# Python Programming

CS242

Department of CSE

IIT Guwahati

**Akshay Parekh**
**Phd, CSE**

# Python Facts

- High-level, General purpose, Interpreted programming language.
- Created by Guido Van Rossum, and made available in 1991.
- Freely available (comes pre-installed in most of UNIX based Mac OS, for windows, https://www.python.org/downloads/windows/ ).
- Available in two versions Python2 and Python3 (Support for Python2 is discontinued). [We will be using Python3]
- Runs in two modes
  - Interactive Mode
  - Scripting Mode

# Why Python

- Object oriented support.
- Portability.
- Large Standard Library.
- Easy to code and deploy.
- Many Open source frameworks and tools.
- Can easily be linked with other programming language (Example: C/Python Cython).
- Being interpreted, makes it easy to use. No object code or any intermediary file handling. Hence faster than many other programming language.
- Easy to code and learn. Easy variable declaration, english words as operators, no semicolons and brackets, etc.

# Why Python is easy?

## Simple Elegant Syntax

```
a = 10
b = 12

sum = a + b
print (sum)
```

# Why Python is easy?

# Not Overly Strict

```
a = 10
b = "Ten"
c = 0.10
d = -12
e = False
```

# Why Python is easy?

## Expressive Language

```
def getCount(inputStr):
  '''
  return vowel count from the given string.
  '''
  return sum(1 for letter in inputStr if letter in
    'aeiouAEIOU')
```

# Hello world in C

```
#include<stdio.h>

int main() {

        printf(“Hello World”);

        return 0;

}
```

# Hello World in Java

```
class JavaProg {

        public static void main(String args[]) {

                System.out.println(“Hello World”);

        }

}
```

# Hello World in Python

```
print(“Hello World”)
```

# Applications of Python

- System Programming.
- GUIs and Desktop Application (tkinter, OT, etc).
- Web Development (Django, Flask, CherryPy, etc).
- Mathematica and Statistical Programming (Numpy, Pandas, Scipy, etc)
- Visualization (matplotlib, bokeh, seaborn, etc)
- Machine Learning and Deep Learning (Tensorflow, Scikit learn, PyTorch, etc).
- Gaming (PyGame, Panda3d, etc)
- Database Programming (PyMongo, etc)

# Setting up Python

- Check the version,
  - `python --version`
  - By default version in UNIX/Mac is Python2 (This can be changed to Python3 in .bashrc).
  - Open .bashrc and add
    - `alias python=python3`
- Check if `pip` (Package Installer) is installed or not,
  - `pip --version`
  - If not installed,
    - `Install from` https://pip.pypa.io/en/stable/installing/
- To access the .ipynb (Ipython Notebook) that I have provided for practise, follow (one of the following)
  - `pip install jupyter`
  - `Sudo apt-get install jupyter`
- Open terminal, navigate to the folder where you have downloaded the .ipynb file and write following command,
  - `jupyter notebook`