Ages 15+
& Adults

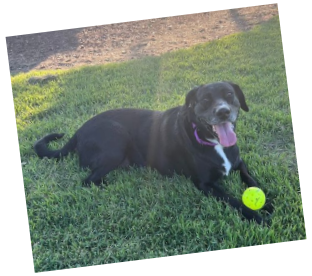
CODEXPLORERS

Intro to Python Programming

Week 1 : Introduction to Python

A bit about me..

- Will apply to CS schools over the summer
- I love my lab named Luna
- In my freetime, I love to listen to music, hang out with friends, swim & play the piano



Introductions

- Name & Favorite thing to do
- If you could create any game, what would it be about?
- If you could have any superpower, what would it be?
- What would you like to do on the computer or tablet?

Experience Check

- Have you ever used a computer to create something?
- Have you tried coding before? What did you make?
    - If not coded before, what do you want to learn how to make?
- Do you play games on a computer or phone? What do you like about them?

Class Assumptions

- Zero to super basic prior programming experience
- Open to learning information
- Open to feedback
- Creative (if you aren’t don’t worry, it will happen automatically)

Course Outline

This 4-week class will introduce you to:

- Core programming concepts using Python such as variables, loops, conditionals, and functions.
- Problem-solving and logical thinking through real-world coding exercises.
- Practical projects like calculators, games, and small utilities.
- The joy and creativity of coding, with zero prior experience needed.

Class Schedule

Class **1** : Introduction to basic Python concepts

Class **2** : Inputs, Conditionals & Decisions

Class **3** : Loops, functions & repetition

Class **4** : Project Showcase

What is an Algorithm?

- Step by step instructions to solve a problem
- Just like you, it needs a clear set of steps to follow
- In coding, or a programming language, algorithms tell a computer what to do, step by step

Discuss an algorithm to brush your teeth

Are there patterns? Are those repeatable?

