

Style
Your Ideas.
Design Your
World!

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Make
Websites
Beautiful!

Scratch for Kids

A Fun in Easy Guide Learn Programming
and Create Games



Easy Lessons
for Beginners



Real Examples
& Practice



Fun Projects
to Build



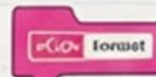
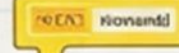
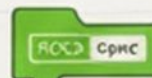
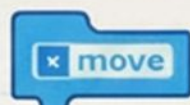
Quizzes &
Challenges



Step-by-Step
Learning



Perfect for
7-35 Years



Be Creative.
Be Confident.
Be a Web
Designer!

Build Your
Design
Tomorrow!



10
Modules



50
Lessons



150+
Topics



10+
Projects



Quizzes
& More!



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Module 1: Introduction to Scratch

Lesson 1: What is Scratch?



1 What is Coding?

Coding is like giving instructions to a computer so it can do amazing things. You can create **games**, **animations**, **stories**, **apps**, and much more!



Coding helps you:

- Improve problem solving
- Be creative
- Think logically
- Build for the future

2 Introduction to Scratch

Scratch is a free, easy-to-use coding platform made just for kids! You can **drag and drop** colorful blocks to create your own projects.



In Scratch, you can:

- Create games
- Make animations
- Tell stories
- Share your projects

3 Why Kids Love Scratch



Easy & Fun

Drag, drop and see results instantly!



Creative Freedom

Make anything you imagine!



Share & Inspire

Join a big community and get inspired!



Build Confidence

Turn ideas into projects and be proud!

You can do it!

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MODULE 1: Introduction to Scratch



LESSON 2: GETTING STARTED

Let's begin
our Scratch
journey!

1

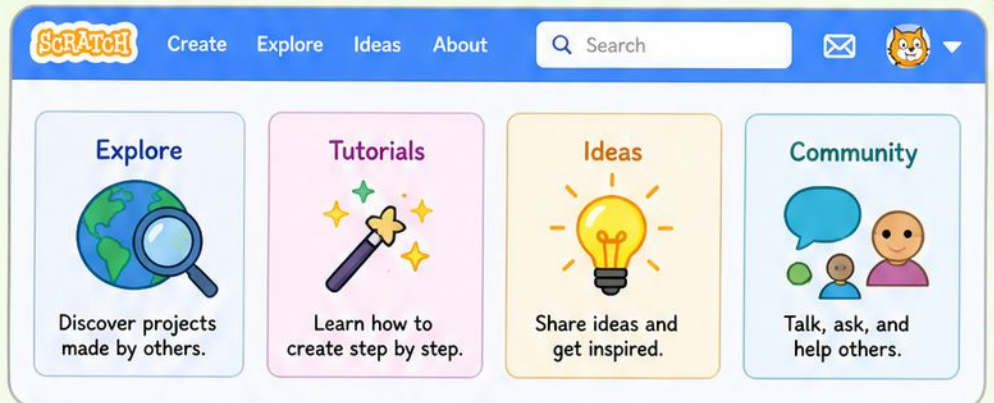
Creating a Scratch Account

- Go to scratch.mit.edu
- Click on "Join Scratch"
- Fill in your details and create your account.
- Start creating and sharing your projects!

2

Exploring the Scratch Website

- Check out amazing projects in the Explore page.
- Learn with helpful tutorials.
- Read and share ideas in the community.
- Find inspiration everywhere!



3

Starting a New Project

- Click the "Create" button.
- A new project opens in the editor.
- Start adding sprites, backgrounds and code.
- Save your project and make something awesome!



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Lesson 3:

SCRATCH

Understanding the Scratch Interface

Module 1: Introduction to Scratch

1 Stage Area

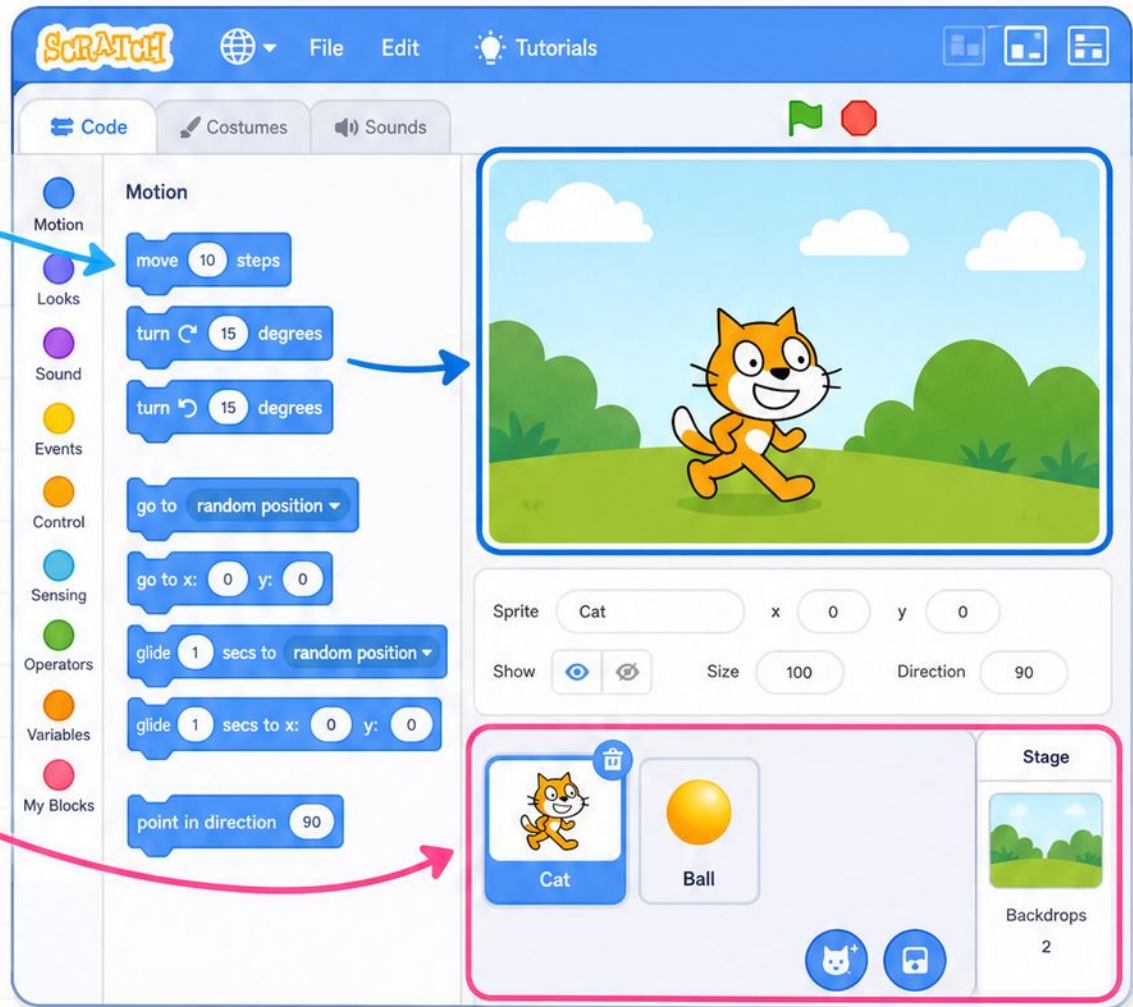
The Stage is the background area where your project comes to life. This is where sprites move, talk, and interact.

2 Sprites

Sprites are the characters or objects in your project. You can choose, draw, or add your own sprites. Each sprite can have its own code and actions!

3 Coding Blocks

Coding blocks are puzzle-like pieces you snap together to tell your sprites what to do. Drag blocks, stack them, and create awesome programs!



Snap blocks together like puzzle pieces!



Lesson 4: Your First Program

Module 1: Introduction to Scratch

In this lesson, you will learn the basics of building your very first program in Scratch!

1 Drag and Drop Blocks

Scratch uses blocks of code that you can drag from the **Blocks Palette** and drop into the **Scripts Area** to build programs.

Blocks Palette

move 10 steps
turn 15 degrees
say Hello! for 2 seconds
change color effect by 25

Scripts Area

move 10 steps
turn 15 degrees
say Hello! for 2 seconds

Just drag, drop and snap the blocks together!

2 Green Flag Event

The **green flag** starts your program. When you click the green flag, the blocks attached to it will run from top to bottom.



when clicked

move 10 steps
say Hello! for 2 seconds
turn 15 degrees

Click the green flag to run your program!

3 Making a Sprite Talk

You can make a sprite talk using the **say** block. Add your message and choose how long it appears.



Hello!

when clicked

move 10 steps
say Hello! for 2 seconds
say I love Scratch! for 2 seconds

Change the message to make your sprite say anything!

Try It!

- ✓ Click the green flag.
- ✓ Watch your sprite move and talk.
- ✓ Experiment with different blocks and messages!



SCRATCH

Lesson 5: Mini Project



Module 1: Introduction to Scratch

In this Mini Project,
you will create:

1



Hello World Animation

Make the words "Hello World!" appear with a fun animation.

2



Talking Character

Add a character that says something to the user.

3



Welcome Message Screen

Create a welcome screen to greet your audience.

You will use
these blocks!

when clicked

say Hello! for 2 seconds

next costume

go to x: 0 y: 0

What Your Project Will Do

Hello World!

The words "Hello World!" appear with an animation.

Hi there!

The character talks to the user.

WELCOME
TO MY PROJECT!

A welcome message screen greets the user.

Let's code
something
awesome!



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Lesson 1:



What are Sprites?

Module 2: Working with Sprites

SCRATCH

Sprites are the characters or objects in your Scratch project. They can move, talk, play sounds and interact!



1

Understanding Sprites

A sprite is an object in Scratch that can perform actions. Examples include characters, animals, food, vehicles, and more!



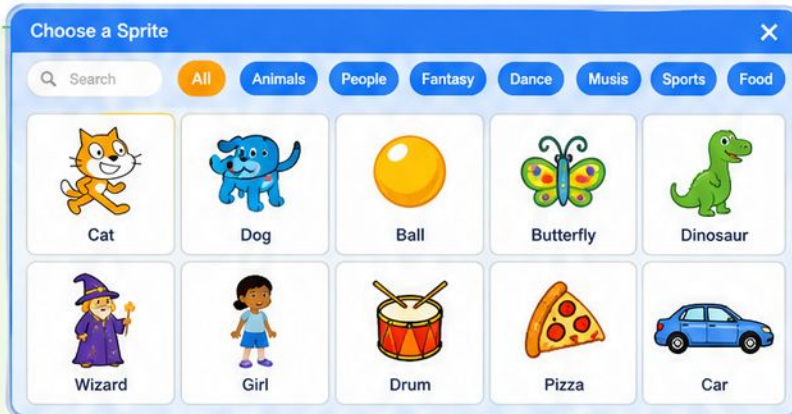
Every sprite has its own role!



