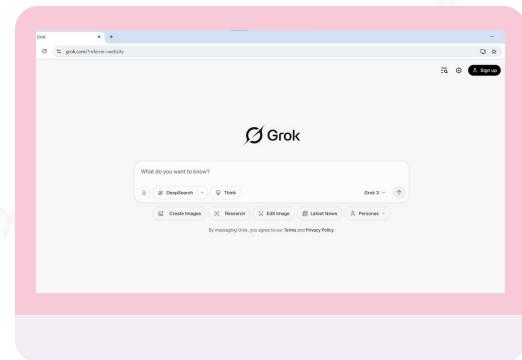
9.3 Making AI Tell Stories

AI can create stories, like your Scratch Jr stories (Chapter 6)! You give it a prompt, and it writes something fun.

Class Activity 3: AI Story Time

1 Step 1

Your teacher will open you a AI chatbot (e.g., a ChatGPT or Grok).

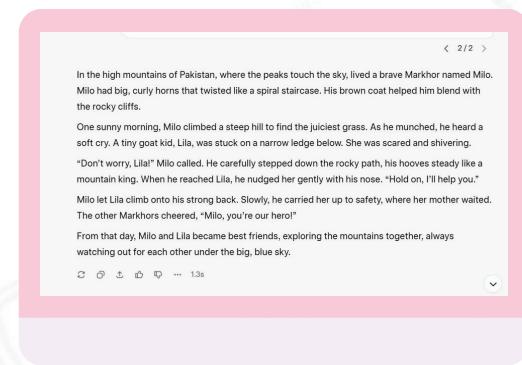


2 Step 2

Give this prompt: "Tell a short story about a markhor in the mountains of Pakistan."

3 Step 3

Listen / Read the story and draw one scene from it.



4 Step 4

Share your drawing with the class.

Home Activity: Story Starter

Draw a picture of a Pakistani festival (e.g., Basant). Write a prompt for an AI to make a story about it (e.g., "Tell a story about a kite in Lahore").

Bonus Challenge

Link to Chapter 6: Turn your AI story into a one-scene Scratch Jr project.

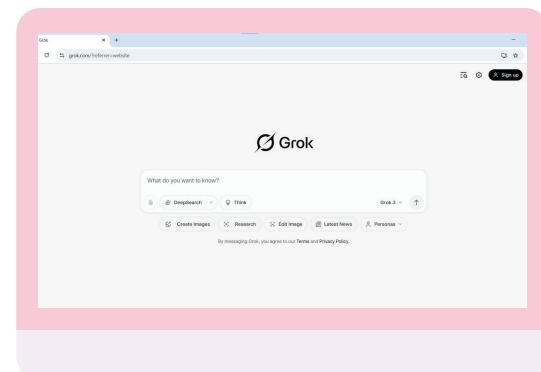
9.4 Playing Games with AI

AI can play simple games, like guessing or riddles, similar to coding a VExcode robot (Chapter 3)!

Class Activity 4: AI Riddle Game

1 Step 1

Use the chatbot with your teacher.



2 Step 2

Give this prompt: "Give me a riddle about a Pakistani fruit."



3 Step 3

Try to guess the answer (e.g., mango).

4 Step 4

Share the riddle with a friend and see if they can solve it!

Home Activity 3: Riddle Creator

Write a riddle about something Pakistani (e.g., a truck). Ask a grown-up what an AI might say about it. Draw the answer.

Bonus Challenge

Ask the AI for a second riddle and solve it with your family.

