**Day 1 - What is Programming and Python?**

**What is Programming**

Programming is a way for us to tell computers what to do. Computer is a very dumb machine and it only does what we tell it to do. Hence we learn programming and tell computers to do what we are very slow at - computation. If I ask you to calculate 5+6, you will immediately say 11. How about 23453453 X 56456?

You will start searching for a calculator or jump to a new tab to calculate the same. This 100 days of code series will help you learn python from starting to the end. We will start from 0 and by the time we end this course, I promise you will be a Job ready Python developer!

**What is Python?**

* Python is a dynamically typed, general purpose programming language that supports an object-oriented programming approach as well as a functional programming approach.
* Python is an interpreted and a high-level programming language.
* It was created by Guido Van Rossum in 1989.

**Features of Python**

* Python is simple and easy to understand.
* It is Interpreted and platform-independent which makes debugging very easy.
* Python is an open-source programming language.
* Python provides very big library support. Some of the popular libraries include NumPy, Tensorflow, Selenium, OpenCV, etc.
* It is possible to integrate other programming languages within python.

**What is Python used for**

* Python is used in Data Visualization to create plots and graphical representations.
* Python helps in Data Analytics to analyze and understand raw data for insights and trends.
* It is used in AI and Machine Learning to simulate human behavior and to learn from past data without hard coding.
* It is used to create web applications.
* It can be used to handle databases.
* It is used in business and accounting to perform complex mathematical operations along with quantitative and qualitative analysis.

**Why Replit?**

* Replit is very easy to share tutorials and code.
* You can easily fork this repl and continue learning in your own style. Video, code as well as text tutorial on the same page which makes things easy!
* For fellow teachers out there, you create a .tutorial folder to create tutorials using replit.

**Day 3 - Modules and pip in Python!**

Module is like a code library which can be used to borrow code written by somebody else in our python program. There are two types of modules in python:

1. Built in Modules - These modules are ready to import and use and ships with the python interpreter. there is no need to install such modules explicitly.
2. External Modules - These modules are imported from a third party file or can be installed using a package manager like pip or conda. Since this code is written by someone else, we can install different versions of a same module with time.

**The pip command**

It can be used as a package manager [pip](https://pip.pypa.io/en/stable/) to install a python module. Lets install a module called pandas using the following command

pip install pandas

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**Using a module in Python (Usage)**

We use the import syntax to import a module in Python. Here is an example code:

import pandas

# Read and work with a file named 'words.csv'

df = pandas.read\_csv('words.csv')

print(df) # This will display first few rows from the words.csv file

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Similarly we can install other modules and look into their documentations for usage instructions.  
We will find ourselved doing this often in the later part of this course

**Day 5 - Comments, Escape sequence & Print in Python**

Welcome to Day 5 of 100DaysOfCode. Today we will talk about Comments, Escape Sequences and little bit more about print statement in Python. We will also throw some light on Escape Sequences

**Python Comments**

A comment is a part of the coding file that the programmer does not want to execute, rather the programmer uses it to either explain a block of code or to avoid the execution of a specific part of code while testing.

**Single-Line Comments:**

To write a comment just add a ‘#’ at the start of the line.

**Example 1**

#This is a 'Single-Line Comment'

print("This is a print statement.")

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Output:

This is a print statement.

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**Example 2**

print("Hello World !!!") #Printing Hello World

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Output:

Hello World !!!

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**Example 3:**

print("Python Program")

#print("Python Program")

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**Output:**

Python Program

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**Multi-Line Comments:**

To write multi-line comments you can use ‘#’ at each line or you can use the multiline string.

**Example 1:** The use of ‘#’.

#It will execute a block of code if a specified condition is true.

#If the condition is false then it will execute another block of code.

p = 7

if (p > 5):

print("p is greater than 5.")

else:

print("p is not greater than 5.")

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Output:

p is greater than 5.

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**Example 2:** The use of multiline string.

"""This is an if-else statement.

It will execute a block of code if a specified condition is true.

If the condition is false then it will execute another block of code."""

p = 7

if (p > 5):

print("p is greater than 5.")

else:

print("p is not greater than 5.")

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**Output**

p is greater than 5.