2

Sprite Library

Scratch has a built-in library with many sprites. You can choose the perfect sprite for your project!



3

Adding New Sprites

You can add new sprites to your project in different ways.

- Choose from the Sprite Library
- Paint your own sprite
- Upload a sprite from your computer
- Surprise (random) for a fun choice!

Sprite

Sprite1



Upload Sprite



Surprise



Paint



Choose from Sprite Library



YOU CAN CODE!



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Lesson 2: Moving Sprites



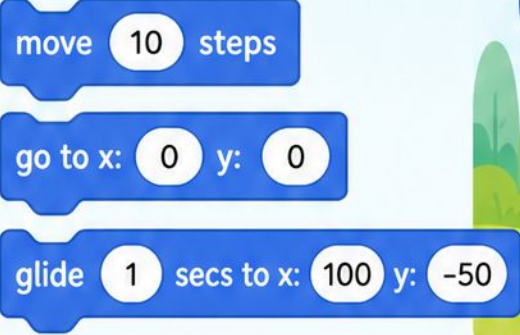
Module 2: Working with Sprites

Sprites are characters or objects in your Scratch projects.

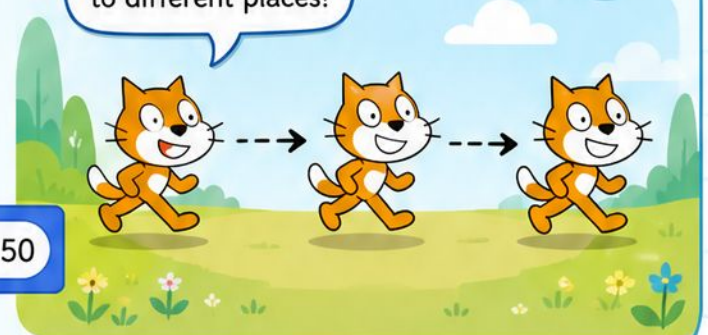
Let's learn how to move, turn, and find the position of sprites!

1 Move Blocks

Move blocks change the position of a sprite by moving it forward, backward, up, or down.

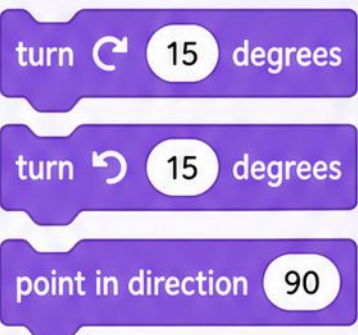


These blocks help your sprite move to different places!



2 Turn Blocks

Turn blocks rotate the sprite clockwise or counter-clockwise. You can turn by degrees.



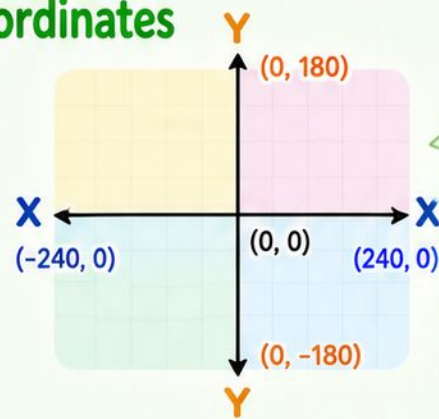
Counter-clockwise (left)



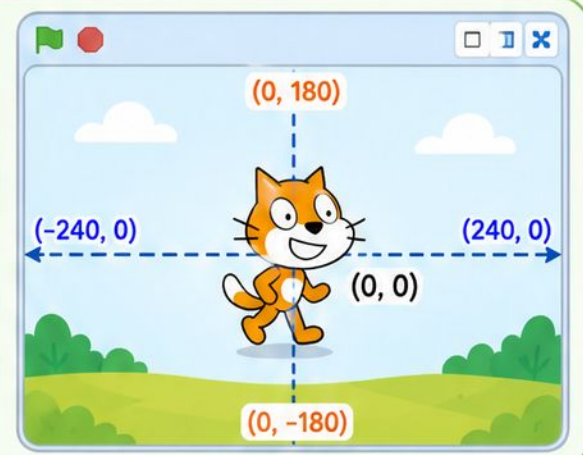
Clockwise (right)

3 Position Coordinates

Every sprite has a position on the Stage. It is shown using X and Y coordinates.



The Stage center is (0, 0).
X moves left (-) or right (+).
Y moves up (+) or down (-).





Lesson 3: Sprite Looks



Module 2: Working with Sprites



Sprites can look different! In Scratch, we use **COSTUMES** to change how a sprite appears.

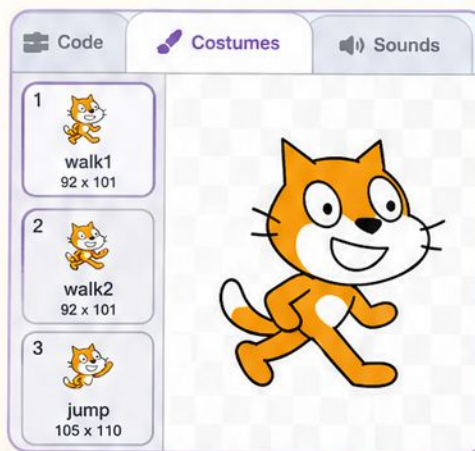


1

Costumes

A **costume** is one look for a sprite.

A sprite can have many costumes.



Where to find it?

Click the **Costumes** tab above the code area to create and edit costumes!



2

Changing Appearance

We can change how a sprite looks by switching to another costume.



Before



After

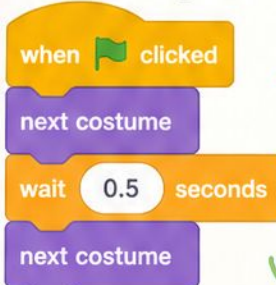
Tips

- ★ Create your own costumes in the Costume Editor!
- ★ Name your costumes so you know what they do.
- ★ Use costumes to bring your stories, games, and animations to life!

3

Switching Costumes

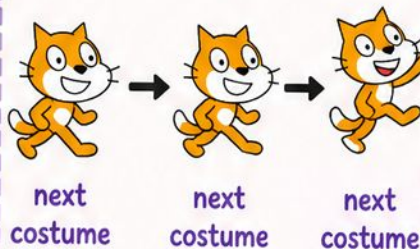
We use code blocks to switch costumes. Try this:



This makes the sprite change to the next costume, waits a little, and changes again!



Example



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Lesson 4: Sprite Sounds



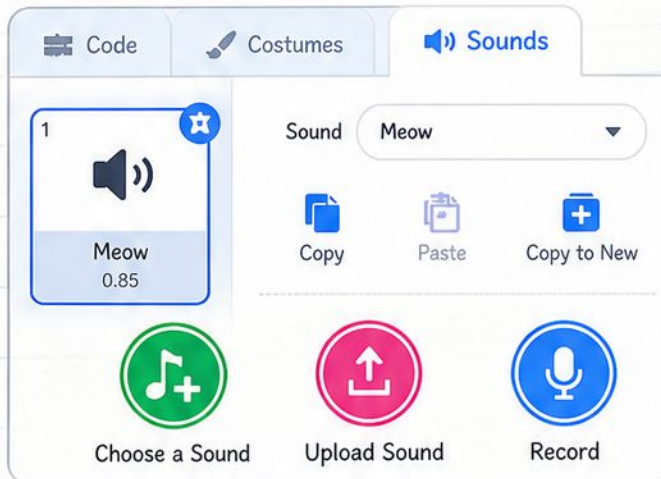
Module 2: Working with Sprites

Make your
sprites **talk**,
sing and make
sounds!

1

Adding Sounds

Add sounds to your sprite from the library, upload a sound, or record your own voice.



Let's add
a sound!



2

Playing Sounds

Use sound blocks to play sounds during your project.



play sound Meow until done

start sound Meow

stop all sounds

Meow!



3

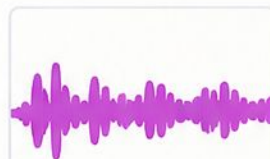
Recording Voice

Record your own voice and use it in your projects!

This is
my voice!



Record



00:03.27

Stop

Save

Use your recorded
voice with sound
blocks!



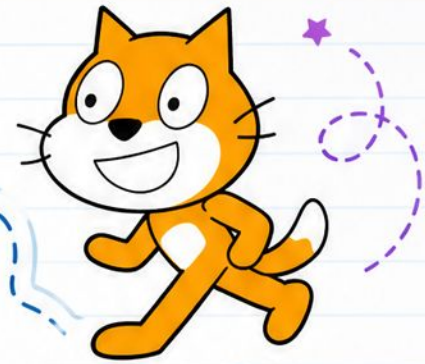
play sound My Voice until done



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Lesson 5: Mini Project



Module 2: Working with Sprites

In this Mini Project, we will:

We will use Scratch blocks to bring our ideas to life!

1

Dancing Character



when clicked

say Hello! for 2 seconds

move 10 steps

next costume

wait 0.5 seconds

turn 15 degrees

2

Funny Animal Animation



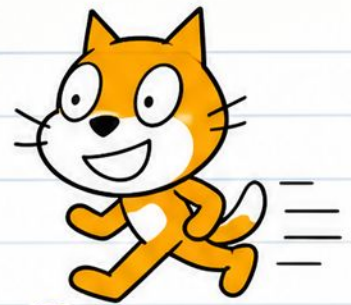
3

Cartoon Introduction





SCRATCH

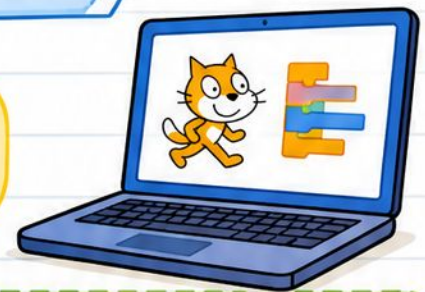


Lesson 1: Motion Blocks

Module 3: Motion and Animation



Motion blocks help sprites move around the Stage. Let's explore some important motion blocks!



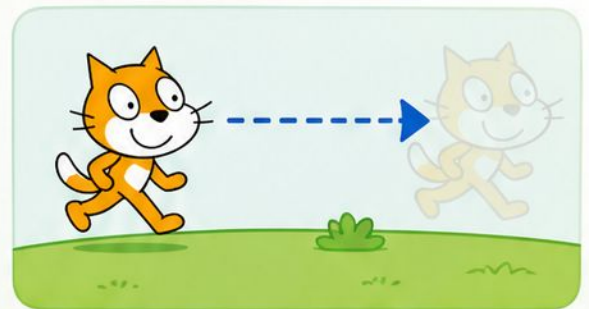
1

Moving Forward

Use these blocks to move your sprite forward by a certain number of steps.

move 10 steps

Example: move 10 steps will move the sprite 10 steps forward.



