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
                           activities(Memory Utilization,Datatype,Pointers) such type of programming language are known as programmer friendly progra


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
    Netharland.

--> 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 langauge.

==> 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
                                            programing.

==> 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 Interpretor and Compiler?

In [ ]:
```
Compiler --> Translate high level code to Machine Code
Interpretor --> 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 Langauge.

Example:  C/C++

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

Example :  Python
```

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

Two types of Programming

In [ ]:
```
Types of Programming language:

==> Static 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: Java,c,c++

    In C/C++ and Java:

          String name = "Pratyush"
          int rollno = 98

==> Dynamic Programming language  are those language in which we need not to define
    the datatype. At the Runtime Compiler will automatically analyze the datatype.

    Example:  Python and Javascript

    In python:

        name="Python"
        roll no = 98
```

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.......
```

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 Enviorment 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.
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)
```

In [ ]:
```

```