Introduction to Coding

Welcome to the world of coding!

What to expect

01

Intro to code

02

Building a Scratch game

03

Python Programs

04

Practical exercises

01

What is Code?

Introduction

Definition:

Code is a set of instructions that tells a computer what to do.
Just like a recipe gives step-by-step instructions to make a dish, code gives step-by-step instructions to the computer.

Why is it Important?

Code runs everything from your favorite apps and websites to video games and robots.
Learning to code helps you understand how technology works and can help you create your own games, websites, and apps.

Basic Syntax:

What is Syntax? the syntax of a computer language is the rules that define the combinations of symbols that are considered to be correctly structured statements or expressions in that language.

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

```
----------------------------
```

```
x = 5
y = "Hello, World!"
```

Coding languages?

Just like English there is many different languages of code. Here is just a few:

Scratch

A visual programming language that's great for beginners. You can create stories, games, and animations by snapping together blocks of code.

Python

A popular language that's easy to read and great for beginners. Used for web development, games, and scientific computing.

HTML & CSS

Languages used to create and style web pages.

Let’s try it!

For our lesson we will be using scratch.

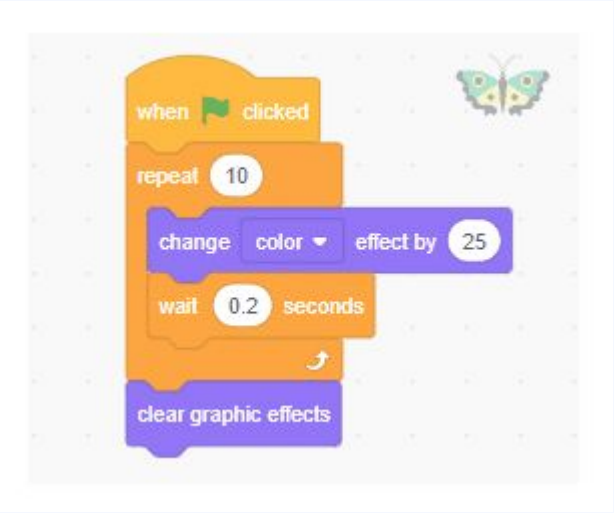
Why Scratch?

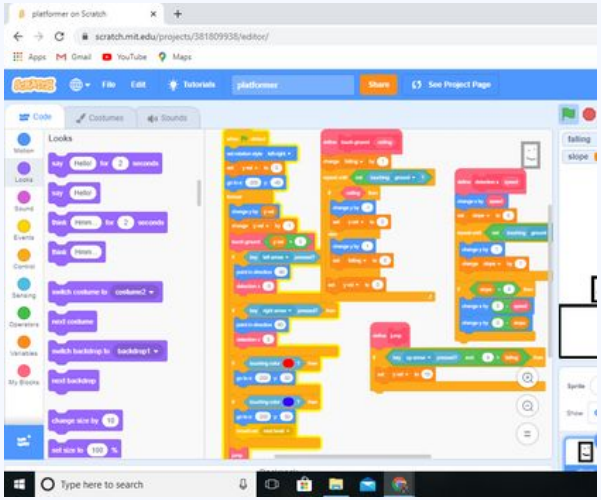
We will be using scratch due to its easy to understand concept and its ability to teach the fundamentals in a fun and engaging way.

How does it work?

Scratch works in a building block way. You snap together different lines of code to create a game.

Examples


when clicked
repeat 10
change color effect by 25
wait 0.2 seconds
clear graphic effects




when space key pressed
go to x: 0 y: 0
forever
move 25 steps
change color effect by 25
turn 15 degrees
play drum 8 for 0.1 beats

Let’s try!

https://scratch.mit.edu/

Goal:

Make a cat move across the screen.