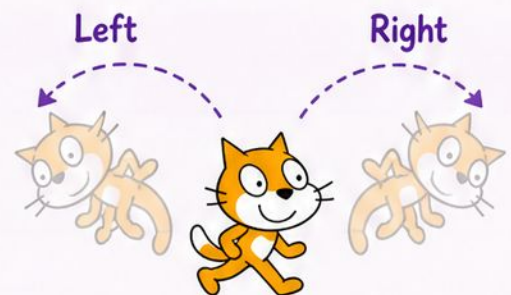
2

Turning Left and Right

Use these blocks to turn your sprite in different directions.

turn 15 degrees

turn 15 degrees



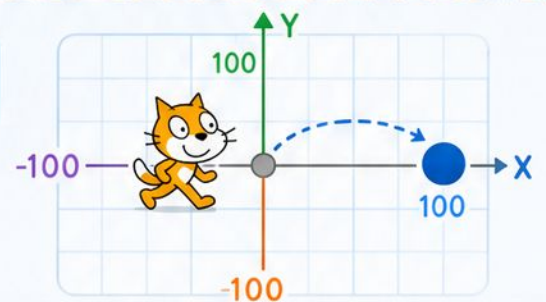
3

Glide Blocks

Use glide blocks to move smoothly to a specific position in a given time.

glide 1 secs to x: 100 y: 0

Example: glide 1 secs to x: 100 y: 0 will smoothly move the sprite to the position (100, 0) in 1 second.



Pro Tip! Combine these blocks to create awesome movements and animations!





Lesson 2: Creating Smooth Movement

Module 3: Motion and Animation

SCRATCH



In Scratch, we can make sprites move smoothly and naturally using **glide blocks**, **speed control**, and **timing**.



1 Glide Effects

Use **glide** blocks to move your sprite to a position **smoothly** over a number of seconds.

glide 2 secs to x: 150 y: 0



2 Speed Control

Change the number of seconds in the glide block to make your sprite move **faster** or **slower**.

glide 1 secs to x: 150 y: 0

→ Faster



glide 4 secs to x: 150 y: 0

→ Slower



Smaller time = Faster
Larger time = Slower



3 Animation Timing

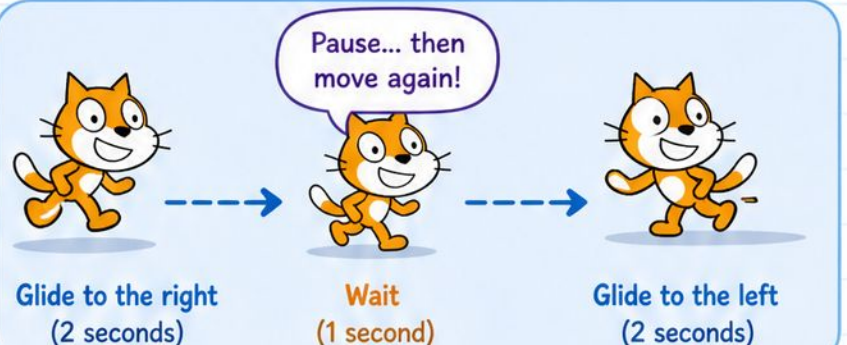
Use **wait** blocks to add pauses between movements. This helps make your animation look **natural** and **easy** to follow.

glide 2 secs to x: 150 y: 0

wait 1 secs

glide 2 secs to

x: -150 y: 0



Tip:

Experiment with different times and waits to create your own **awesome** animations!





Lesson 3: Costume Animation

Module 3: Motion and Animation



In this lesson, we will learn how to bring characters to life using costume animation in Scratch!



1 Walking Animation

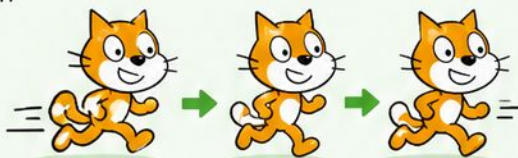
Create the effect of walking by switching between costumes step by step.



Quickly switching costumes makes your character look like it's walking!

2 Running Animation

Make your character run faster by switching costumes more quickly!



Shorter wait time = faster action! Your character runs!

3 Character Actions

Use different costumes to show actions like jumping, cheering, waving and more!



Jump



Cheer



Wave



Think

Endless actions, endless creativity!

Plan your story. Choose the right action. Make it awesome!

Tips

Add sound effects and backgrounds to make your animation even more exciting!



Practice more, experiment, and let your imagination come to life!





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Lesson 4: Background Animation



Module 3: Motion and Animation

Bring your projects to life by using changing backdrops, smooth scene transitions, and creating animated stories that keep your audience engaged!



KEY POINTS

1

Changing Backdrops

Switch backdrops to change the background and set the scene for your story.

when clicked

next backdrop

switch backdrop to space



2

Scene Transitions

Add smooth transitions between backdrops to make your project look more exciting!

when clicked

next backdrop

change color effect by 25

wait 0.5 seconds

clear graphic effects



Use effects like color, fade, or brightness for cool transitions!

3

Animated Stories

Combine backdrops, transitions, and sprites to create engaging animated stories!

when clicked

switch backdrop to forest

wait 2 seconds

switch backdrop to castle

wait 2 seconds

switch backdrop to space



Tell your story one scene at a time and make it come alive!



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Lesson 5: Mini Project

Module 3: Motion and Animation

1 Flying Bird Animation

Animate a bird flying across the sky using motion and looks blocks.

```
when green flag clicked
go to x: -220 y: 80
switch costume to bird1
forever loop
  change x by 5
  next costume
```



2 Moving Car Scene

Create a car that moves along the road with a cool background.

```
when green flag clicked
go to x: -230 y: -120
forever loop
  change x by 8
  if on edge, bounce
```



3 Dancing Robot

Make a robot dance using motion, looks and sound blocks.

```
when green flag clicked
switch costume to dance1
forever loop
  turn 15 degrees
  change y by 10
  next costume
  play sound dance beep until done
```



Use your **creativity** and **Scratch** skills to bring your ideas to life!



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Lesson 1:

SCRATCH

Event Blocks

Module 4: Events and Interaction

Event blocks are used to start scripts when something happens. They help your projects respond to different actions!



1

Green Flag Events

when  clicked

This block starts the script when the green flag is clicked.



It is often used to start the project.



2

Key Press Events

when  key pressed

This block starts the script when a specific key on the keyboard is pressed.



You can choose any key from the menu.



3

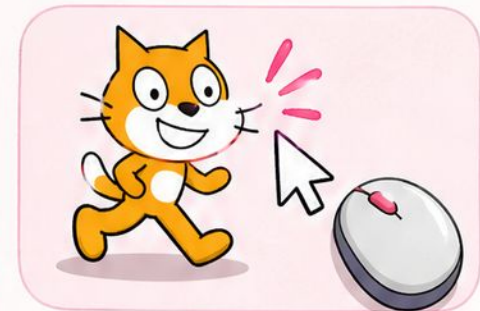
Mouse Click Events

when this sprite clicked

This block starts the script when the sprite is clicked with the mouse.



Great for adding interactive effects!



Try these blocks and make your projects come to life! 



Remember: Events make your projects interactive and fun!



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Lesson 2: User Interaction



Module 4: Events and Interaction



1

Keyboard Controls

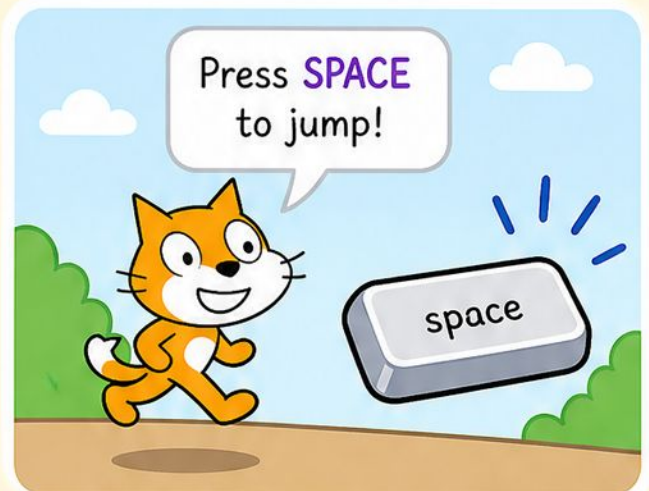


Use keyboard events to make sprites move, jump, or change when keys are pressed.

when key **space** pressed

move **10** steps

say **Well done!** for **2** seconds



2

Mouse Controls



Use mouse events to detect clicks, cursor position, or when the mouse is pressed.

when this sprite clicked

say **You clicked me!** for **2** seconds

go to **mouse-pointer**



3

Interactive Buttons



Create buttons that users can click to start games, change scenes, or trigger actions.

when this sprite clicked

switch backdrop to **Next Level**

play sound **Cheer** until done



LESSON 3:

BROADCASTING MESSAGES

Module 4: Events and Interaction

Broadcasting messages lets sprites talk to each other. One sprite **sends** a message, and other sprites can **react**!

1 SEND MESSAGES

Any sprite can send a message to let others know that something has happened.

Use this block:

broadcast message1

Choose a message or type a new one!

EXAMPLE

When the green flag is clicked, the cat broadcasts "Game Start".



2 RECEIVE MESSAGES

Sprites can listen for a message and do something when they receive it.

Use this block:

when I receive message1

Add the blocks you want the sprite to do!

EXAMPLE

The dog and dinosaur listen for "Game Start" and start moving when they receive it.

Dog

when I receive Game Start

point in direction 90

move 10 steps



Dinosaur

when I receive Game Start

switch costume to dino2

say Roar! for 2 seconds



3 COORDINATING SPRITES

Broadcasting helps all sprites work together to create awesome projects!

EXAMPLE

One message can start a race, show a score, play a sound, and more!



broadcast Go!



Think: What message can you send in your project today?





Lesson 4: Multiple Events



Module 4: Events and Interaction

SCRATCH

1

Combining Events

Use different events to start your scripts. This makes your project respond to many kinds of actions!

when clicked

say Hello! for 2 seconds

when space key pressed

move 10 steps



space

2

Event Chains

Start one event and trigger other events or actions in sequence. This creates powerful and exciting effects!

when this sprite clicked

say Let's go! for 1 seconds

wait 1 seconds

move 100 steps

play sound Meow until done



1. Click the Cat

Let's go!

2. Say something



3. Move



4. Play sound

3

Interactive Scenes

Combine multiple events, characters, and actions to make fun and interactive projects that users can explore!



