Dhirubhai Ambani University

(Formerly known as DA-IICT)

Topic: Introduction to Python Programming

Course: Programming Lab

Course Code- PC503

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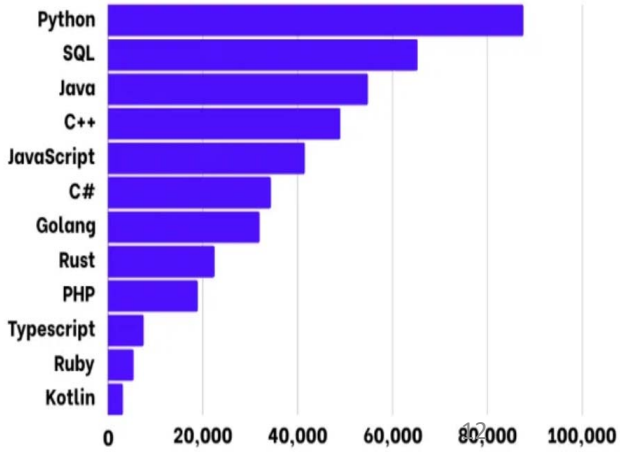
Brief Introduction

- Python is a programming language created in 1991 by Guido van Rossum.

Why Python?

- Python is an open-source language.
- It works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.)
- Easier to learn and use.
- Powerful libraries – Ready-made ML, AI, web, and automation tools.
- High industry demand – More jobs and career opportunities.



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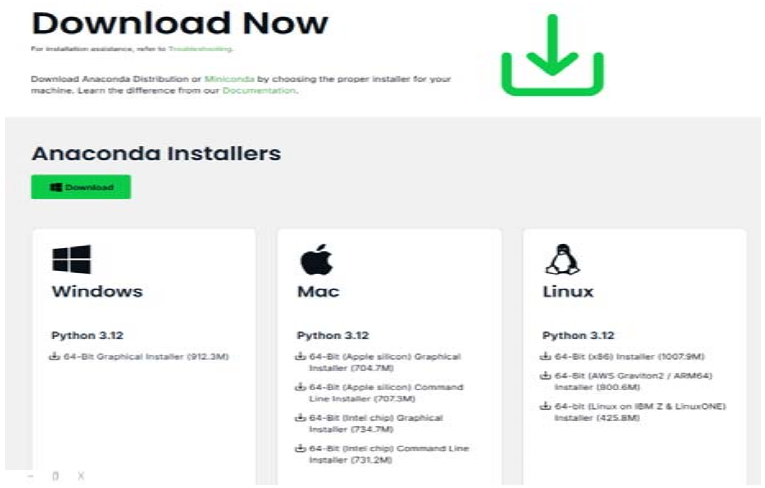
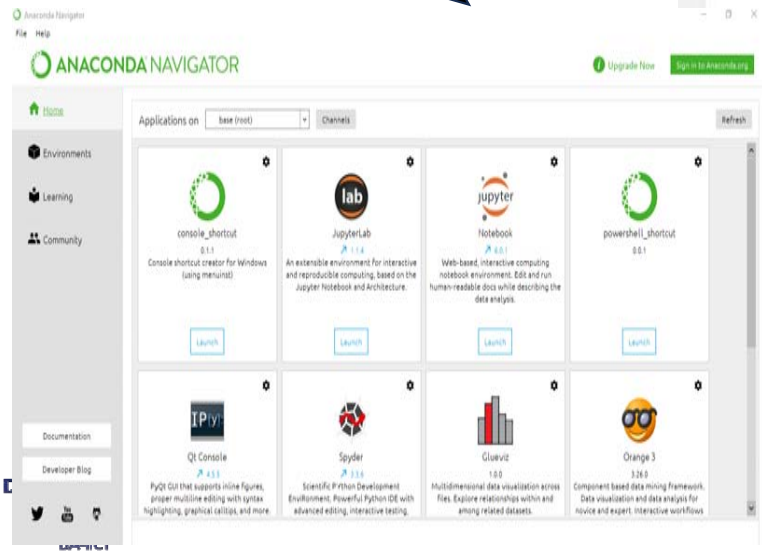
Python IDE