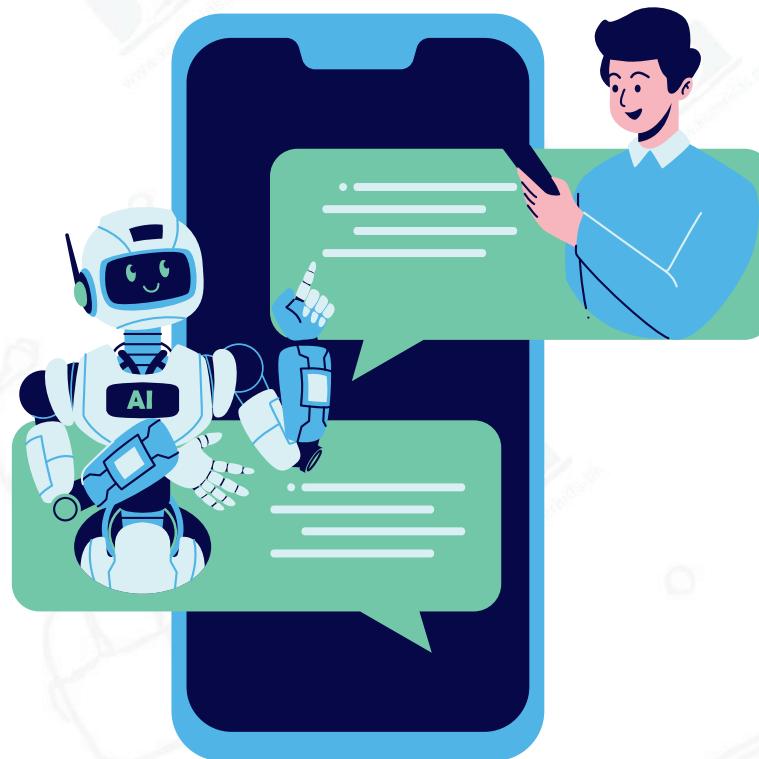


9.5 Chapter Wrap-Up

Amazing work, Koder Kids! You explored AI, chatted with ChatGPT, made stories, and played games. You're AI superstars!

What We Did:

- Learned AI, like coding in Python.
- Asked questions and made stories about Pakistan.
- Played riddle games with AI.



Fun Fact

AI is used in Pakistan to predict weather for farmers!

Chapter 10:

Exploring Electronics

Welcome to Electronics Fun!

Get ready, Koder Kids, for an exciting journey into electronics! You'll use parts like bulbs and motors to build gadgets, just like coding a robot in VExcode VR (Chapter 3). Let's light up and spin things up!



Fun Fact

Electricity powers lights in Pakistani villages, just like your projects today!



Teacher Tip

Ensure batteries are ready and supervise wire connections for safety.

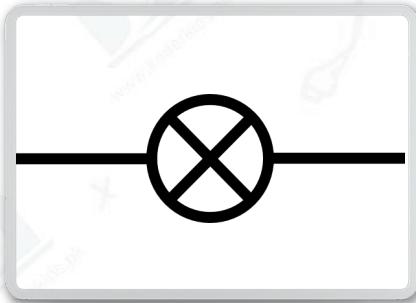
10.1 What is inside Kit?

let us go through our kit and see what is inside.