Try this!

- ✓ Press keys
- ✓ Click sprites
- ✓ Watch what happens!



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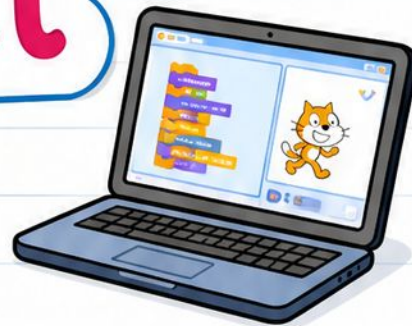




Lesson 5: Mini Project



Module 4: Events and Interaction



1

Interactive Greeting Card

Create a greeting card that responds when the card is clicked. Add messages, sounds, and animations to make it special!



when this sprite  clicked

say Happy Day! for 2 secs

play sound Cheer until done

switch costume to Card Open



Click the card!

2

Magic Button Project

Make a magic button that changes looks, plays sounds, or shows surprises when clicked!

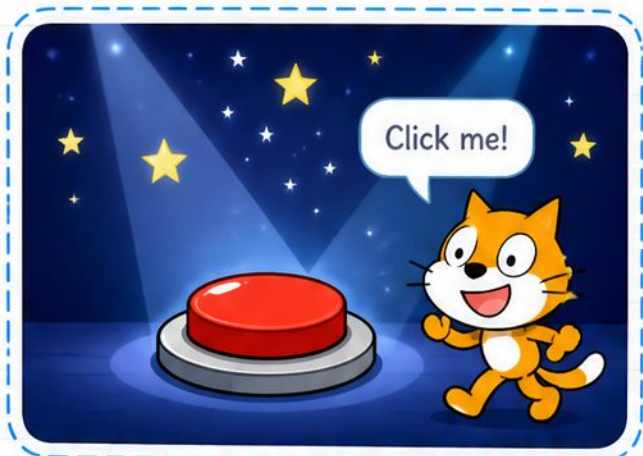


when this sprite  clicked

change color effect by 25

play sound Magic until done

say Ta-da! for 2 secs



3

Click-to-Play Animation

Create an animation that starts when you click the sprite or the stage. Let the fun begin!

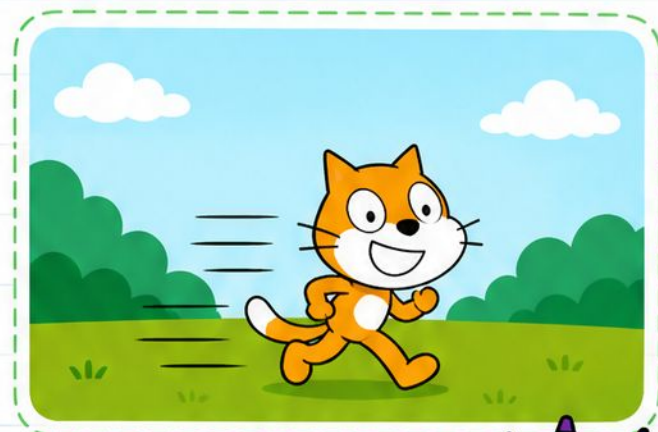


when this sprite  clicked

forever

move 10 steps

next costume





Lesson 1: Introduction to Variables



Module 5: Variables and Scoring

1 What are Variables?

Variables are like **boxes** that **store** information. They can hold **numbers** that can **change** while the program runs.



This box holds the value 25.



Variables help us keep track of **important** information!

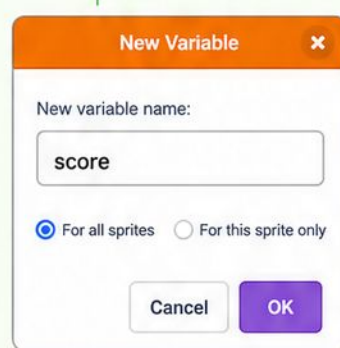
2 Creating Variables

In Scratch, you can **create** your own variables to store data. Here's how you can **create** and **use** one!

1 Go to **Variables** category.



2 Click on **Make a Variable**



3 Give it a name, like **"score"**.

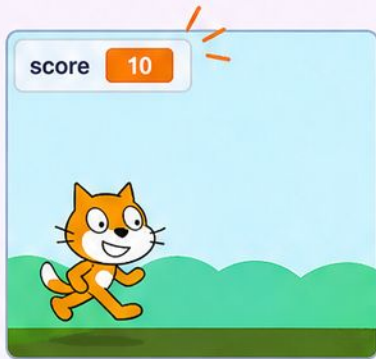


4 Use blocks to set or change its value.



3 Displaying Values

You can **show** a variable's value on the **Stage** so everyone can see it!



Check the box next to the variable name. It will appear on the Stage!

Tip!

Use variables to keep track of scores, time, lives, and more!





SCRATCH

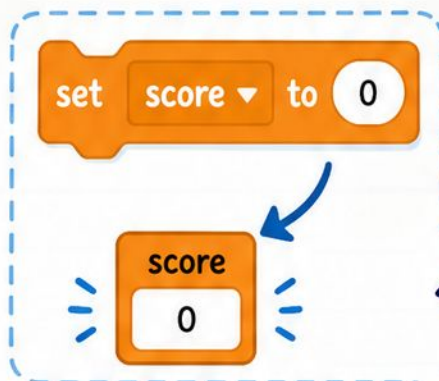
Lesson 2: Counting Scores



Module 5: Variables and Scoring

1 Score Variables

A **variable** is like a box that can store a number. We'll use a variable named "**score**" to keep track of the player's score.

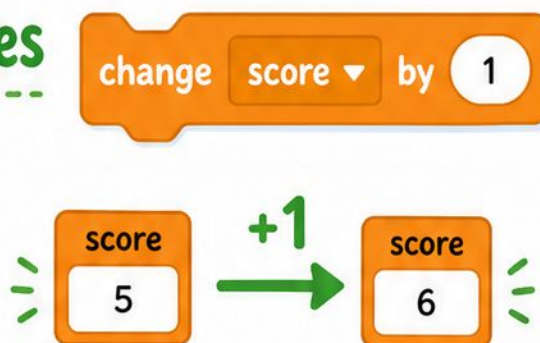


We use variables in Scratch to keep track of scores in our games! ♥



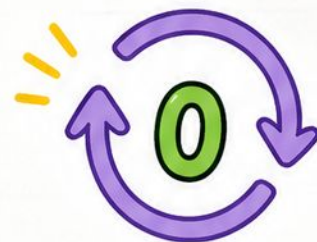
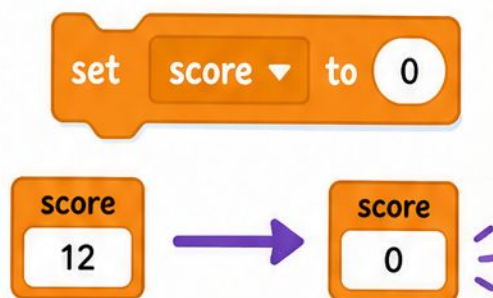
2 Increasing Scores

When the player earns points, we **increase** the score by adding a number (usually 1) to the current value.



3 Resetting Scores

We can **reset** the score back to 0 when starting a new game or after a game over.



Tip!

Show the score on screen using a **variable monitor** so players can see their points!



Practice these blocks and build awesome games that keep score! ♥





Let's code!

SCRATCH

Lesson 3: Timers



Module 5: Variables and Scoring

In this lesson, you will:

1 Creating Timers

Use variables to keep track of time. Start, count, and stop timers in your Scratch projects!



2 Countdown Clocks

Build countdown clocks that show time decreasing to zero. Perfect for games and animations!



3 Time-Based Challenges

Create exciting challenges where players race against the clock. Beat the time and earn points!



How to Create a Timer

```
when green flag clicked
set time to 60
repeat until time = 0
  change time by -1
  wait 1 seconds
say Time's up! for 2 seconds
```



Variables are perfect for storing time! Use them to build awesome projects. 😊

Example: Time Challenge Game

```
when green flag clicked
set time to 30
set score to 0
repeat until time = 0
  change time by -1
  wait 1 seconds
if touching star? then
  change score by 1
```



Collect items before time runs out to get a high score! 💡

Use timers to make your projects more exciting and challenging! ❤️



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Lesson 4: Keeping Track of Data

SCRATCH



Module 5: Variables and Scoring

In games, we keep track of important information.
Variables help us store and update data as the game runs!



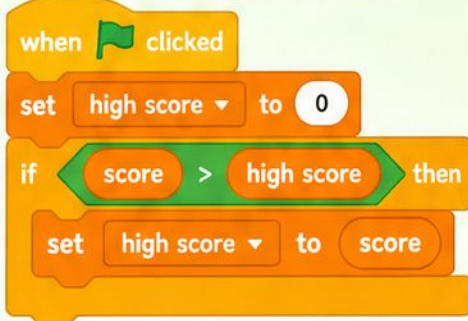
We will learn about:

1 High Scores

Keep track of the best score achieved in the game.

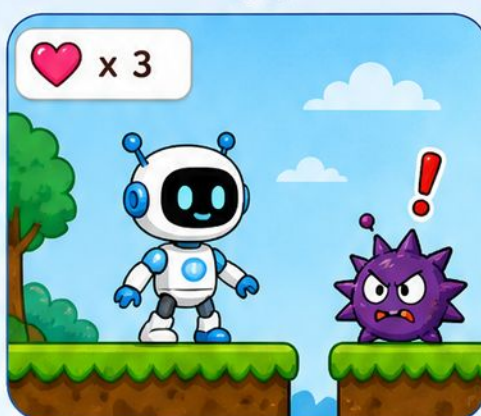


Example in Scratch:



2 Lives System

Keep track of how many lives the player has left.

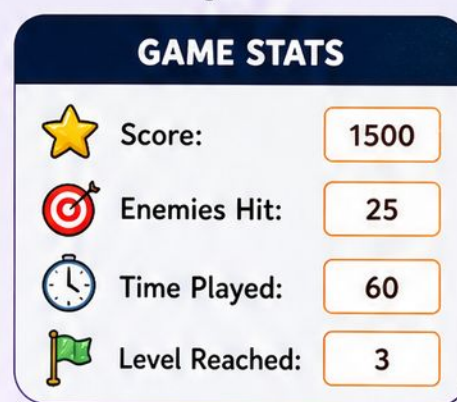


Example in Scratch:

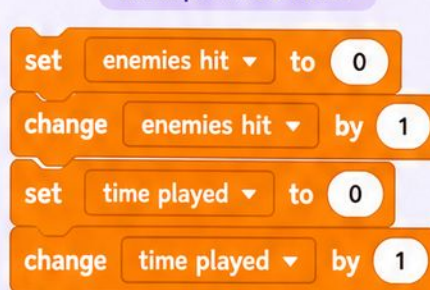


3 Game Statistics

Collect and display useful information about the game.



