SCRATCH MEETS AI

BRIDGE COURSE

GRADE-6

PRIMARY PREVIEW

- Working with Multiple Sprites
- Creating a Game in Scratch
- Broadcast and Receive Blocks
- Using the AI Features of Scratch
- Variables

WORKING WITH MULTIPLE SPRITES

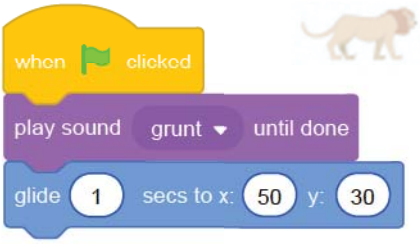
You can create projects that feature multiple sprites. Each sprite can be coded separately allowing you to bring your project to life with fun interactions. Let's create an exciting project with two sprites that combines movement and sound using Scratch blocks. To create a project with two sprites, follow the given steps:

Step 1 Choose multiple animal sprites from the **Scratch library**.

Step 2 Select a jungle-themed backdrop to create a natural environment.

Step 3 Change the size and position of the sprites from the **Sprite Info Pane**.

Step 4 Click the **Lion** sprite and create the given script.



Step 5 Click the 

block drop-down arrow to add sound.

If the desired sound is not available, you can add it from the **Sound library** under the **Sound tab**.

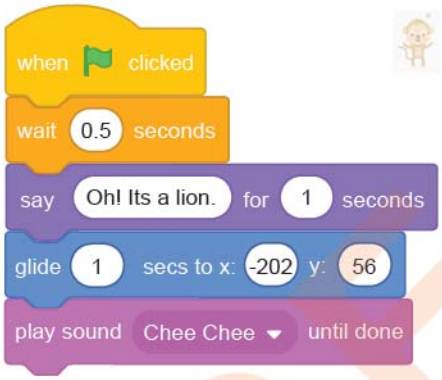
Step 6 Click the 

block text box to set the gliding position of the sprite.

Step 7 Now, click the **Monkey** sprite and create the given script.

Step 8 Make the necessary changes in the blocks as per the script to bring your project to life.

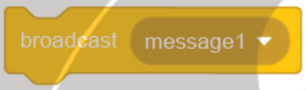
Step 9 Click the **Green Flag** to run the project.



BROADCAST AND RECEIVE BLOCKS

The **Broadcast** and **Receive** blocks are found in the **Events** block category. These blocks allow sprites to communicate with each other without being directly connected. This is useful for controlling different parts of a story or game. Here are the Broadcast and Receive blocks and their uses:

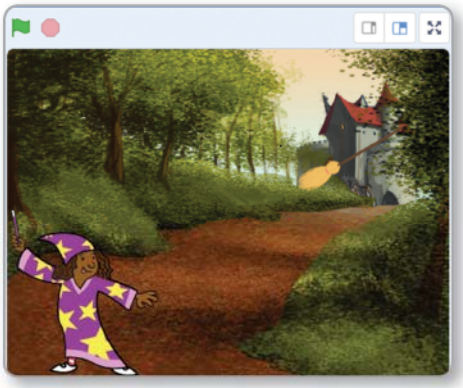
It starts the script when the specified broadcast message is received.



It sends a message to all sprites, triggering scripts with matching "When I Receive ()" block.

This block sends a message and waits until other scripts finish before moving on.

Let's create a small script using above blocks. To do so, follow the given steps:

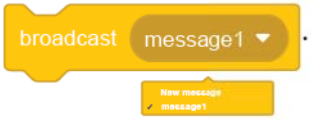


Step 1 Create a story using the **Wizard Girl** and **Broom** sprites.

Step 2 Choose a suitable backdrop.

Step 3 Drag the 

block from the **Events** block category.

Step 4 Select the **New message** option from the drop-down arrow 

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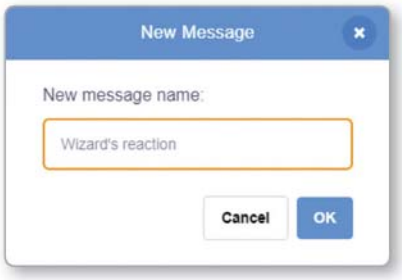
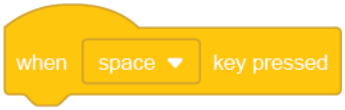
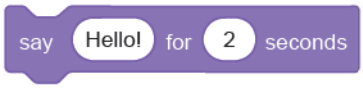


Step 5 Type the Wizard's reaction in the **New message** name box and click on **OK**.

