AN INTRODUCTORY COURSE
ON

PYTHON IN PHYSICS

(VERSION: 0.1)

(WITH SPECIAL EMPHASIZE ON NUMPY, SYMPY, AND MATPLOTLIB)

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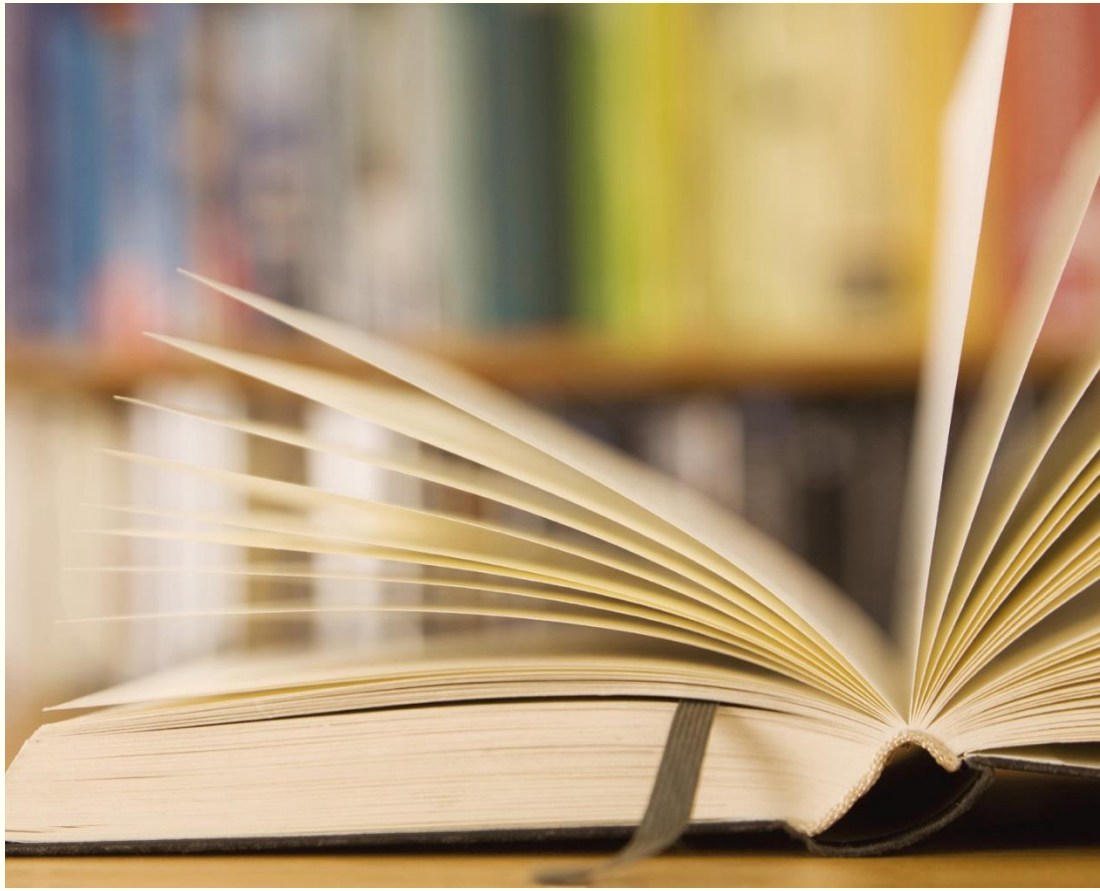


