

What are Compilers?

In [] : Compilers --> Compilers are used **for** converting high level language into Machine Language.
--> It **is** working **as** a Translator.

High Level Language --> The languages which are understandable by Humans(English.)
Machine Language --> The Languages which are understandable by Computers(Binary Language)

What is Computer Programming and What is a Programs?

In [] : Program/Codes --> A set of instructions that we will give to computers to solve a problem.

Computer Programming --> The process of creating a set of instructions that tells a computer how **and** what task computers need to do.
--> Computer Programming will be done **with** the help of different programming languages.

Example --> C, C++, JAVA, PYTHON, JAVASCRIPT, SHELL.....

What is Python Programming?

In [] : Python **is** a General Purpose High Level Programming Language.

General Purpose ==> Common Purpose(You can use this programming language anywhere anytime).
High Level Programming ==> It's **syntax is similar to english Language**.
==> If we are writing any code we need to take care about low level activites(Memory Utilization,Datatype,Pointers) such type of programming language are known **as** programmer friendly progr

Example:

In C language **if** you want to add Two Number:

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int a=10;
    int b=20;
    int c=a+b;
    printf("Sum is %c",c);
}
```

In python **if** we want to Add of Two number

```
a=10
b=20
c=a+b
print(c)
```

History of Python

In [] : --> Python **is** developed by Guido Van rossum **in 1989 while** working at National Research institute Netherland.

--> The official Date of Birth of Python **is 20th feb 1991**(Python **is** available to the public on this day).

--> Python **is** implemented Before Java(**1996** jdk1.0).

--> Python **is** owned by Python Software Foundation(Non Profitable Organization)

--> Java **is** owned by Oracle.

Where we can Use Python?

In [] : ==> Machine Learning
==> Data Science
==> Deep Learning
==> Data Visualtion
==> Data Wrangling
==> Web Applications
==> Desktop Application
==> Games
==> IOT(Internet of Things)

Note --> R is also a programming language that is used for Data science and Machine Learning but R is not General Purpose Language.

Where we can use Java?

In [] : --> Web development
--> Android Applications

Where is the worst case situation of using Python?

In [] : --> Android Application --> Kotlin **or** Java
--> Compiler Design --> C **and** C++

Features of Python

In [] : ==> Simple **and** Easy --> The Syntaxes of python **is** approximately similar to english language.

==> Free **and** Open Source --> We need **not** to spend a single penny **for** writing python code.

==> High Level Programming Language --> Programmer Friendly

==> Platform Independent --> **if** we are any python code **in** any one operating system(windows,linux, Mac Os) then we also run same code on any other operating system.
The output of that python code **is** same **in** every operting system.

==> Both Functional **and** Object Oriented Programming --> We can write python programs **with** the help of functions **as** well **as** **with** the help of classes **and** object.

==> Dynamic Typed Programming Lanaguage --> If we are writing a code **in** that code we need **not** to define which kind of data we are going to use **in** our programming.

==> Interpreted Programming Language --> Line by Line statements of the program will be executed.

==> Rich Libraries **and** Frameworks --> In Python we are having million of libraries **and** Packages **and** we can use all those libraries **and** Packages **for** different Technologies.

Example of Functional Programming and Object Oriented Programming

In [] : *#Program with the help of Functions*

```
def add(a,b):
    return a+b
```

In [] : *#Same Program with the help of object oriented programming.*

```
class Addition:
    def add(self,a,b):
        return a+b
```

What is a Difference Between Interpreter and Compiler?

In [] : Compiler --> Translate high level code to Machine Code
Interpreter --> Translate High level code to Machine Code

Compiler --> Will execute the code atonce.
Interpeter --> Execution will be done line by line

Types of Programming Languages?

In [] : Compiled Language --> The Language which are using compilers **for** Converting high level code to machine code **is** known **as** Compiled Language.

Example: C/C++

Interpreted Languages --> The Language which are using Interpretors **for** Converting high level code to machine code **is** known **as** Interpreter Language.

Example : Python

Note --> Interpreted Languages are always slower than Compiler Language.

Two types of Programming

In [] : Types of Programming Languages:

1.Static Typed Programming Language --> Static Typed Programming language are those languages **in** which we need to define **or** declare the type of data that we are using **in** our program.
--> In Static programming we need to specify the datatype first before execution.

Example of Static Typed Programming Language --> C/C++ AND JAVA

In C:

Adding Two Numbers