Step 1:

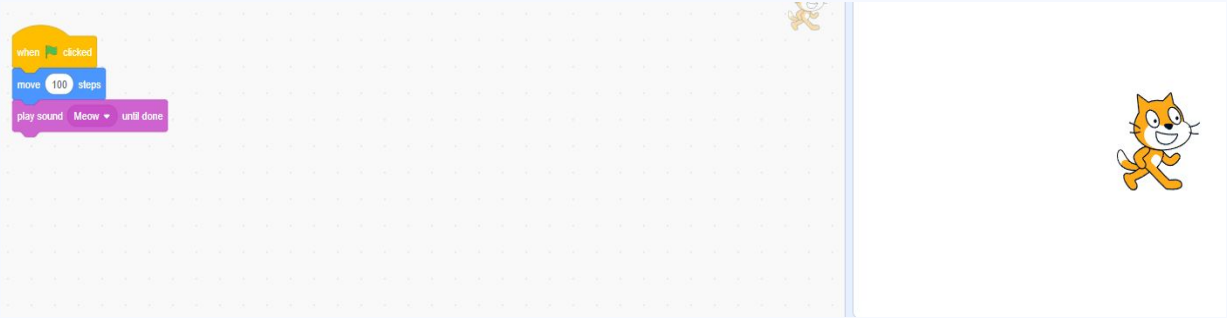
Drag out a "when green flag clicked" block.

Step 2:

Attach a "move 10 steps" block.

Step 3:

Attach a "play sound meow" block.



Your first program!

https://scratch.mit.edu/

01 — **Open Scratch** — Log in, then click create!

02 — **Adding Code** — Drag the when green flag clicked block from Events.

03 — **Motion** — Now drag the move 10 steps block from motion and attach!

04 — **Sound** — Now drag the meow when done block from sound and attach!

TEST IT!

Click the green flag!

If your sprite moved and meowed you just made your first program!

Now experiment!

Try changing the amount of steps or the sound.

Let’s step it up!

Objective:

A apple catching game.

Main Sprite

Falling Sprite

Want more?

Let’s touch on a more complicated language

What we need (Python)

Python Installation

Python needs to be installed on your computer so you can run Python code.

Code Editor

A code editor is a tool where you write and edit your Python code.

Basic Python Syntax

Understand basic Python syntax to write simple programs.

A Simple Project

Start with a simple project or exercise to apply what you've learned.

The basics of Python

Variables

A variable is like saving something under a name. For example - ‘x=5’
Now when I refer to X it will equal 5 in our program.

Conditions

```
if condition:
   # do something
elif condition:
   # do something else
else:
   # do another thing
```

Loops

```
fruits = ["apple", "banana", "cherry"]
for x in fruits:
  print(x)
```

Functions

```
def my_function():
  print("Hello from a function")

my_function()
```

Note:

These are very few of the important aspects of Python and coding as a whole.

Our First Python Program

01

Open VS Code

Click it!

02

Make the file

File > New File > name.py

03

Write your code

Now enter our code! (next slide)

04

Run it!

Open the built in terminal and type “python name.py”

Simple Program Example

python

Copy code

```python
# Ask for the user's name
name = input("What is your name? ")

# Ask for the user's age
age = input("How old are you? ")

# Print a greeting
print("Hello, " + name + "! You are " + age + " years old.")
```

Want to learn more about Python?

There is so many great things you can do with python especially with its extensive libraries.

Is Mercury the closest planet to the Sun and the smallest one in the Solar System? **Note that it's a bit larger than the Moon**

Here is some project ideas and some resources on the next slide.

Simple Text-based Adventure Game, Chatbot, Personal Portfolio Website Generator, Network Scanner, Vulnerability Scanner.

Games and resources

Python

CodeCombat
Pygame
W3 Schools
Code.Org
FreeCodeCamp

Or just google some!

Scratch

- Scratch
- Ideas

How much can you make as a programmer?

Thanks !

Have any questions?

Template: Slidesgo Icons: Flaticon Graphics: Freepik