ACTUAL PICTURE



SYMBOL FOR PAPER

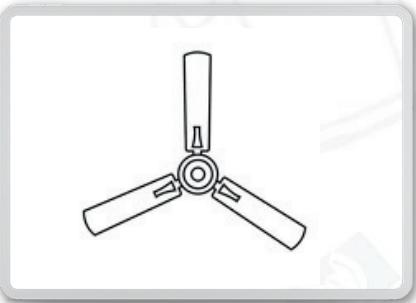


Bulb and Holder

ACTUAL PICTURE



SYMBOL FOR PAPER

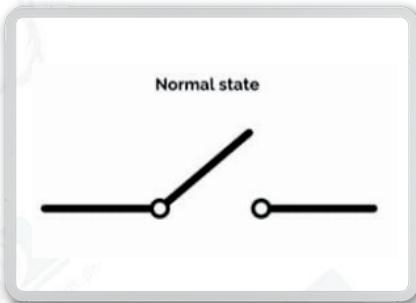


Fan motor and propeller

ACTUAL PICTURE

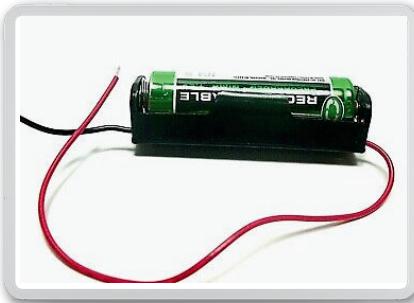


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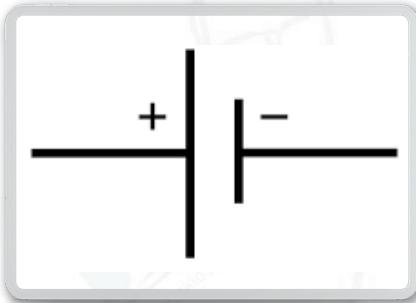


Switch Button

ACTUAL PICTURE



SYMBOL FOR PAPER



Battery and Holder

Other Items



Battery Clips



Paper Pin



Wire pieces

10.2 Light System (Bulb and Holder)

A light bulb glows when electricity flows through it, like a star in a Scratch Jr story (Chapter 6)! A lamp holder keeps the bulb safe.

What They Do:

Bulb: Lights up with power

Holder: Holds the bulb securely.

Mini-Task: Hold the bulb and guess how it lights up.

Class Activity 1: Hold and Guess

1 Step 1

Pick up the bulb and holder.



2 Step 2

Guess how they work together (ask your teacher).

3 Step 3

Draw the bulb symbol on your page.

Home Activity 1: Hold and Guess

Draw a bulb and holder on a page at home. Add an old fashioned lantern next to it!

10.3 Power System (Battery and Wire)

A battery gives power, like the brain in a computer (Chapter 1). Wires carry the power like roads!

What They Do:

Battery: Provides energy (traditional symbol: long line | - short line).

Wire: Connects parts (traditional symbol: straight line -).

Mini-Task: Touch the wire to the battery and feel if it's warm (ask a grown-up).

Draw the battery symbol!

Class Activity 2: Feel the Power

1 Step 1

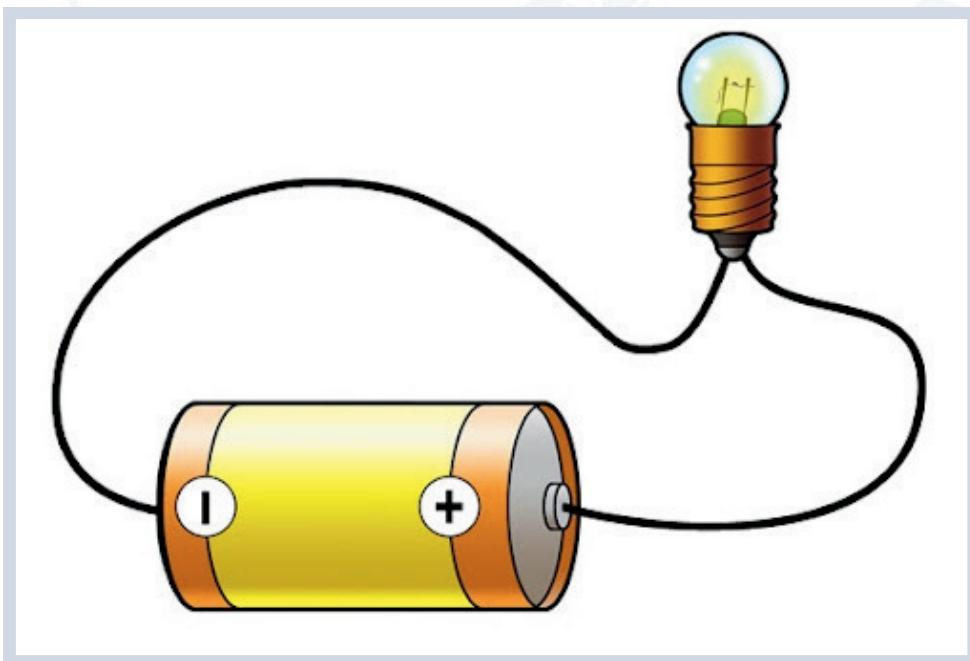
Hold the battery and wire (with teacher help).