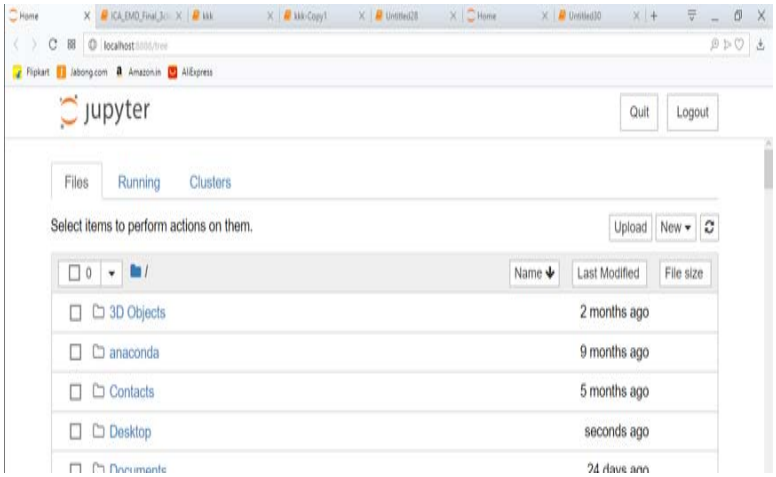

BEST PYTHON IDE
PyCharm
VS Code
jupyter
Jupyter Notebook
Sublime Text
PyDev

Installation of Jupyter Notebook

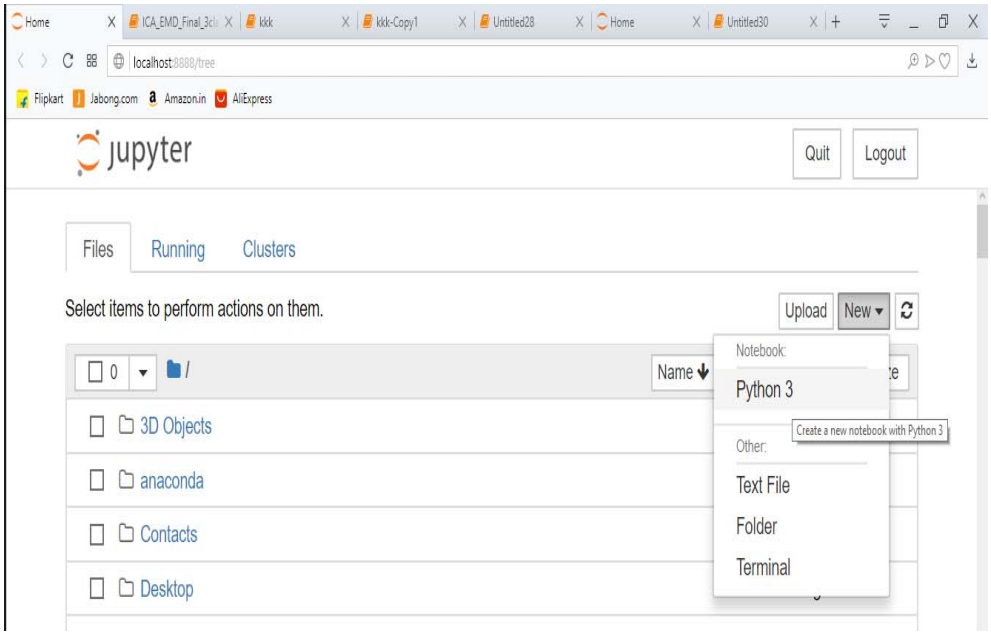


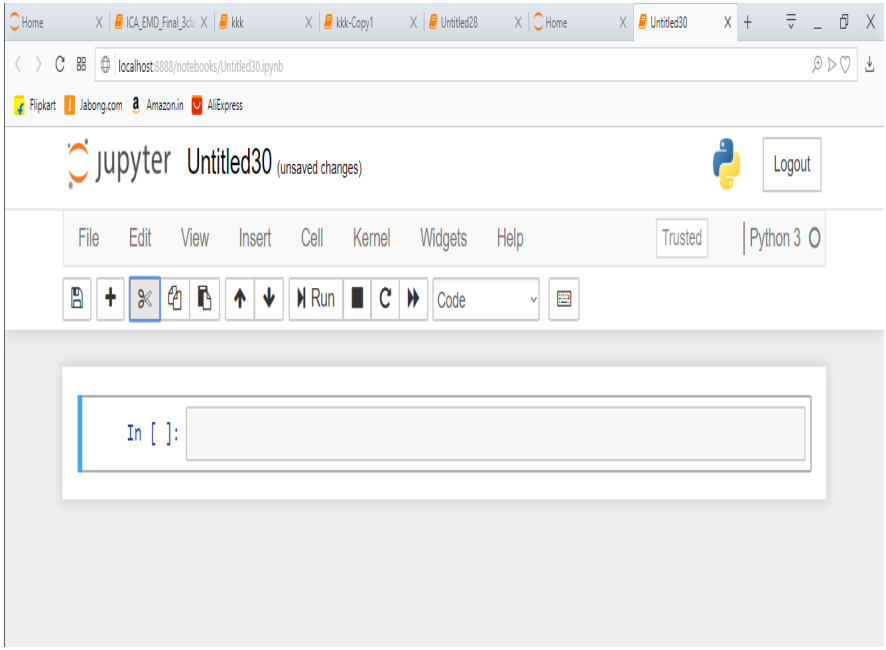


Source: anaconda.com



Create a new program file in Jupyter Notebook





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Python Vs Other Languages

❖ **On average, Python code is smaller than JAVA/C++ codes by 3.5 times.**

C Code

```
#include <stdio.h>
void main()
{
    printf("Hello World");
}
```

C++ code:

```
#include <iostream>
void main( )
{
        cout << "Hello World";
}
```