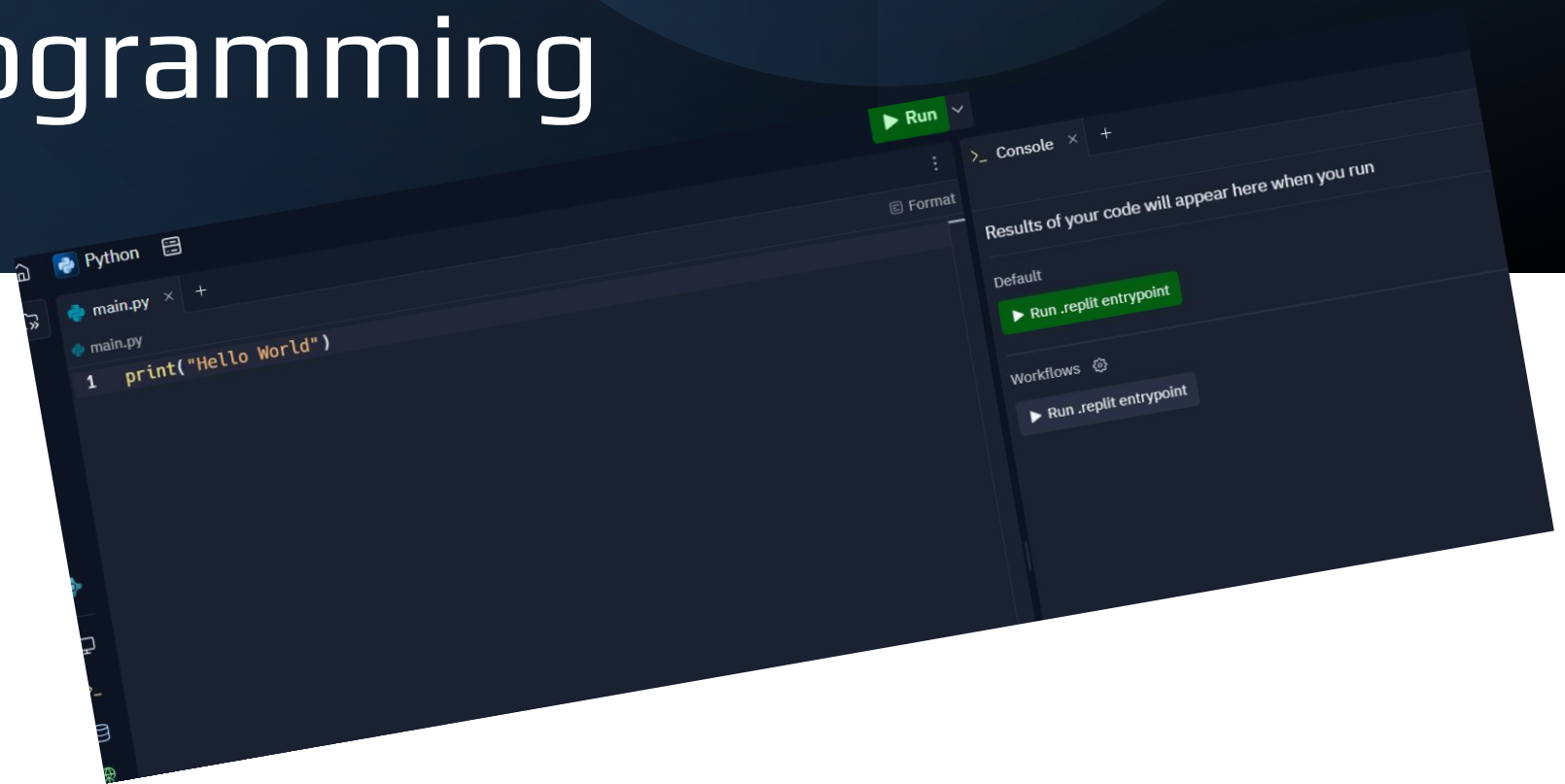
Program

- Set of instructions that tells a computer what to do. These are written in an artificial (non-speaking) language.
- Also referred to as code or computer code.

Difference between Algorithm and Program

- Algorithm = Plan or instructions – these aren't specific to a language or a computer
- Program = Code that follows the plan and runs on a computer. Stuff that is written in a way that the computer understands and executes.

Python Programming



Why learn Python?

Most popular language

Used in web development, data science, AI, automation and more