Example in Scratch:



Tracking data makes games more **fun** and helps players see their **progress**!



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Lesson 5: Mini Project



★ Module 5: Variables and Scoring

1 Score Counter Game

Create a game where the score increases when the player catches or clicks the target.



```

when green flag clicked
  set score to 0
  change score by 1
  say Score: score
  
```

2 Reaction Timer Game

Test your reflexes! Click the green flag and click the sprite as fast as you can. The timer shows your reaction time.

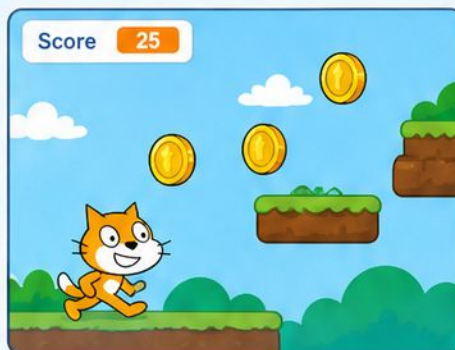


```

when green flag clicked
  hide
  wait pick random 1 to 3 seconds
  show
  set time to timer
  
```

3 Coin Collector

Collect coins to increase your score. Avoid obstacles and try to get the highest score!



```

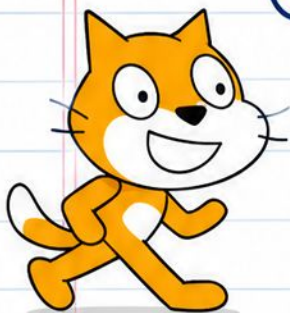
when green flag clicked
  set score to 0
  forever loop
    if touching coin ? then
      change score by 1
  
```

Remember:

Variables help us keep score, measure time, and make our games more fun!

Use variables like score and time to track and improve your gameplay!





Lesson 1:



SCRATCH

Understanding Logic



Module 6: Logic and Conditionals



1

What is Logic?

Logic helps us make **decisions** and **solve problems**. In programming, logic is used to check **conditions** and decide what **happens next**.

If it **rains**, then I will take an **umbrella**.



2

True and False

In logic, a statement can only be either **True** or **False**.



The sun rises in the East.



True



Fish can fly.



False



Computers understand only **True** or **False**!

Two Possible Values

TRUE

FALSE

3

Comparison Operators

Comparison operators are used to compare two values. They always return **True** or **False**.

Operator	Meaning	Example	Scratch Block
=	is equal to	$5 = 5 \rightarrow \text{True}$	
≠	is not equal to	$7 \neq 3 \rightarrow \text{True}$	
>	greater than	$9 > 4 \rightarrow \text{True}$	
<	less than	$2 < 6 \rightarrow \text{True}$	
≥	greater than or equal to	$6 \geq 6 \rightarrow \text{True}$	
≤	less than or equal to	$3 \leq 5 \rightarrow \text{True}$	

Try it!

What is the result of $10 > 20$?

(Answer: **False**)





SCRATCH

Lesson 2:

If Blocks



Module 6: Logic and Conditionals

In Scratch, **IF** blocks help your projects make decisions and react to things!

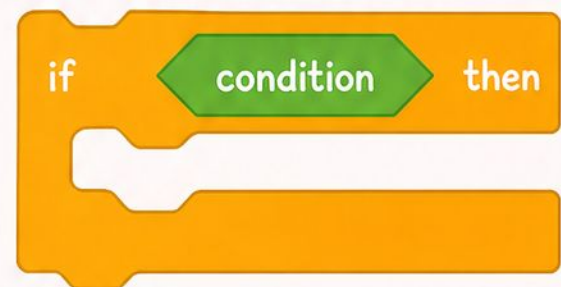


1

If-Then Statements



The IF block checks a condition. If it's **true**, then it runs the blocks inside it.



2

Simple Conditions



Conditions are questions that are either **true** or **false**.



3

Triggering Actions



When the condition is **true**, the blocks inside the IF block run and do something!



Think →
Check →
Act!



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Think
Decide
Act! 😊

LESSON 3:

SCRATCH

If-Else Blocks

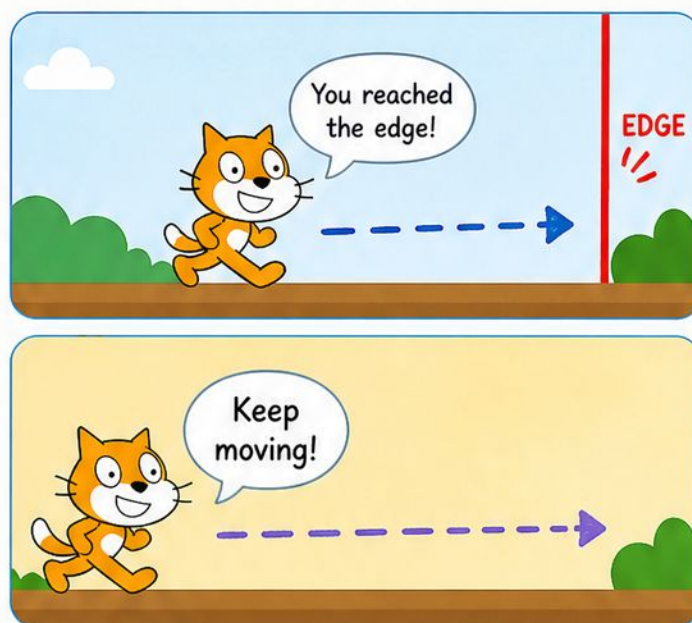
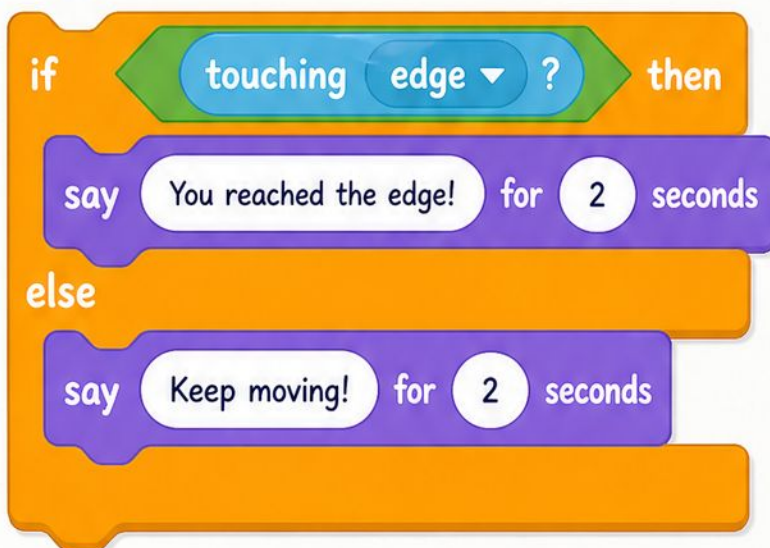


Module 6: Logic and Conditionals



The **If-Else** block helps your Scratch project make decisions and do different things based on different conditions.

Example



KEY POINTS

1 Decision Making



The **if** block checks a condition. If it's true, the first set of blocks runs.

2 Handling Different Outcomes



The **else** block runs when the condition is false, giving a different result.

3 Branching Logic



Programs can take different paths. This is called branching, and it makes projects smart!

Lesson 4: Combining Conditions

Module 6: Logic and Conditionals

SCRATCH

Use AND and OR to make smarter decisions and build more exciting projects!



Why Combine Conditions?

- ★ Make your programs smarter
- ★ React to multiple things at the same time
- ★ Create more fun and challenging games

KEY POINTS

1

AND/OR Logic

Use AND when BOTH conditions must be true.
Use OR when EITHER condition can be true.

AND Example

touching edge ? and
key space pressed?

Both conditions are true.
Then the action runs.

OR Example

touching color ? or
score > 10

If either condition is true,
the action runs.

2

Complex Decisions

Combine multiple conditions to handle real-life situations in your projects.

Example

```
if score > 20 and lives > 0 then
  say You win! for 2 seconds
else
  say Keep trying! for 2 seconds
```

The sprite says "You win!" only if BOTH conditions are true.



3

Advanced Game Logic

Use combined conditions to create challenging and interactive games.

Game Idea: Collect & Win!

- 💎 Collect all gems
- ♥ Avoid enemies
- ★ Reach the exit

Win when:

gems collected = 3 and
not touching Enemy ? and
touching Exit ?



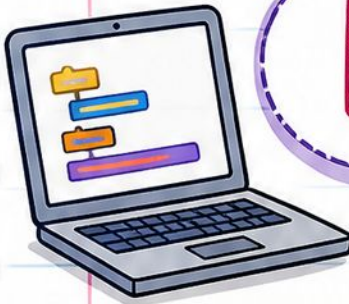
Tips

- ✓ Plan your conditions.
- ✓ Test step by step.
- ✓ Think like a game designer!



Lesson 5: Mini Project

Module 6: Logic and Conditionals

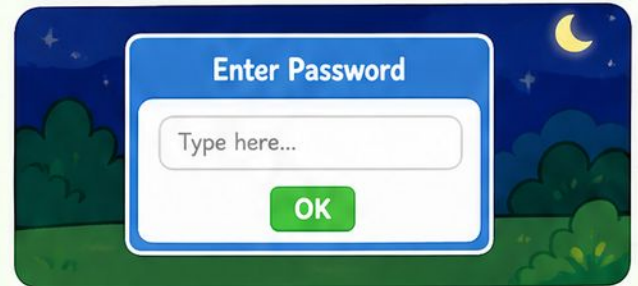


1



Password Protected Screen

Create a secure entry screen where users must enter the correct password to continue.



2



Interactive Quiz Game

Ask fun questions, check answers using logic, and give instant feedback.



3



Smart Character Interaction

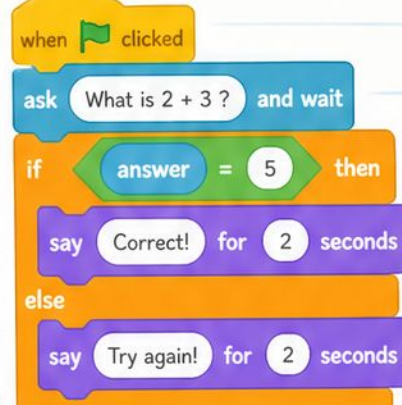
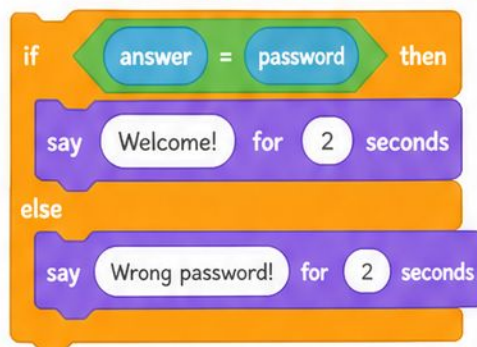
Use smart characters that talk, guide, encourage, and respond based on user actions.