Python code:

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

❖ **Python is interpreted while C/C++, etc. are compiled.**

- **Compiler: spends a lot of time analysing and processing the program, faster program execution**
- **Interpreter: relatively little time is spent analysing and processing the program, slower program execution**

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Print in Python

print('Hello World')
or
print("Hello World")

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

```
Hello World
```

print(Item1 , Item2)

```
a=2
b=5
print(a)
print(b)
```

```
2
5
```

```
a=2
b=5
print(a,b)
```

```
2 5
```

Print variable with statements:

```
print('The value of x is {} and y is {}'.format(2,5))
```

```
The value of x is 2 and y is 5
```

```
a=2
b=5
print('The value of x is {} and y is {}'.format(a,b))
```

```
The value of x is 2 and y is 5
```

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Comments and Indentation

- For single line comment hash (#) symbol is used.
- For multi-line comments use triple quotes, either ''' or """.

```
# WAP to print Hello World
print("Hello World")
```

```
""""WAP
to print
Hello World""""
print("Hello World")
```

- Python uses indentation instead of braces to determine the scope of expressions.
- All lines must be indented the same amount to be part of the scope (or indented more if part of an inner scope).

```
[45]: print("my name is Ram")
      print("my age is 20")
      print(c)
```

```
  Cell In[45], line 2
    print("my age is 20")
    ^
IndentationError: unexpected indent
```

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Exercise- 1

WAP to print the following text in the given format:

Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are

```
Twinkle, twinkle, little star,
How I wonder what you are!
Up above the world so high,
Like a diamond in the sky.
Twinkle, twinkle, little star,
How I wonder what you are
```

print("Twinkle, twinkle, little star, **\n**How I wonder what you are! **\n**Up above the world so high, **\n**\Like a diamond in the sky. **\n**Twinkle, twinkle, little star, **\n**How I wonder what you are")

Exercise- 2

WAP to print the following text in the given format:

Twinkle, twinkle, little star, How I wonder what you are! Up above the world so high, Like a diamond in the sky. Twinkle, twinkle, little star, How I wonder what you are

```
Twinkle, twinkle, little star,
        How I wonder what you are!
                Up above the world so high,
                        Like a diamond in the sky.
Twinkle, twinkle, little star,
        How I wonder what you are
```

print("Twinkle, twinkle, little star, **\n\t**How I wonder what you are! **\n\t\t**Up above the world so high, **\n\t\t\t**Like a diamond in the sky. **\n**Twinkle, twinkle, little star, **\n\t**How I wonder what you are")

Variables

- A variable name can only contain alpha-numeric characters and underscores.
- A variable name cannot start with a number.
- There is no need to declare the type of a variable during initialization.
- Variable names are case-sensitive (age, Age, and AGE are three different variables)
- Reserved words such as break, for, continue, etc., can't be used as variable names.
- In Python, variable types can change during runtime (dynamic typing).
- In Python, multiple assignments can be made in a single statement.

```
Age = 4   # x is of type int
x = "SHYAM" # x is now type str

print (Age)          print(x)

Output: 4            SHYAM
```

```
x = 4   # x is of type int
x = "SHYAM" # x is now type str

print (x)

Output: SHYAM
```

```
a, b, c = 5, 3.2, "Hello"

Print(a, b ,c)
Output: 5 3.2 Hello
```

Input from user

- In Python, we use the input( ) function to take input from the user.
- Whatever you enter as input, the input function converts it into a string.
- If you enter an integer value, the input() function converts it into a string.

```
print("what is your name")
input()
```

```
what is your name
↑↓ for history. Search history w:
```

```
: print("what is your name")
  input()
```

```
what is your name
 Radheshyam
: 'Radheshyam'
```

- Once the value comes into the variable string, it can be converted into an integer or float, etc.

```
: print("what is your Age")
  Age=input()
  x=int(Age)
  print(x)
```

```
what is your Age
 25
25
```

```
print("what is your Salary")
Salary=input()
x=float(Salary)
print(x)
```

```
what is your Salary
 20000
20000.0
```

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Input from user

- We can use the **int()** function before **input( )** function to accept an integer from the keyboard as:

```
print("what is your Age")
Age=int(input())
print(Age)
```

```
what is your Age
 25
25
```

- Similarly, we can use the **float()** function before **input( )** function to accept an float value from the keyboard as:

```
print("what is your Salary")
Salary=float(input())
print(Salary)
```

```
what is your Salary
 20000
20000.0
```

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Exercise- 3

Write a program that accepts the radius of a circle from the user and computes the area.

```
radius_str = input("Enter the radius of the circle: ")
radius = float(radius_str)
area = (22/7) * radius ** 2
print(area)
```

```
Enter the radius of the circle:  1.11
3.8723142857142863
```

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Exercise- 4

Write a Python program that accepts the user's first and last name and prints them in reverse order.