# PYTHON FULL COURSE

## Pre-requisite

1. Install Python → go cmd → python & pip check
2. Install VS code → install extensions & customize

## What is Programming ?

↳ As Hindi & English is language to communicate with each other, similarly we use a programming language like python to communicate with computer.

Programming is a way to instruct the computer to perform various tasks.

## Python ?

↳ Python is a simple and easy to understand language which feels like reading simple English.

This Pseudo code nature of python makes it easy to learn and understandable by beginners.

## Features

- Easy to understand = less development time
- Free and open source
- High level language
- Portable → works on Linux/Windows/Mac

+ Fun to work with.

Dt. Pg.

# Ch-1 :- Modules, Comments and pip

Let's write our very first python program.
Create a file called hello.py and paste the below code in it.

```
print("Hello World")
```

→ "print" is a function

You can run it using type - python (filename)
Execute this file (.py file) by typing hello.py and you will see "Hello World" printed on screen.

## Modules :-

↳ A Module is a file containing code written by somebody else (usually) which can be imported and used in our programs.

## Types of Modules :-

1. Built-in modules :- Pre-installed in Python
2. External Modules :- Need to install using pip

e.g of Built-in modules are abc, ast, array, os etc.
e.g of External Modules are ~~tensorflow~~ tensorflow, flask etc.

## Using Python as a Calculator

We can use python as a calculator by typing "python" + ↵ on the terminal
↳ This will open REPL
or Read Evaluate Print Loop.

**Comments :-** (shortcut ctrl + /)
↳ comments are used to write something which programmer doesn't want to execute
↳ can be ~~mark~~ used to mark author name, date, etc.

There are 2 types of comments in Python
1. Single line comments :- using #
2. Multi line comments :- using ''' comment '''

**Pip :-**
↳ Pip is a package manager for Python you can use pip to install a module on your system
↳ pip install flask
it installs flask module.

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# Ch-1 - Practice Set

1. Write a program to print "Twinkle Twinkle Little star" poem in Python.

2. Use REPL and print the table of 5 using it.

3. Install an external module and use it to perform an operation of your interest.

4. Write a python program to print the contents of a directory using os module.
   Search online for the function which does that.

5. Label the program written in Problem 4 with comments.

# Solutions (ch-1)

① (VSC) print(" Twinkle Twinkle little Star ")
''' for multiline '''

② (cmd) python + ↵
5 * 1 → 5 5 * 2 → 10

③ google - playsound module
open vsc - go to terminal - pip install playsound.
vsc — from playsound import playsound.
playsound ('D:\\My folder. . . . .\play.mp3'
use double backslash.

④ google - os module print content of a directory
import os
print ( os.listdir())

⑤ # owner :
# location :
# Date :
import os
print (os.listdir())

— 44:40 —

Dt. _____ Pg. _____

# Ch-2 Variables and Datatypes

A Variable is the name given to a memory location in a program. For e.g

```
a = 30
b = "Harry"
c = 71.22
```

- Variables = Container to Store Value
- Keywords = Reserved words in Python
- Identifiers = class / function / variable name

## Data Types :-

↳ Primarily there are following data types in Python

- → Integers
- → Floating point numbers
- → Strings
- → Booleans
- → None

Python is a fantastic language that automatically identifies the type of data for us :

```
a = 71      ⇒ Identify a as class <int>
b = 88.4    ⇒ Identify b as class <float>
c = "Cloud" ⇒ Identifies ~~Ram~~ c as class <str>
```

## * Rules for defining a Variable name →

↳ Also applies to other identifiers

→ A Variable name can contain alphabets, digits and underscore.
→ A Variable name can only start with an alphabet and underscore.
→ A Variable name can not start with a digit
→ No white space is allowed to be used inside a Variable name.

Examples of few variables names are :-
Prashant, one8, seven, _seven etc

## * Operators :-

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

Following are some common operators in Python :-

1. Arithmetic operators ⇒ +, -, *, /, % (modules), ** (exponential)
2. Assignment operators ⇒ =, +=, -=, etc.
3. Comparison operators ⇒ ==, >, <, >=, <=, != etc.
4. Logical operators ⇒ and, or, not

Dt. _____ Pg. _____

## Type casting and type() function

↳ The conversion of one data type into the other data type is known as type casting in python or Type conversion in python.

Python supports a wide variety of functions or methods like : int(), float(), str(), ord(), hex(), oct(), tuple(), set(), list(), dict() etc. for the type casting in python.

There are two types of typecasting :-

① Explicit conversion

↳ conversion of one data type into another data type, done via developer or programmer.

e.g int(), float(), str() etc.

② Implicit type casting :

↳ Data types in Python do not have the same level i.e, ordering of data types is not the same in Python.

While performing any operations one of the variable's data types will be changed to the higher data. According to the level, one data type is converted into other by Python itself.

This is called Implicit type casting.

type function is used to find the data type of a given variable in Python.

| | |
|---|---|
| a = 31 | b = "31" |
| type(a) = class <int> | type(b) = class <str> |

A number can be converted into a String and vice versa (if Possible)
There are many functions to convert one data type into another

str(31) = "31" ⇒ Integer to String Conversion
int("32") = 32 ⇒ String to Integer Conversion
float(32) = 32.0 ⇒ Integer to float Conversion
... and so on.

Here "31" is a string literal and 31 a numeric literal

* input() function
↳ This function allows the user to take input from the keyboard as a String
a = input("Enter name") ⇒ If a is "Prashant", the user entered Prashant

It is important to note that the output of input is always a String ⇒ If a is "34" user (even if the number is entered) entered 34.