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**Escape Sequence Characters**

To insert characters that cannot be directly used in a string, we use an escape sequence character.

An escape sequence character is a backslash \ followed by the character you want to insert.

An example of a character that cannot be directly used in a string is a double quote inside a string that is surrounded by double quotes:

print("This doesnt "execute")

print("This will \" execute")

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**More on Print statement**

The syntax of a print statement looks something like this:

print(object(s), sep=separator, end=end, file=file, flush=flush)

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**Other Parameters of Print Statement**

1. object(s): Any object, and as many as you like. Will be converted to string before printed
2. sep='separator': Specify how to separate the objects, if there is more than one. Default is ' '
3. end='end': Specify what to print at the end. Default is '\n' (line feed)
4. file: An object with a write method. Default is sys.stdout

Parameters 2 to 4 are optional

**DAY 6 - Variables and Data Types**

**What is a variable?**

Variable is like a container that holds data. Very similar to how our container in kitchen holds sugar, salt etc Creating a variable is like creating a placeholder in memory and assigning it some value. In Python it’s as easy as writing:

a = 1

b = True

c = "Harry"

d = None

These are four variables of different data types.

**What is a Data Type?**

Data type specifies the type of value a variable hold.> This is required in programming to do various operations without causing an error.  
In python, we can print the type of any operator using type function:

a = 1

print(type(a))

b = "1"

print(type(b))

By default, python provides the following built-in data types:

**1. Numeric data: int, float, complex**

* int: 3, -8, 0
* float: 7.349, -9.0, 0.0000001
* complex: 6 + 2i

**2. Text data: str**

str: "Hello World!!!", "Python Programming"

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**3. Boolean data:**

Boolean data consists of values True or False.

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**4. Sequenced data: list, tuple**

**list:** A list is an ordered collection of data with elements separated by a comma and enclosed within square brackets. Lists are mutable and can be modified after creation.

**Example:**

list1 = [8, 2.3, [-4, 5], ["apple", "banana"]]

print(list1)

Output:

[8, 2.3, [-4, 5], ['apple', 'banana']]

**Tuple:** A tuple is an ordered collection of data with elements separated by a comma and enclosed within parentheses. Tuples are immutable and cannot be modified after creation.

**Example:**

tuple1 = (("parrot", "sparrow"), ("Lion", "Tiger"))

print(tuple1)

Output:

(('parrot', 'sparrow'), ('Lion', 'Tiger'))

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**5. Mapped data: dict**

**dict:** A dictionary is an unordered collection of data containing a key:value pair. The key:value pairs are enclosed within curly brackets.

**Example:**

dict1 = {"name":"Sakshi", "age":20, "canVote":True}

print(dict1)

Output:

{'name': 'Sakshi', 'age': 20, 'canVote': True}

**DAY 7 - Operators**

Python has different types of operators for different operations. To create a calculator, we require arithmetic operators.

**Arithmetic operators**

| **Operator** | **Operator Name** | **Example** |
| --- | --- | --- |
| + | Addition | 15+7 |
| - | Subtraction | 15-7 |
| \* | Multiplication | 5\*7 |
| \*\* | Exponential | 5\*\*3 |
| / | Division | 5/3 |
| % | Modulus | 15%7 |
| // | Floor Division | 15//7 |

**Exercise**

n = 15

m = 7

ans1 = n+m

print("Addition of",n,"and",m,"is", ans1)

ans2 = n-m

print("Subtraction of",n,"and",m,"is", ans2)

ans3 = n\*m

print("Multiplication of",n,"and",m,"is", ans3)

ans4 = n/m

print("Division of",n,"and",m,"is", ans4)

ans5 = n%m

print("Modulus of",n,"and",m,"is", ans5)

ans6 = n//m

print("Floor Division of",n,"and",m,"is", ans6)

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**Explaination**

Here 'n' and 'm' are two variables in which the integer value is being stored. Variables 'ans1' , 'ans2' ,'ans3', 'ans4','ans5' and 'ans6' contains the outputs corresponding to addition, subtraction,multiplication, division, modulus and floor division respectively.

**Exercise 1 - Create a Calculator**

Create a calculator capable of performing addition, subtraction, multiplication, and division operations on two numbers. Your program should format the output in a readable manner!