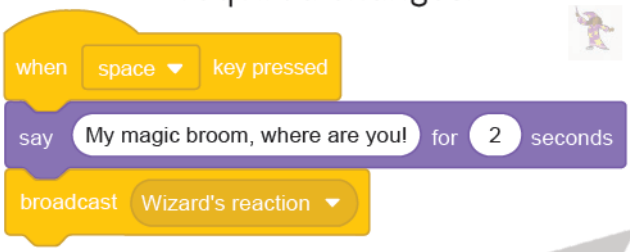
Step 6 Drag the 

block and put it above the broadcast block.

Step 7 Drag the 

block and type the text after clicking the text box.

Step 8 Create the given scripts for both sprites **Wizard** and **Broom**. Make the required changes.



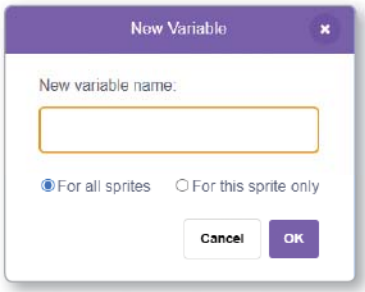
Step 9 Press the **Spacebar** key to run your project.

RAPID RECALL Tick (✓) if you know this.

1. The Broadcast and Receive blocks are found in the Events block category.
2. Broadcast and Receive blocks are useful for controlling different parts of a story/game.

VARIABLES

Variables are like labelled boxes that store information your program can use, change and display. You can use them to store numbers, text or other information that needs to be updated or referenced throughout your project. You can create your own variable by clicking on **Make a Variable** button.



Create a New Variable

There are two types of variables in Scratch:

- **Global Variables:** These variables are created on any sprite and can be accessed or modified by other sprites in the project by choosing **For all sprites**.
- **Local Variables:** These variables are created for a specific sprite and can only be used by that sprite, selected by choosing **For this sprite only**.

The variable blocks used in Scratch are:

my variable	This block refers to a custom variable that you create in your project.
set my variable to 0	This block sets the selected variable to a specific value.
change my variable by 1	This block adds or subtracts a certain number to the variable.
show variable my variable	This block shows the value of the chosen variable on the screen.
hide variable my variable	This block hides the chosen variable from the screen.

CREATING A GAME IN SCRATCH

Have you ever dreamt of creating a computer game?

Here's your chance to turn it into reality with a Scratch project. Let's learn how to create a game in Scratch using **Sensing** blocks and **Variables** to make the game more interactive and engaging.

To create a game in Scratch, follow the given steps:

Step 1 – Choose a sprite as the main character of your game (a cat or a player).

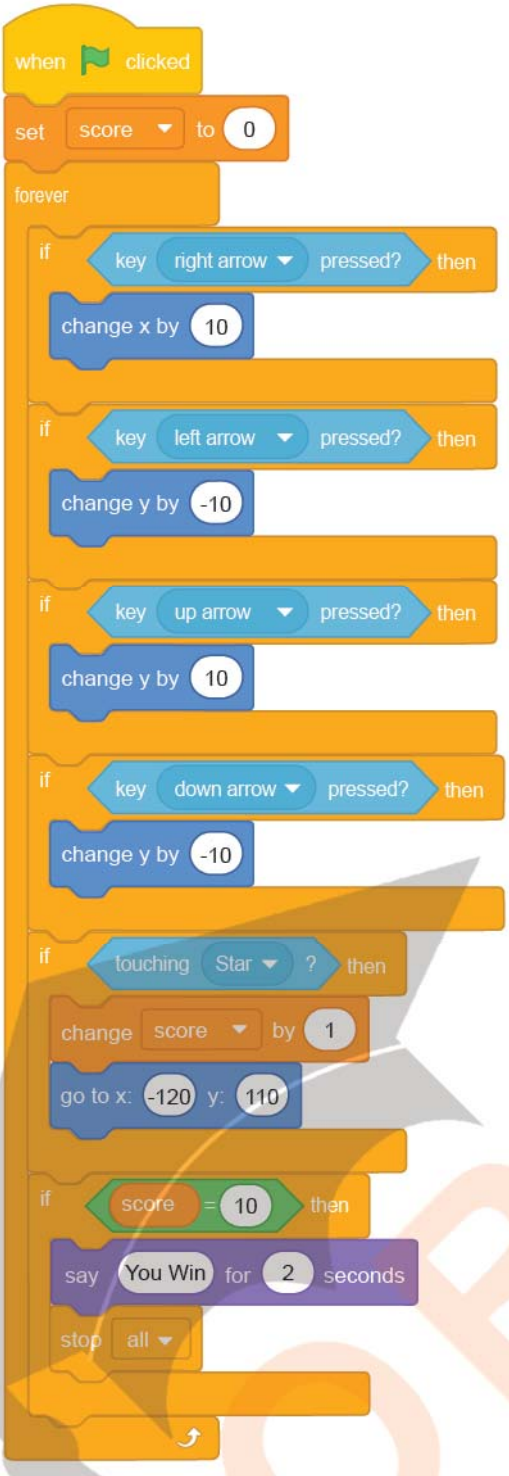
Step 2 – Add another sprite to be a target the player needs to touch (a star).