Easy to read, easy to write

Where is Python used?

- Websites (Instagram, YouTube)
- Games (pygame!)
- Data analysis (Netflix recommendations)
- Automation (emails, reports)
- AI and Machine Learning

Our First Python Program

Setting up our coding environment

1. Navigate to Replit (https://replit.com/new/python3)
2. it will prompt you to login or sign-up
   - you can sign up with your google account
3. Utilize option to create a free app. You can choose to name it “Dev-1”
4. Navigate to the bottom left of the pane and turn off AI Autocomplete

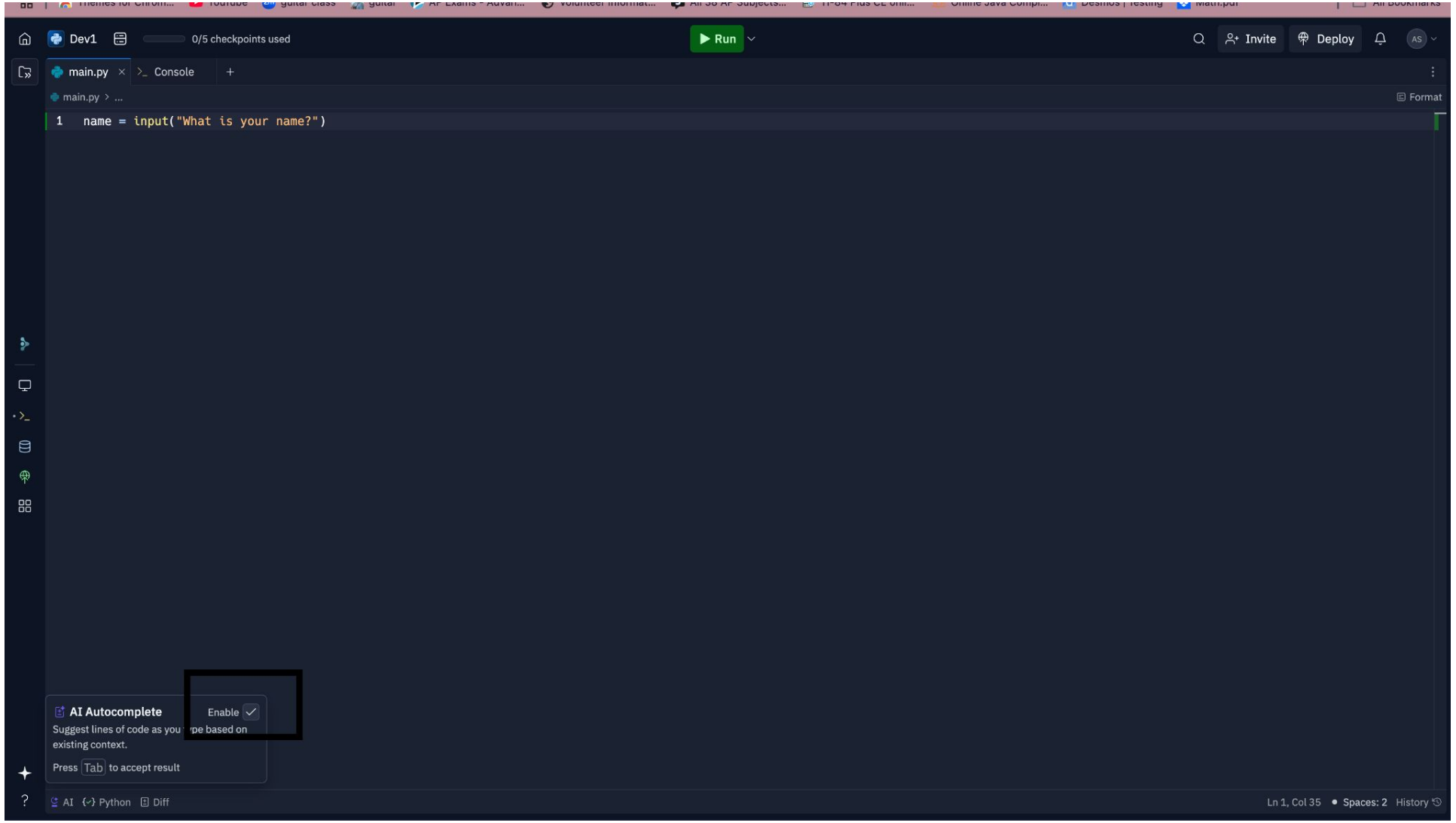
If this doesn't work..