We'll use:

- ✓ if then else
- ✓ ask and answer
- ✓ variables
- ✓ broadcast
- ✓ wait and say

Example Blocks





Lesson 1: Why Use Loops?



Module 7: Loops and Repetition

1 What are Loops?

Loops are Scratch blocks that repeat actions **again** and **again** until a condition is met. They help us make our sprites do things multiple times.



2 Avoiding Repetitive Code

Without loops, we would have to write the same blocks over and over again. Loops help us **avoid repetition** and keep our scripts clean and easy to read!

Without Loop



With Loop



3 Making Scripts Efficient

Loops make our projects run smoother and faster. They use **less space** and are **easier** to update or change in the future.



Efficient code
= Happy coder!
Use loops and
build amazing
projects!

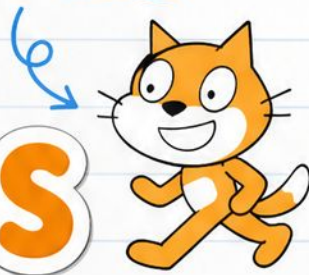


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Lesson 2:

SCRATCH



Repeat Blocks



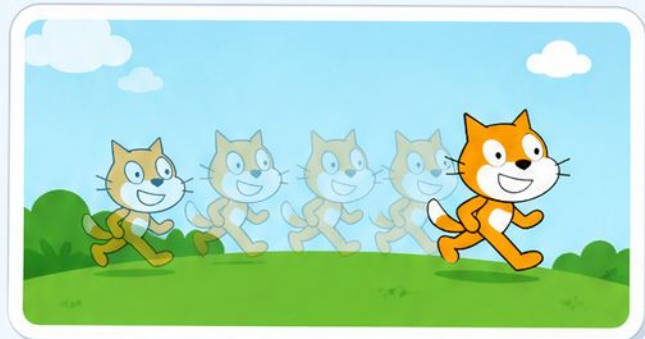
Module 7: Loops and Repetition



1

Repeating Actions

Repeat blocks help sprites do the same actions again and again!



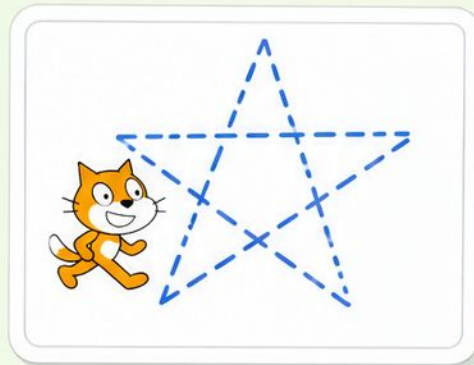
The cat keeps moving!



2

Set Number of Loops

Use the **repeat** block to set how many times the actions should happen.



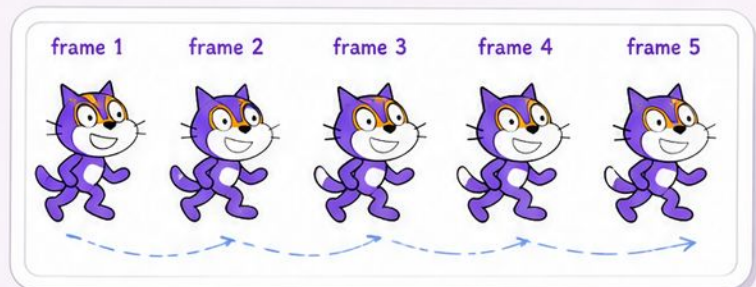
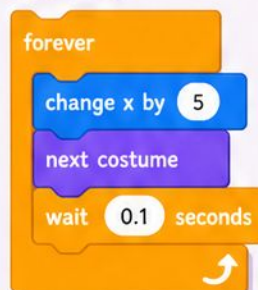
This will draw a **star** 5 times!



3

Animation Basics

Repeat blocks help bring your stories and games to life by creating smooth **animations**!



Small changes, repeated quickly, create **smooth animation**!



Code.
Create.
Animate!



Loops make coding easier and more fun!



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Lesson 3: Forever Loops

Module 7: Loops and Repetition



1

Continuous Actions

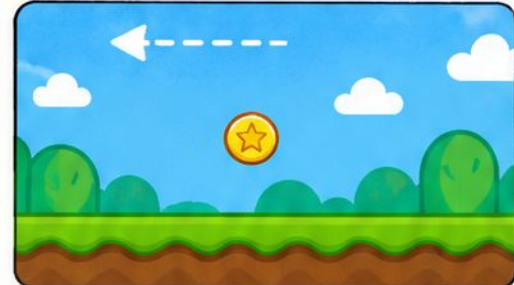
A forever loop keeps a script running endlessly, so the sprite keeps doing something over and over.



2

Game Background Loops

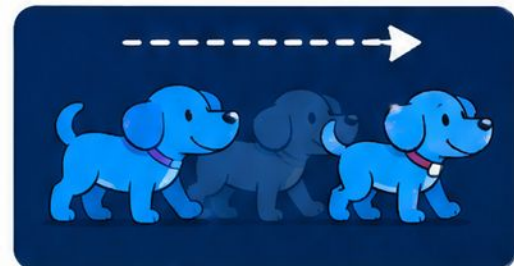
Use a forever loop to keep backgrounds scrolling so the game world never stops.



3

Constant Movement

Make sprites move, bounce, or animate smoothly without stopping.



Remember!

The forever block has no end. It keeps going until you stop the project.

Forever loops help make your projects come alive!





Module 7: Loops and Repetition



SCRATCH

Lesson 4: Nested Loops

Nested loops mean putting one loop inside another loop to do awesome things!



Nested loops help us create bigger, cooler, and more amazing projects in Scratch!



1 Loops Inside Loops

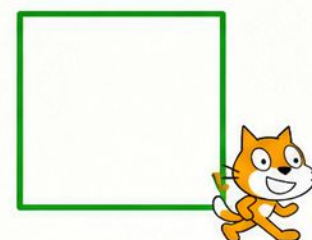
Put one loop inside another loop. The inner loop runs completely each time the outer loop repeats.



EXAMPLE (SCRATCH BLOCKS)



OUTPUT



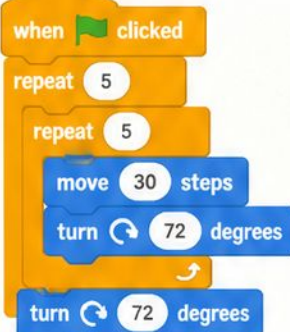
A square is drawn!

2 Complex Patterns

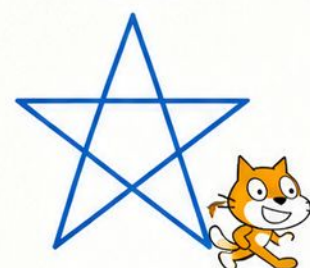
Nested loops help us create cool shapes, patterns, and designs with just a few blocks!



EXAMPLE (SCRATCH BLOCKS)



OUTPUT



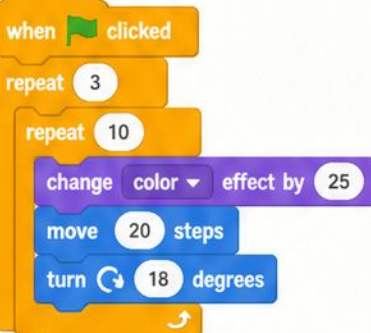
A beautiful star!

3 Advanced Animations

Use nested loops to control sprites, create effects, and build amazing animations!



EXAMPLE (SCRATCH BLOCKS)



OUTPUT



Colorful animation in action!



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Lesson 5: Mini Project

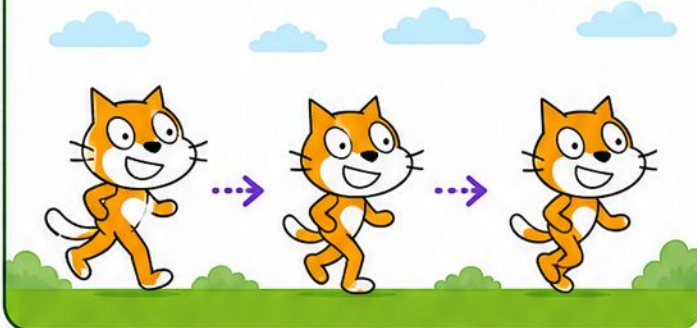
Module 7: Loops and Repetition



Loops help us repeat actions again and again.
Let's build three fun mini projects using loops in **Scratch**!



1 Walking Character Loop



```

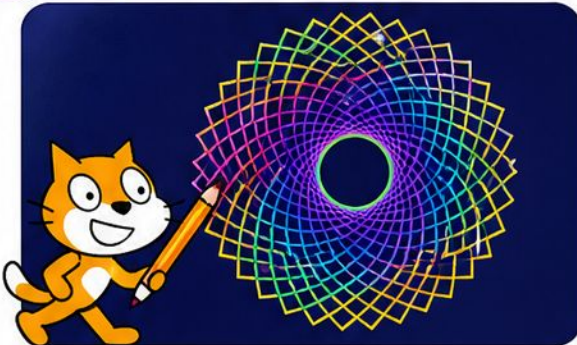
when green flag clicked
forever loop
  move 10 steps
  next costume
  wait 0.1 seconds

```



Make a character walk continuously using a loop and **next costume**.

2 Spinning Pattern Generator



```

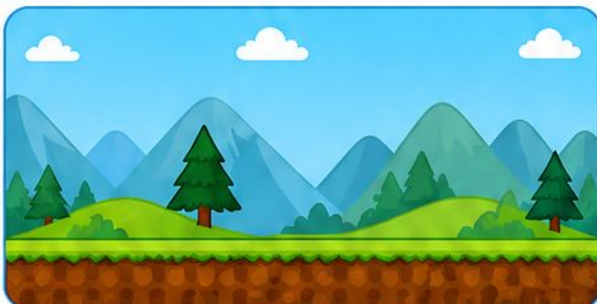
when green flag clicked
pen down
repeat 36
  move 10 steps
  turn 10 degrees
  pen change color by 10

```



Create beautiful spinning patterns with loops, turns and **colors**!

3 Endless Runner Background



```

when green flag clicked
forever loop
  change x by -5
  if x position < -240 then
    set x to 240

```



Make a scrolling background that moves forever for an **endless runner** game!