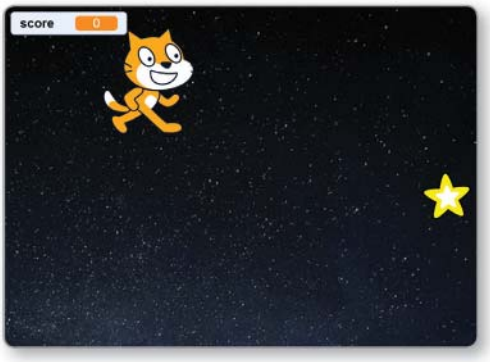
Step 3 – Create a **Variable** and name it **score v** for the player sprite.

Step 4 – Place the **Star** sprite at a random position on the stage.

Step 5 – Choose a suitable backdrop for the game.

Step 6 – Now, create the given script for your player sprite.





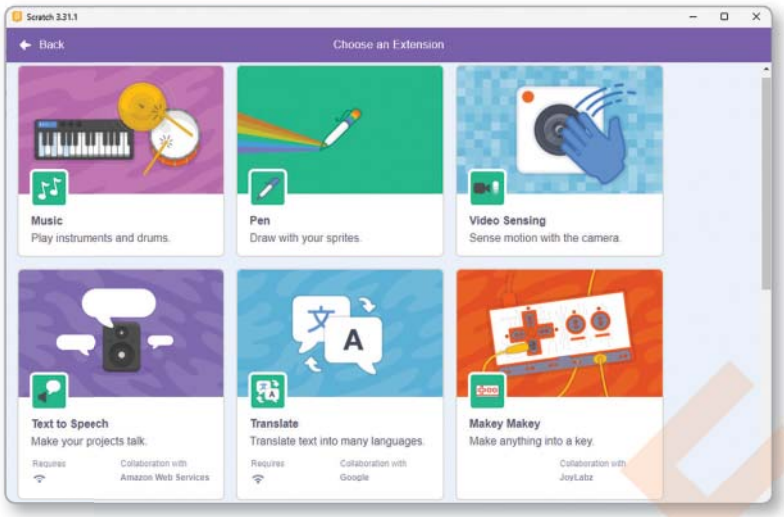
Use the arrow keys on your keyboard to move the sprite up, down, left or right. Whenever the sprite touches the Star, your score increases. If your score reaches 10, you win the game!

Think Tank

Suppose you have to code a dance party in Scratch where characters keep dancing in a loop until stopped, which block will you use for this and which songs would you play in the program?

USING THE AI FEATURES OF SCRATCH

There are many powerful extensions you can use to make your projects more dynamic and interactive. To use them, you must first add them to the blocks palette.



To add these extensions to the blocks palette, follow the given steps:

Step 1 → Click on the **Add Extension** button.

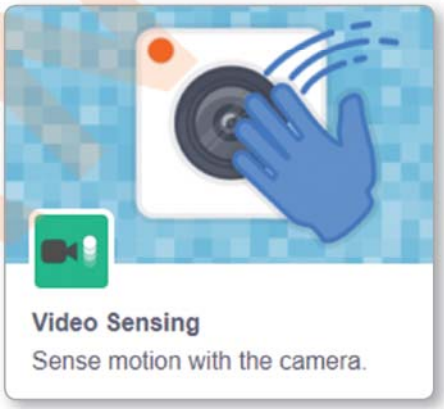
Step 2 → Choose the desired extension.