https://www.programiz.com/python-programming/online-compiler/

- this is a free code editor, however it does not allow you to save your projects. keep that in mind.

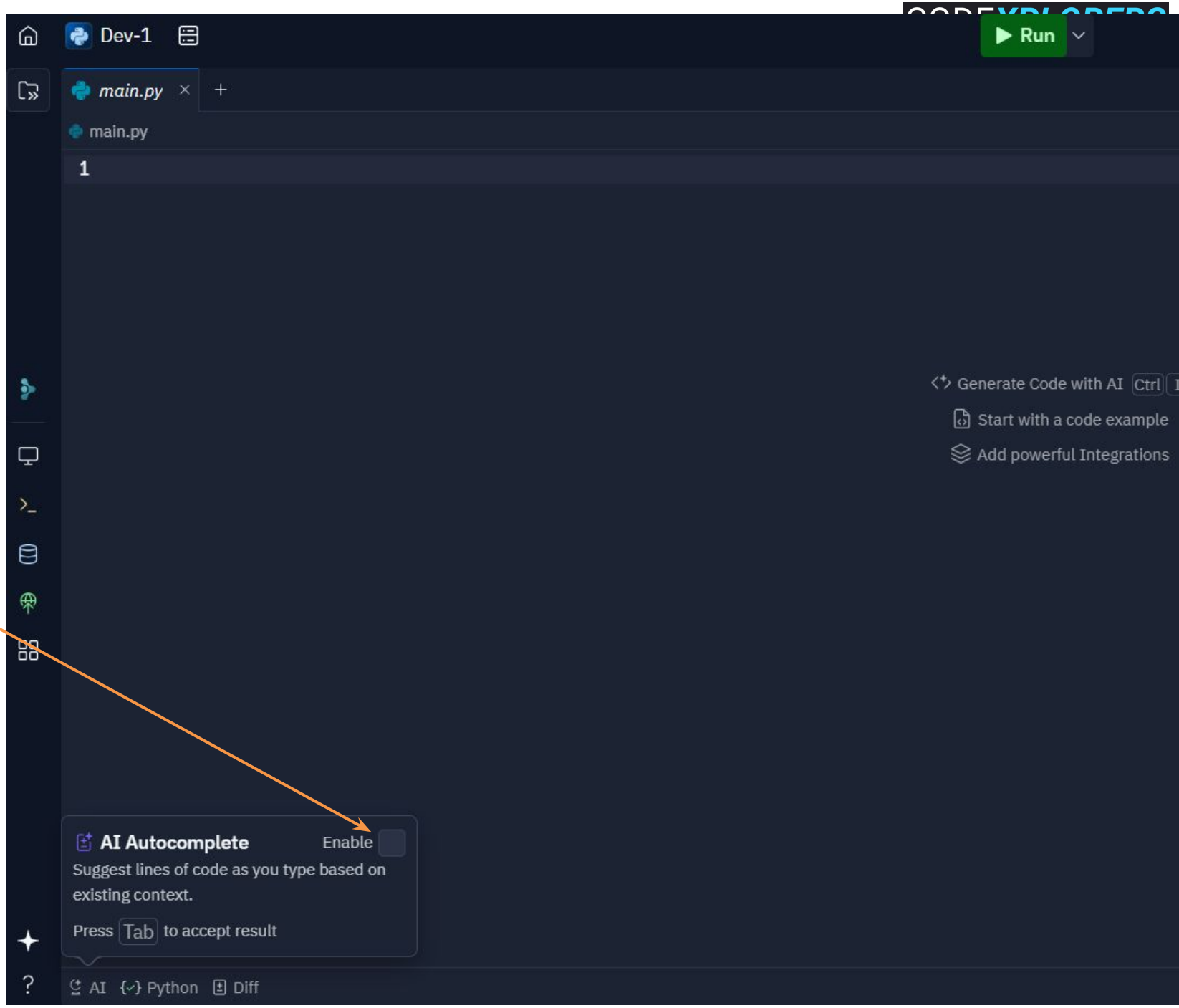
https://colab.research.google.com/

- this will allow you to save the files. I have never used this before, but I can help.


Dev1
0/5 checkpoints used
Run
Invite
Deploy
main.py
Console
main.py > ...
Format
1 name = input("What is your name?")
AI Autocomplete
Enable
Suggest lines of code as you type based on existing context.
Press Tab to accept result
AI
Python
Diff
Ln 1, Col 35
Spaces: 2
History

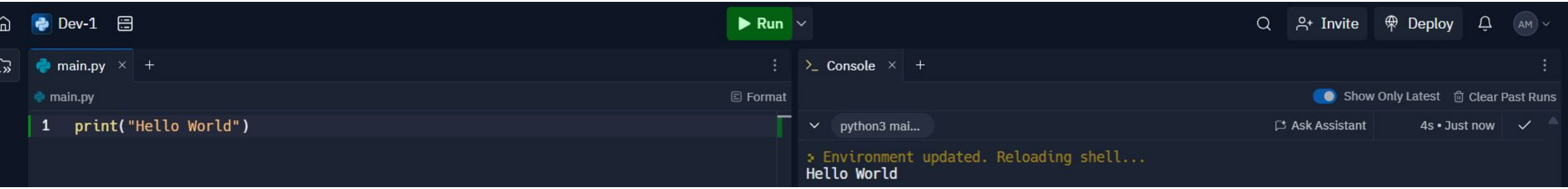
This is how your development environment (IDE) in Replit should feel like.

Note that the AI Autocomplete Enable check is unclicked.



Running your first Python program

Type print("Hello, World!")
Press Run! 🎉



On the IDE, you essentially write instructions (or code), the compiler reads and helps execute your code.

The output appears on the console to the right (in this case)

Variables

Variables are used to store information

Examples

- `name = "Sam"`
- `age = 25`
- `is_student = True`

*name of the variable is on the left side of the “=”.

*the actual value of the variable is on the right side of the “=”

Someone tell me another example!

Common Data Types

- **Numeric**: These can be either integers or floating-point numbers.
- **Boolean**: These are True/False values.
- **String**: These are text values composed of a sequence of characters.
- **Sequence (Lists)**: These are collections of data types that can be the same or different.

Common Data Types

```
name = "Alice"      # str
age = 30            # int
height = 5.7        # float
is_student = True   # bool
colors = ["red", "blue", "green"]  # list
```

*Python is case-sensitive!! Make sure T not t

Note : Python has many others but for the context of our class, we will limit to the 5 above

Code **Comments**

- Comments are notes you write inside your code to explain what it does. Makes it EASY to read and explain code to others.
- Python ignores comments when running the program.

```
''' This is a multi-line comment
using triple single quotation marks
'''

""" This is a multi-line comment
using triple double quotation marks
"""
```

```
# This is a single line comment in Python
```

```
# Get the user's name and age
name = input("What is your name? ")
age = input("How old are you? ")

# Greet the user
print("Hello, " + name + "!")
print("You are " + age + " years old.")

# Play with numbers: estimate birth year
current_year = 2025
birth_year = current_year - int(age)  # Convert the input to a number for math

# Tell them their birth year
print("You were probably born in " + str(birth_year) + ".")
```

Key Takeaways

- What's an algorithm?
- Input, Output statements
  - What is our input?
  - What is our output? hint...what do we use print() for?
- Data types and variables
  - What are some of the types?
- First lines of code (Yay! ☺)

Want to practice more?

https://www.learnpython.org/

https://futurecoder.io/

https://www.w3schools.com/python/ -> this one I HIGHLY recommend

THANK YOU