2 Step 2

Connect battery and bulb with help of wires and clips.

3 Step 3

See if you the bulb turns ON.



Home Activity 2: Wire Drawing

Draw a battery and wire. Add the wire symbol (-)!



10.4 Motion System (Motor and Fan Blade)

A motor spins when powered, like a VExcode robot (Chapter 3)! A fan blade makes air move.

What They Do:

Motor: Turns with electricity (traditional symbol: circle with M inside).

Fan Blade: Spins to cool things

Mini-Task: Spin the fan blade by hand and imagine it with power. Draw the motor symbol!

Class Activity 3: Spin Test

1 Step 1

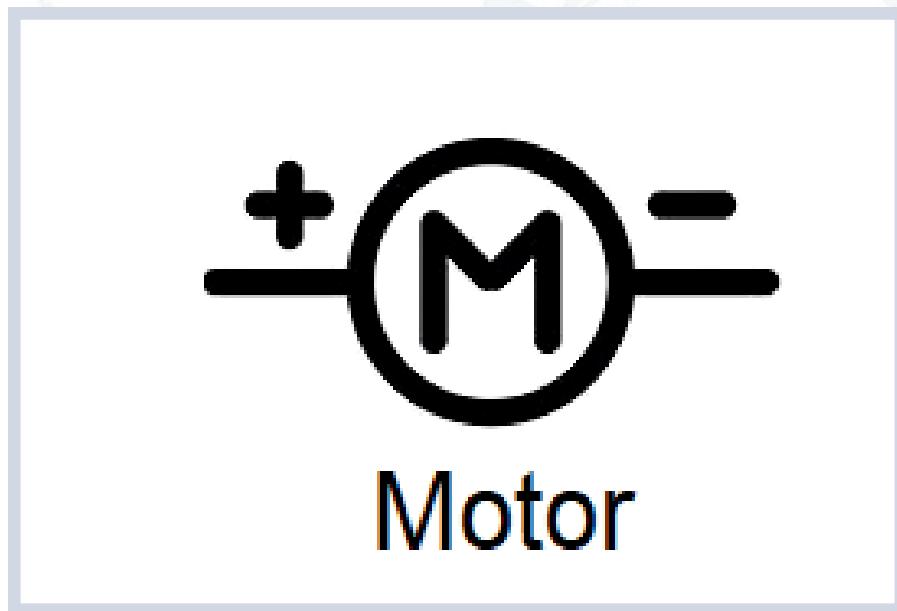
Hold the motor and fan blade.

2 Step 2

Spin the blade by hand.

3 Step 3

Draw the motor symbol on your page.



Home Activity 3: Fan Art

Draw a motor with a fan blade. Add a Pakistani fan design!

10.5 Control System (Switchgear and Spring Clip)

A switch turns power on or off, like a Scratch Jr start button (Chapter 2)! Spring clips hold wires tight.

What They Do:

Switchgear: Controls electricity (traditional symbol: |-||- with a break).

Spring Clip: Grips wires (no specific symbol, described as a connector).

Mini-Task: Flip the switch and clip a wire with the spring clip. Draw the switch symbol!