The chosen extension will be added to the blocks palette. Let's learn about some of these exciting extensions.

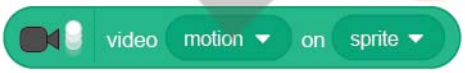
VIDEO SENSING

The **Video Sensing extension** lets you use your webcam to control your project. It can detect movement in front of the camera and use it to make things happen in the game, like moving a sprite or triggering an action.

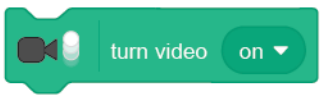
The Video Sensing extension includes the following blocks:



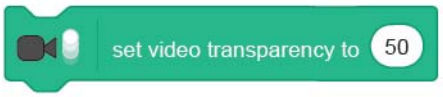
It starts a script when the camera detects motion greater than a set value (like waving your hand).



This block detects the motion or direction of movement captured by the webcam. You can apply it to a specific sprite or the entire stage.



This block turns the webcam on, off or flips the video feed.



This block is used to control the visibility of the video feed from the webcam.

FACT File

The '**set video transparency to ()**' block sets how transparent the video is. 0 shows the video clearly, 100 hides it completely.

Project 1 Sprite Reacts When You Move

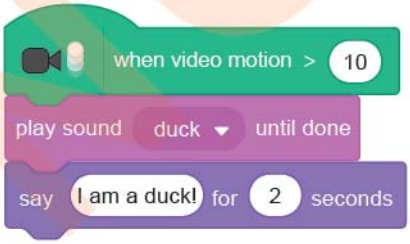
Create a simple project where the sprite reacts to your movements captured by the webcam. To create a simple project using the Video Sensing extension, follow the given steps:

Step 1 Click the **Add Extension** button.

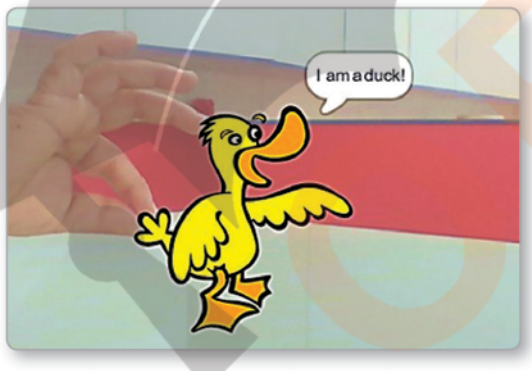
Step 2 Select **Video Sensing** extension.

Step 3 Remove the default sprite and add a new sprite.

Step 4 Create the given script for the chosen sprite.



Now, step in front of the webcam and wave your hand or touch the sprite. The sprite will detect your movements, play the duck sound and say, 'I am a duck!'.



LIVE LEARNING

Create a small project using Video Sensing blocks where the sprite changes its costume when it detects movement in front of the webcam.

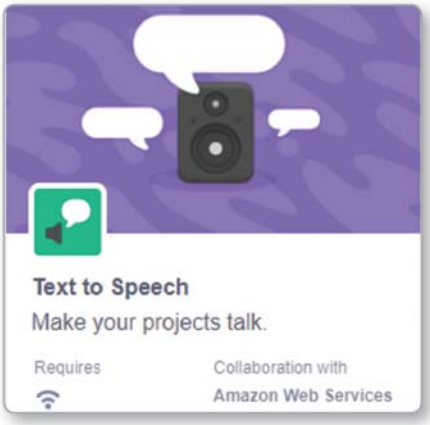
PRIVACY PRACTICES

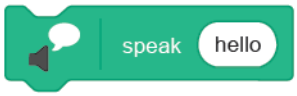
Always ask for permission before turning on the webcam. Use it respectfully by not recording others without their consent.

TEXT TO SPEECH

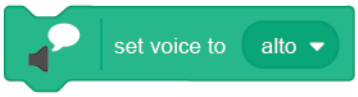
The **Text to Speech extension** lets your sprite talk. You can type a message and the sprite will say it out loud. You can also change the voice and language. It makes your projects more fun and real.