Lesson 1: Game Design Basics

SCRATCH



Module 8: Game Design Fundamentals



1 What Makes a Game?

A game is an interactive experience where players face **challenges**, follow **rules**, and try to achieve a **goal** for fun!



2 Player Goals

Every game has a **goal** that tells the player what they need to achieve to **win**.



Score Points
Collect items and earn the highest score.



Reach the End
Complete the level or reach the finish line.



Collect Items
Gather treasures or items to complete the game.



3 Game Rules

Rules explain how the game **works** and what the player **can** or **cannot** do.



How to Move



What to Avoid
(Enemies, Traps)



Time Limits
(If any)



Lives
(How many chances)



Think Like a Game Designer!

Great games start with clear goals, fun rules, and creative ideas!



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Great games need great controls!



Lesson 2: Player Controls

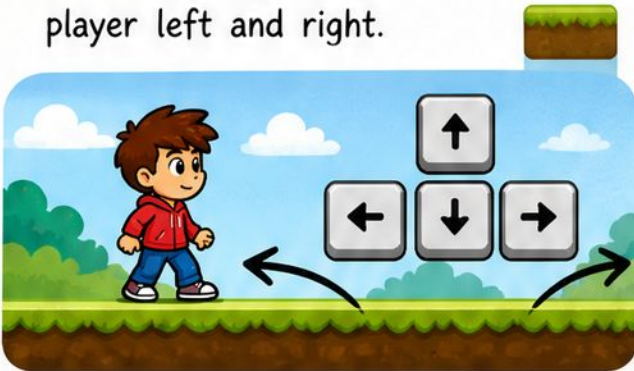
Module 8: Game Design Fundamentals

★ In this lesson, we'll learn how to move the player, jump, shoot, and perform actions using the keyboard!



1 Keyboard Movement

Use arrow keys to move the player left and right.



```

when green flag clicked
  forever loop
    if key right arrow pressed? then
      change x by 5
    if key left arrow pressed? then
      change x by -5
  
```



Arrow keys help the player move around the world!



2 Jumping Mechanics

Press the **UP** arrow to make the player jump!



```

when green flag clicked
  forever loop
    if key up arrow pressed? then
      change y by 10
      wait 0.1 seconds
  
```

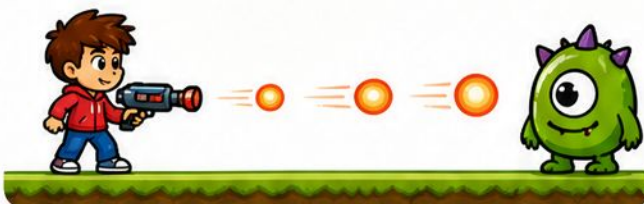


Add gravity or limits to make jumps feel real!



3 Shooting and Actions

Press **SPACE** to shoot or perform actions like attacks or collecting!



```

when green flag clicked
  forever loop
    if key space pressed? then
      create clone of Bullet
      wait 0.2 seconds
  
```



Use clones for bullets and try cool effects!





Lesson 3:



SCRATCH

Collision Detection



Module 8: Game Design Fundamentals



Collision detection helps characters know when they touch something in the game—like blocks, enemies, or items!

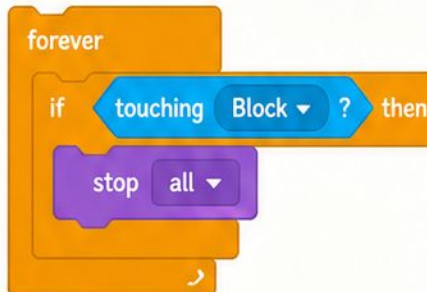


In Scratch, we use **sensing** blocks to check for touching objects.

1

Touching Blocks

Detect when the player touches a block or wall to stop movement or change direction.



2

Enemy Interactions

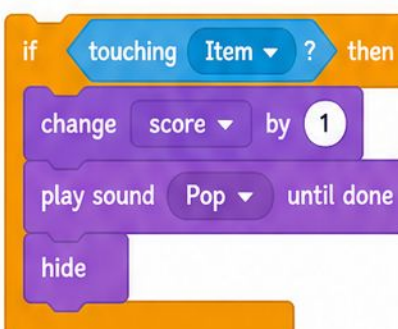
Detect when the player touches an enemy. You can lose a life, restart the game, or show a game over message.



3

Collecting Items

Detect when the player touches an item. You can add points, play a sound, and hide the item.



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SCRATCH

Lesson 4: Win and Lose Conditions



Module 8: Game Design Fundamentals

1 Game Over Screens

When the player loses, show a game over screen and let them know the game has ended.



```
when green flag clicked
hide
when I receive game over
show
say Game Over! for 2 seconds
stop all
```



2 Winning Levels

When the player reaches the goal, celebrate and move to the next level!



```
when green flag clicked
if touching Goal then
say You Win! for 2 seconds
broadcast next level
wait 1 seconds
```

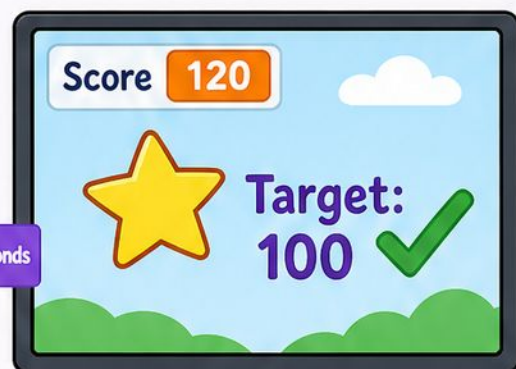


3 Score Thresholds

Use score values to decide when the player wins or loses. Set a target and keep track!



```
when green flag clicked
set score to 0
forever
if score >= 100 then
say Great! You reached the target! for 2 seconds
broadcast win
```





Lesson 5: Mini Project



Module 8: Game Design Fundamentals

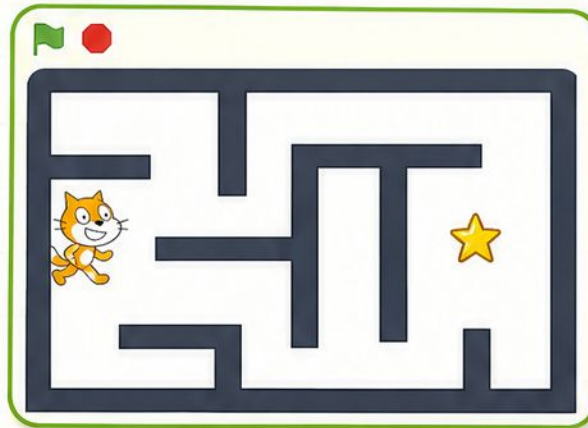
Let's bring our ideas to life by building fun games!



1

Simple Maze Game

Create a maze and help the character reach the goal!

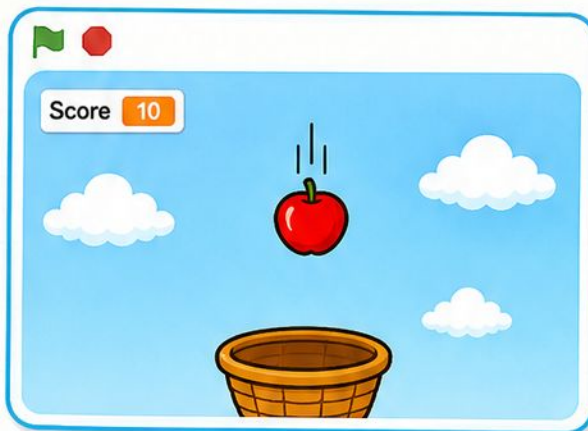


```
when green flag clicked
  move 10 steps
  if on edge, bounce
  next costume
```

2

Catch the Falling Object

Catch the falling objects and earn points!



```
when green flag clicked
  forever loop
    change y by -5
    if touching Basket ? then
      change Score by 1
```



3

Basic Platformer Level

Build a simple platform level. Jump, avoid obstacles, and reach the flag!



```
when green flag clicked
  forever loop
    if key right arrow- pressed? then
      change x by 10
    if key up arrow- pressed? then
      change y by 15
```



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SCRATCH

Lesson 1:

Creating Stories

Module 9: Creative Storytelling

Every great story has **key ingredients!**
Let's learn the building blocks of amazing stories.

1 Story Elements

These are the main parts of every story.

- ★ **Beginning** – Introduces the story and characters.
- ★ **Middle** – The problem or challenge.
- ★ **End** – The solution and how it ends.

Beginning



Introduce the characters and setting.

Middle



A problem or challenge happens.

End



The problem is solved. The story comes to an end.

2 Character Roles

Every character has a role to play.

- ★ **Main Character** – The hero of the story.
- ★ **Supporting Characters** – Help the main character.
- ★ **Antagonist** – Creates the problem.



Main Character

The hero who takes action.



Supporting Character

Helps, guides, or supports.



Antagonist

Creates obstacles or problems.

3 Setting the Scene

The setting tells us when and where the story happens.

- ★ **Place** – Where it happens
- ★ **Time** – When it happens
- ★ **Mood** – How it feels

Place



City park

Time



At night

Mood



Mysterious and calm

My Story

when  clicked

say "Let's tell a story!" for 2 seconds

move 10 steps

next costume



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Lesson 2: Dialogue and Narration



SCRATCH

Module 9: Creative Storytelling



In this lesson, you will learn how to bring your stories to life using:

1

Speech Bubbles

Let your characters talk to each other using speech bubbles. Great for showing dialogue!



when clicked

say Hi there! for 2 seconds

wait 1 seconds

say How are you? for 2 seconds

2

Voice-Overs

Add a narrator's voice to tell your story, explain scenes, or share thoughts. It makes your story more exciting!



when clicked

switch backdrop to night

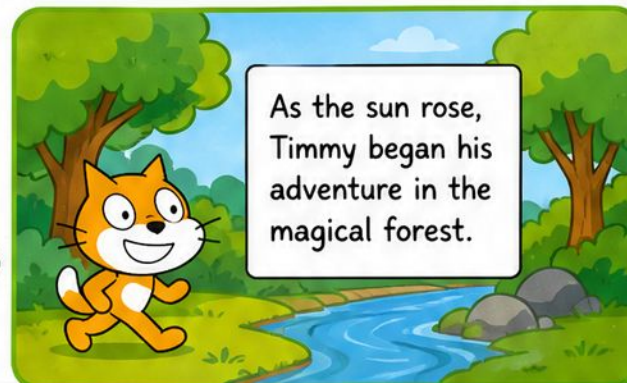
start sound Night Breeze

say It was a dark night. for 3 seconds

3

Narrative Text

Use text on the screen to describe actions, settings, or events. It helps the audience follow your story easily!



when clicked

switch backdrop to forest

show

say As the sun rose, Timmy began his adventure in the magical forest. for 4 seconds

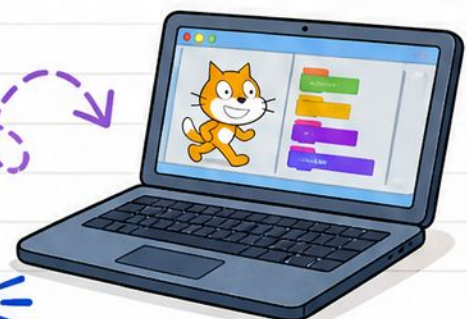
Remember:

Good stories have characters, a narrator, and a clear message!