Class Activity 4: Switch Play

1 Step 1

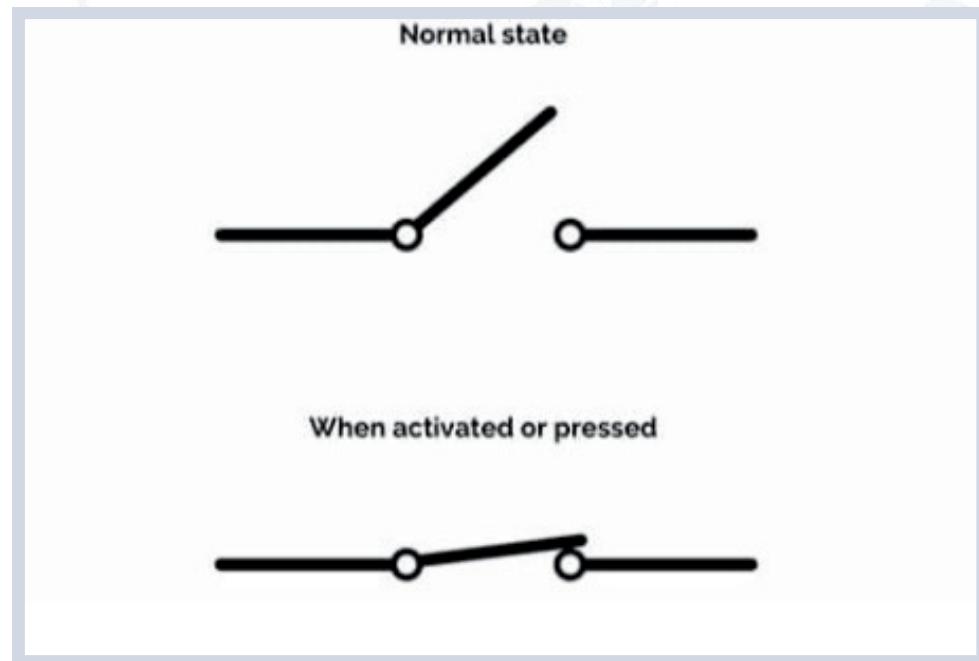
Flip the switch on and off.

2 Step 2

Clip a wire with the spring clip (ask teacher).

3 Step 3

Draw the switch symbol.



Home Activity 4: Clip Craft

Draw a switch and spring clip. Add a Pakistani kite string to your drawing!

10.6 Extra Connector (Paper Clip)

A paper clip can connect parts, like variables in Python (Chapter 4)!

What It Does:

Paper Clip: Joins wires (no specific symbol, described as a U-shaped connector).

Mini-Task: Bend a paper clip and imagine connecting wires. Draw a U shape for the paper clip!

Class Activity 5: Clip and Bend

1 Step 1

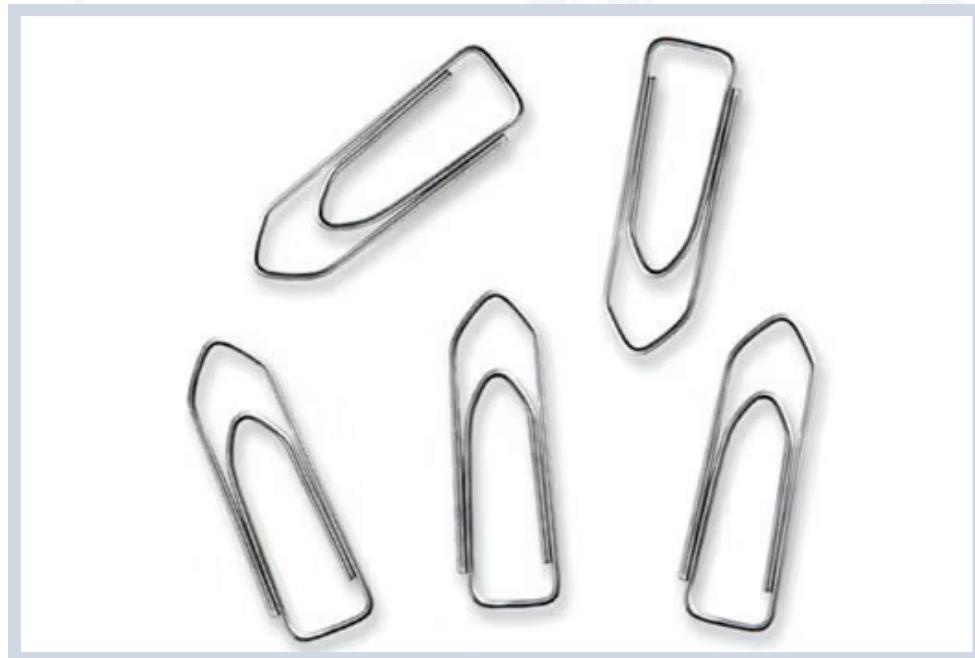
Bend a paper clip into a U shape.