The Text to Speech extension includes the following blocks:

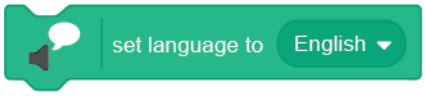




This block makes your sprite say the words you type.



This block changes how the sprite's voice sounds. You can choose from different voices like Alto, Tenor, Giant and Kitten.



This block changes the language your sprite speaks in. Useful for creating multilingual or global projects.

Ask AI AGENT

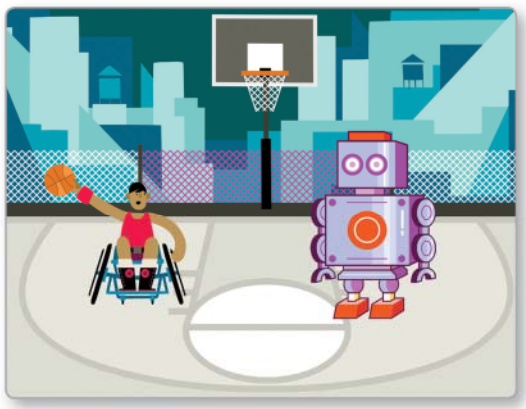
Create a multilingual script that uses Text to Speech blocks so the sprites can talk to each other in different languages.

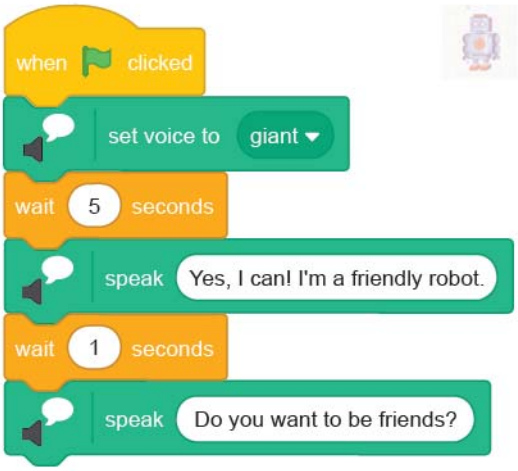
+ | Study

Project 2 Converting Text to Speech

Create a project using **Text to Speech** blocks, where the boy and the robot talk to each other by converting typed messages into spoken words. To start with your project, first add the **Text to Speech** extension using **Add Extension** button.

Select a backdrop and add the **Andie** and **Retro Robot** sprites. Then, create the scripts for the sprites and make the necessary changes in the blocks.



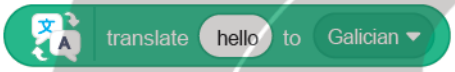


Click the **Green Flag** and hear Andie and Retro Robot chat using cool computer voices.

TRANSLATE

The **Translate extension** lets users change the words they type into different languages. This is possible through a collaboration between **Scratch** and **Google**. It internally uses **Google Translate** to perform the translations.

The Translate extension includes the following blocks:



This block translates the text to the selected language.

This block sets the language for translating text.

Project 3 Translating Text

Create a project using the Translate Extension, where the sprite will change the text you type into the language you choose.

Now, add a sprite and backdrop for the project.

FACT File

The Translate blocks can translate text into over 100 different languages.

Click the sprite and create the following script:

Click the **Green Flag** button to start.

The sprite will ask you to type the text you want to change into another language. Then, it will show you the translated text.

INTERDISCIPLINARY LEARNING

21st Century Skills #Creativity

Create a Scratch project using the Translate Extension. Then ask your classmates to type a message and choose a language to translate it into.

LANGUAGE | LAB ACTIVITY

TECH TERMS

- **Extension:** It is an extra set of blocks in Scratch that adds new features to your project.
- **Google Translate:** It is a tool that helps you change words or sentences from one language to another.
- **Variable:** It is like a container that stores information, such as a score or a name, that can change while the project runs.

REWIND RUN

- In Scratch each sprite can be coded separately, allowing you to bring your project to life with fun interactions.
- The Broadcast and Receive blocks are found in the Events block category.
- Variables are like labelled boxes that store information your program can use, change and display.
- There are two types of variables in Scratch: Global Variables and Local Variables.
- The Video Sensing extension detects movement in front of the camera and uses it to make things happen in the game.
- The Text to Speech extension lets your sprite talk.
- The Translate Extension lets users change the words you type into different languages.