```
#include<stdio.h>
#include<conio.h>
int main()
{
    int a=10;
    int b=20;
    int c=a+b;
    printf("Sum is %d",&c)
}
```

2.Dynamic Typed Programming Languages --> Dynamic Typed Programming languages are those language **in** which we need **not** to define the datatype. At the Runtime compiler will automatically analyze the datatype.

Example of Dynamic Typed Programming Language --> Python **and** JavaScript

In Python:

Adding Two Numbers **in** Python:

```
a=10
b=20
c=a+b
print(c)
```

Python Installation For Three Types of Configurations.

In [] : Python Installation For Three Types of Configurations.

RAM --> Less than 4GB --> VS Code,Python IDLE
RAM --> Less Than 8GB --> Anaconda(jupyter notebook,Jupyter lab,Pycharm,Spyder...)
RAM --> Less than 2GB --> Python IDLE,Google Colab

What is Anaconda

In [] : Anaconda **is** a open source distribution packages built on python **and** R programming Along **with** that inside anaconda we have alot of libraraies **and** packages that are widelt used **in** machine learning, data science, deep learning etc

Ides Present in Anaconda

In [] : *#Different IDE'S Present in Anaconda?*

```
1.Jupyter notebook
2. Jupyter lab
3. Pycharm
4. Spyder
5. VS CODE
6. R Studio
Etc.....
```

Installation of Anaconda

In [] : You can Refer this PDF **for** Anaconda Installation:

<https://github.com/pratyushsrivastava500/DS010923-Pratyush/blob/1404fb34b8eef586a12267a1e5e18b46f70d9b12/Environmental%20Setup%20and%20Python%20Installation/Anaconda%20%20Installation.pdf>

Ways to Open Anaconda Navigator

In [] : *#Way to open Anaconda Navigator?*

Step 1: Go on Search Bar

Step 2: Type Anaconda Navigator

Step 3: Navigator will open(It will take some time)

Step 4: If you want to check the installed libraries **and** Packages you can check **with** the help of Enviornment Option that **is** present on the left side of Anaconda Navigator.

Step 5: If you want to open any python Editor than simply click on launch inside anaconda navigator you ide will automatically opened

Ways to open different IDEs

In [] : *#Ways to open different IDEs*

First Way : You can open any IDE **with** the help of Anaconda Navigator(Just click on Launch button after opening Anaconda Navigator)

Second Way : You can open any IDE **with** the help of Anaconda Prompt(Just write the Ide Name like jupyter notebook)

Third Way : Search the IDE on Search Bar **and** Double click on it.

Ways to Open Jupyter Notebook

In [] : *#Ways to Open Jupyter Notebook*

First Way : Using Anaconda navigator(just launch jupyter notebook)

Second Way : Using anaconda Prompt(Just type command : jupyter notebook)

Third Way : Search Jupyter Notebook on Search Bar **and** Double click on it.

Write first code on jupyter notebook

In [] : Step 1: Open Juputer Notebook **with** the help of Anaconda Navigator **or** Anaconda Prompt **or** by Search Bar.

Step 2: On the Right Side a Button named **as** NEW click on it.

Step 3: After Clicking on new button You will see the Python Option click on it.

Step 4: After clicking on Python You will redirected to the new file of Jupyter notebook

Step 5: If you want to rename your file you can simply click on the name on the file **and** after that you can rename your file.

Step 6: Cells are given to you Just write you code **in** the cell.

#For running the cell

Step 7: For executing the cell you can use shift+enter **or** Run button **is** given on Top.

Step 8: You code **is** running **and** you will see output.

Note: Your code **is** automatically saved you need **not** to save your file again **and** again **in** case of Jupyter Notebook. **and** All the files are already saved on your default folder(C:\Users\user)