2 Step 2

Imagine it connecting wires (ask teacher).

3 Step 3

Draw the U shape on your page.



Home Activity 5: Clip Design

Draw a paper clip connecting two wires. Add a Pakistani truck art pattern!



10.7 Lighting a Bulb

Let's make a bulb light up, like creating art in Paint (Chapter 1)!

STEP 1 Place the bulb in the holder.

STEP 2 Connect wires from the holder to the battery (use spring clips).

STEP 3 Watch it glow when connected!

Class Activity 6: Bulb Light

1 Step 1

Set up the bulb, holder, wires, and battery with your teacher.

2 Step 2

Connect them and turn on the circuit.

3 Step 3

Cheer when the bulb lights up!

A SIMPLE ELECTRIC CIRCUIT



Home Activity 6: Home Glow

With a grown-up, light a bulb at home. Draw the circuit with symbols!



10.8 Running a Motor

Make a motor spin, like a VExcode robot (Chapter 3)!

STEP 1 Attach the motor to the battery with wires.

STEP 2 Add the fan blade to the motor.

STEP 3 Watch it spin when powered!

Class Activity 7: Motor Spin

1 Step 1

Connect the motor, wires, and battery (teacher help).

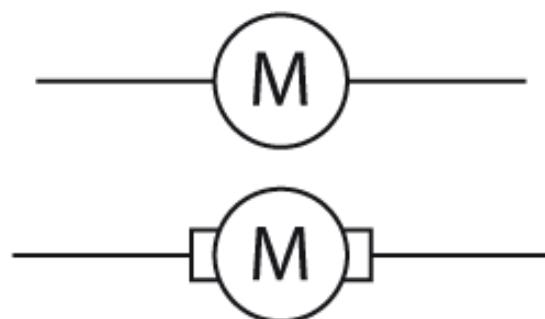
2 Step 2

Add the fan blade and turn it on.

3 Step 3

Draw the spinning fan on a paper along with the motor symbol.

Electronic symbol for motor



Home Activity 7: Spin Fun

With a grown-up, run the motor at home. Draw the fan in action with symbols!



10.9 Making a Switch Work

Control your circuit with a switch, like coding in Scratch Jr (Chapter 2)!

Steps:

- STEP 1** Add the switchgear to the bulb circuit.
- STEP 2** Connect wires from the battery through the switch.
- STEP 3** Flip the switch on and off to light the bulb!