Combine dialogue, voice-overs, and text to create amazing stories in **Scratch!**



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Lesson 3: Scene Changes



Module 9: Creative Storytelling



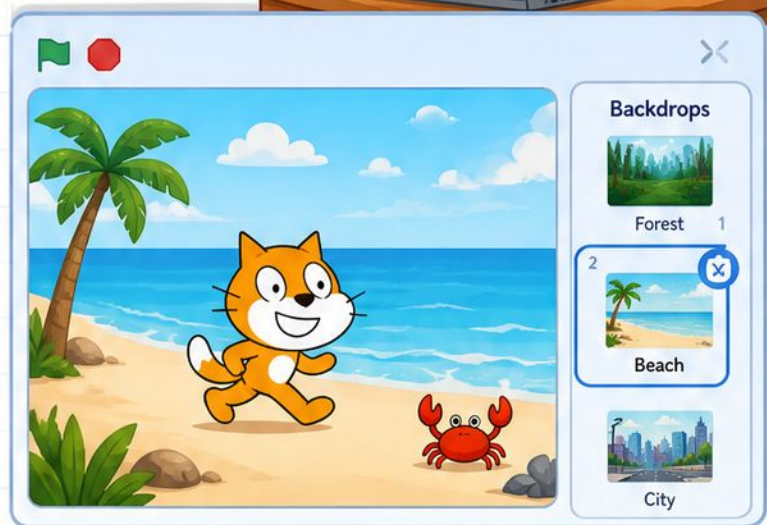
Great stories take us on **adventures**! In Scratch, we can change scenes to move our story from place to place.



1 Backdrop Switching

Change the backdrop to instantly move to a new scene.

switch backdrop to Beach ▾



2 Smooth Transitions

Use effects to fade in or fade out between scenes for a smooth look.

switch backdrop to City ▾

set ghost ▾ effect to 100

go to front ▾ layer



Fade Out
→

←
Fade In



3 Multi-Scene Stories

Combine many scenes to tell an exciting and creative story!



Scene 1
The Forest



Scene 2
The Beach



Scene 3
The City



Scene 4
Outer Space

Plan your story, change your scenes, and bring your ideas to life!





Lesson 4:



Interactive Stories

Module 9: Creative Storytelling



In This Lesson

YOU write the story.
The player chooses the path!

1



Choose Your Own Adventure

You create a story where the player decides what happens next!

2



What should I do?

Player Choices

The player picks an option, and the story changes based on their choice!

Go Left

Go Right

3



Branching Narratives

Choices create different paths, leading to many possible endings!

You find a mysterious cave.
Where do you want to go?

Enter the cave

Walk around

You enter the cave and find a hidden treasure!



You walk around and find a friendly dragon!



You did it!
You win!



You and the dragon become best friends!



SCRATCH

Use code to make your story interactive in Scratch!

```
when clicked
say Welcome to my story! for 2 seconds
ask What do you want to do? and wait
if answer = Enter the cave then
say You found treasure! for 2 seconds
else
say You met a friendly dragon! for 2 seconds
```



Every choice makes your story
unique and exciting!



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Lesson 5: Mini Project

SCRATCH



Module 9: Creative Storytelling



Use your imagination and Scratch skills to create amazing stories and interactive projects!

1

Animated Short Film

Create your own short animated film with scenes, characters, dialogue, and music. Bring your story to life!



```
when green flag clicked
say Let's begin! for 2 secs
change backdrop to City
start sound Music
broadcast Next Scene
```

2

Interactive Fable

Create an interactive fable where readers make choices and see different outcomes. Teach a valuable lesson!



```
when green flag clicked
say Welcome to the Fable! for 2 secs
ask What should the rabbit do? and wait
if answer = Keep practicing then
say Great choice! for 2 secs
broadcast Next Part
```

3

Mystery Story Project

Create a mystery story with clues, hidden secrets, and surprising twists! Can the reader solve the mystery?



```
when green flag clicked
say A mystery begins... for 2 secs
go to Bedroom
change effect ghost by 25
ask Where is the hidden clue? and wait
if answer = under the book then
say You found the clue! for 2 secs
```

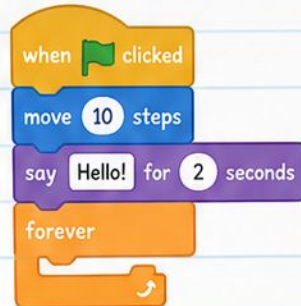


Imagine • Create • Share
Your story, your way!





Lesson 1: Project Planning



Module 10: Capstone Projects

1

Brainstorming Ideas

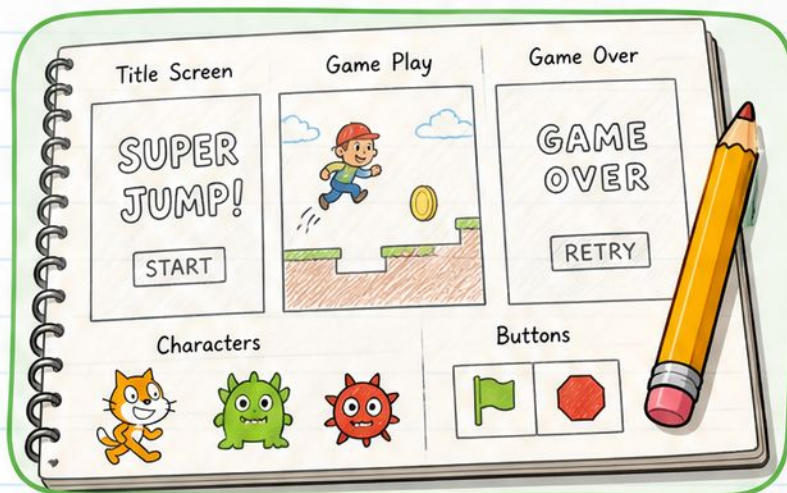
Think of fun game ideas!
What will your game be about?
Who are the characters?
What is the goal?



2

Sketching Your Game

Draw your game screens,
characters, and buttons.
A sketch helps you
plan how your game
will look and work!



3

Creating a To-Do List

Break your project into
small steps. A to-do list
helps you stay organized
and finish your game
step by step!



One step
at a time,
you can do
it!



Lesson 2: Educational Game Project



SCRATCH

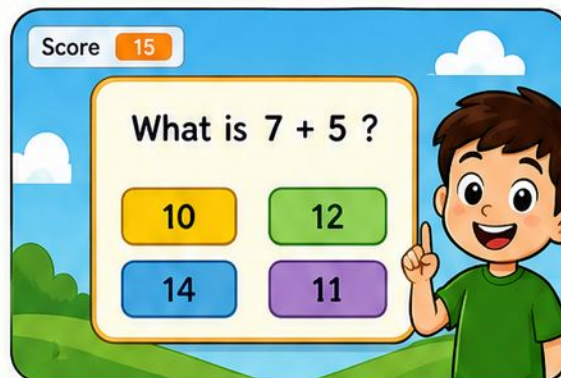
Module 10: Capstone Projects



1

Math Quiz Game

Create a fun math quiz game!
Ask addition, subtraction, or
multiplication questions and
track the score.



Build
Learn
Play
Share!

2

Spelling Bee Project

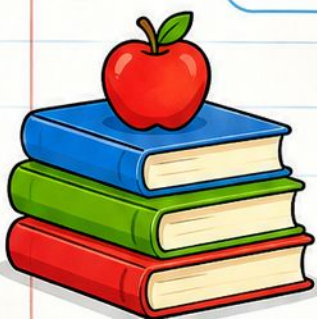
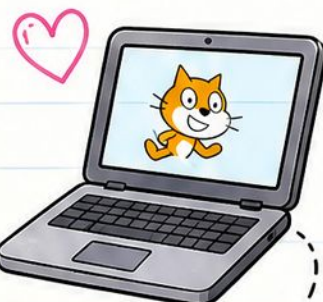
Build your own spelling bee!
Show a word, get the correct
spelling, and earn points.
Challenge your friends!



3

Science Fact Finder

Make a game that shares
amazing science facts!
Click a button to discover
fun facts about animals,
space, plants, and more.



www.codescompiler.com



SCRATCH



Lesson 3: Arcade Game Project



Module 10: Capstone Projects



1



Space Shooter Game

Blast enemies, dodge obstacles, and score high in space!



```
when green flag clicked
forever
  create clone of Enemy
  move 10 steps
  if touching edge? then
    change score by
```

2



Platformer Adventure

Jump, collect coins, avoid enemies, and reach the goal!



```
when green flag clicked
forever
  if key right arrow pressed?
    change x by 5
  if key up arrow pressed?
    change y by 10
```

3



Racing Challenge

Race against time, avoid obstacles, and cross the finish line!



```
when green flag clicked
set time to 60
forever
  change y by 8
  if touching obstacle? then
    change time by -5
```



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Lesson 4:

Creative Animation Project

SCRATCH



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when clicked

say Let's animate! for 2 seconds

move 10 steps

next costume

repeat 10

In this lesson, you will create amazing animation projects using your creativity and Scratch skills!

1

Music Video Project

Create your own music video with dancing characters, cool backdrops, and awesome effects. Add sound, beats, and make it your style!



2

Digital Art Gallery

Design a digital art gallery to showcase your drawings or digital paintings. Add frames, titles, and navigation to explore the gallery!



3

Animated Storybook

Bring your story to life! Create characters, scenes, and animations to tell your own story in a fun and interactive way.



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Lesson 5:



YOU DID IT!

Final Capstone Project



Module 10: Capstone Projects



In this lesson, you will:



1

Showcasing Your Skills



Present your project and celebrate what you've built! Show how your creativity and coding skills come together to solve problems and create something amazing.



2

Debugging and Polishing



Find and fix bugs, improve graphics, sounds, and animations. Test your project, make it smoother, and polish every detail to make it the best it can be!



3

Sharing Your Project



Share your project with friends, classmates, and the world! Get feedback, inspire others, and be proud of your awesome creation.



Great project!



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