Class Activity 8: Switch Control

1 Step 1

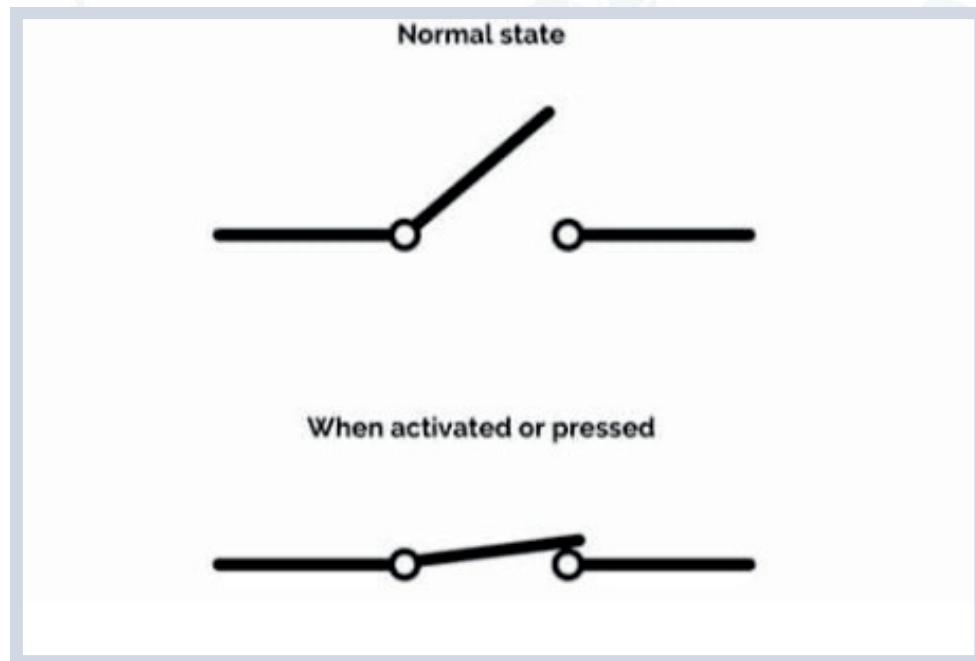
Add the switch to your bulb circuit
(teacher help).

2 Step 2

Flip it on and off to test.

3 Step 3

Tell a friend how it works! Draw the circuit with the switch symbol (-||-).



Home Activity 8: Switch Play

With a grown-up, add a switch to your circuit. Draw the on/off action with symbols!

10.10 Building a Simple Fan

Combine parts to make a fan, like a Python project (Chapter 4)!

STEP 1 Connect the motor, fan blade, and battery with wires.

STEP 2 Add the switchgear to control it.

STEP 3 Turn it on and feel the breeze!

Class Activity 9: Fan Build

1 Step 1

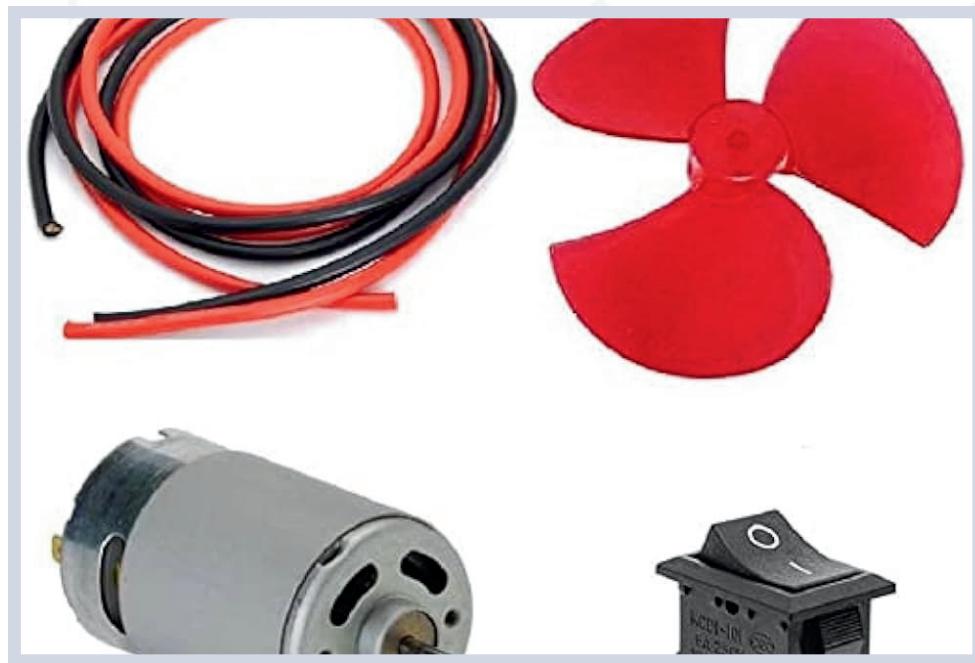
Set up the motor, fan, wires, battery, and switch (teacher help).

2 Step 2

Turn it on and feel the air.

3 Step 3

Draw your fan design with all symbols!



Home Activity 9: Fan Breeze

With a grown-up, build a fan at home. Draw it with all symbols!

10.11 Creating a Paper Clip Circuit

Use a paper clip to connect parts, like a creative Scratch Jr scene (Chapter 6)!

Steps:

STEP 1 Make a circuit with the bulb and battery.

STEP 2 Use a paper clip to connect a wire instead of a spring clip.

STEP 3 Test if the bulb lights up!

Class Activity 10: Clip Circuit

1 Step 1

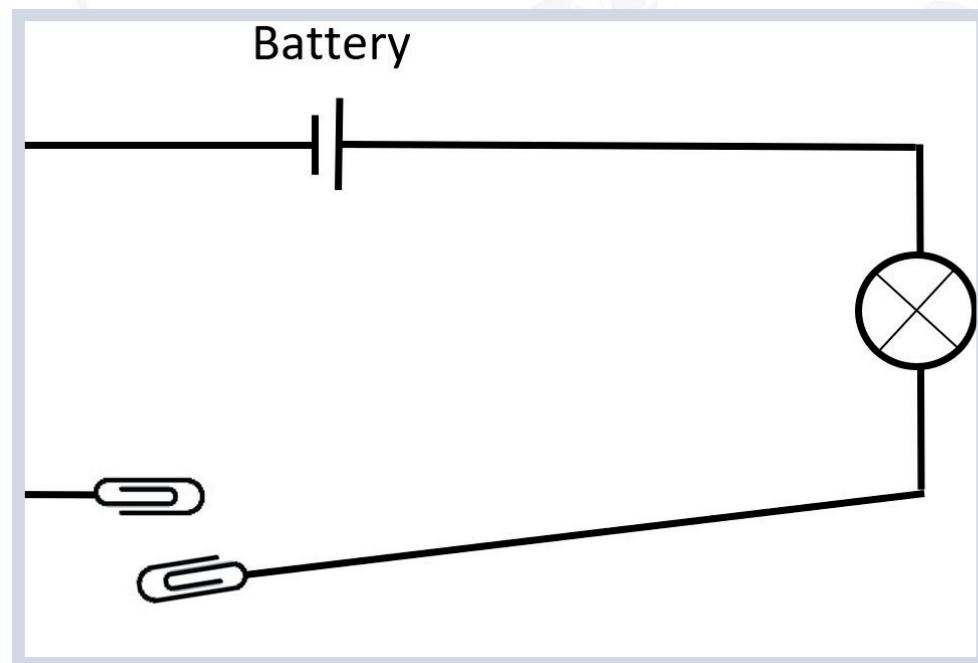
Build a bulb circuit with a paper clip (teacher help).

2 Step 2

Test it to see if it works.

3 Step 3

Show your circuit to the class! Draw it with a U shape for the paper clip.



Home Activity 10: Clip Challenge

With a grown-up, try a paper clip circuit. Draw it with symbols!

10.12 Chapter Wrap-Up

Amazing job, Koder Kids! You explored electronics, built circuits, and made a fan-awesome like your PowerPoint presentations (Chapter 5)!

What We Did:

- Learned about bulbs, motors, and switches with traditional symbols.
- Built circuits and a fan with Pakistani flair.
- Drew our projects with symbols.



- Keep experimenting with tech!

Fun Fact

Pakistani engineers use circuits to power big fans in hot cities like Multan!



KODER KIDS

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