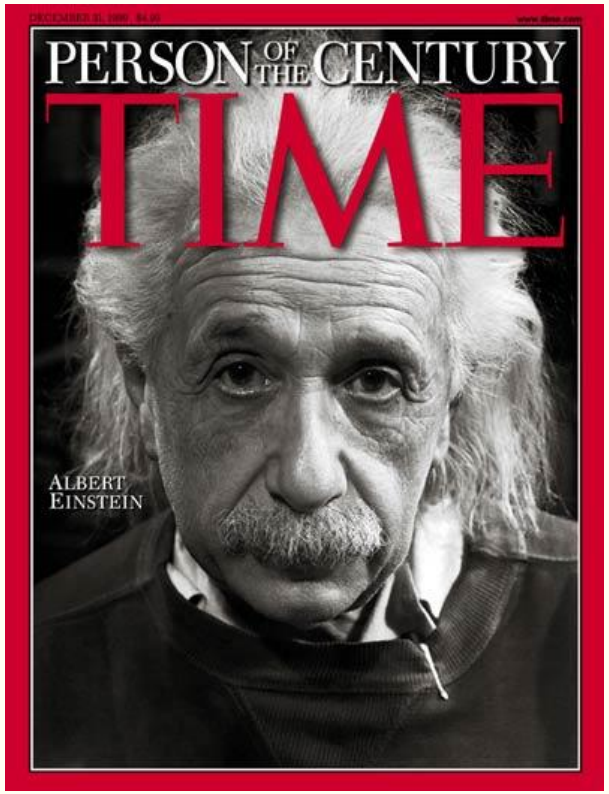
Also @ Centre for Advanced Studies & Innovation Lab, 18/27 Kali Mohan Road, Silchar 788003, INDIA

Objective

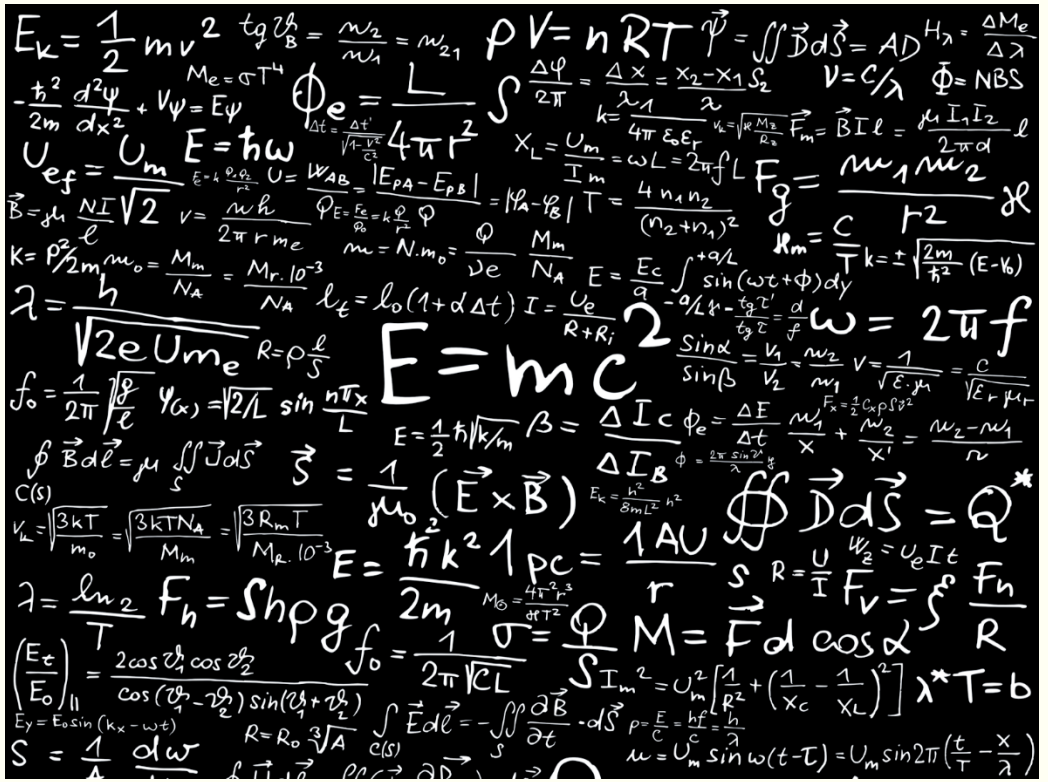
- Why Python?
- Basic tenets of Python Programing Language
- Numpy for Numerical Programming
- Sympy for Symbolic Programming
- Matplotbib for Scientific plotting
- Application of Python in Error Analysis & Curve Fitting
- Application of Python in simple Ordinary Differential Equation (ODE)
- Application of Python in simple Partial Differential Equation (PDE)
- Introduction of Simulation using Python
- Python in solving the syllabus of CBCS UG Course of a colleges?
- Concluding Notes

Career in Theoretical Physics

Einstein - Millennium man of human civilization



His mind works with equations!



Some Mega Experimental Projects in Physics on Earth

CERN ACCELERATOR

Subject: Particle Physics

@ Switzerland-France

Some Mega Experimental Physics Projects on Earth

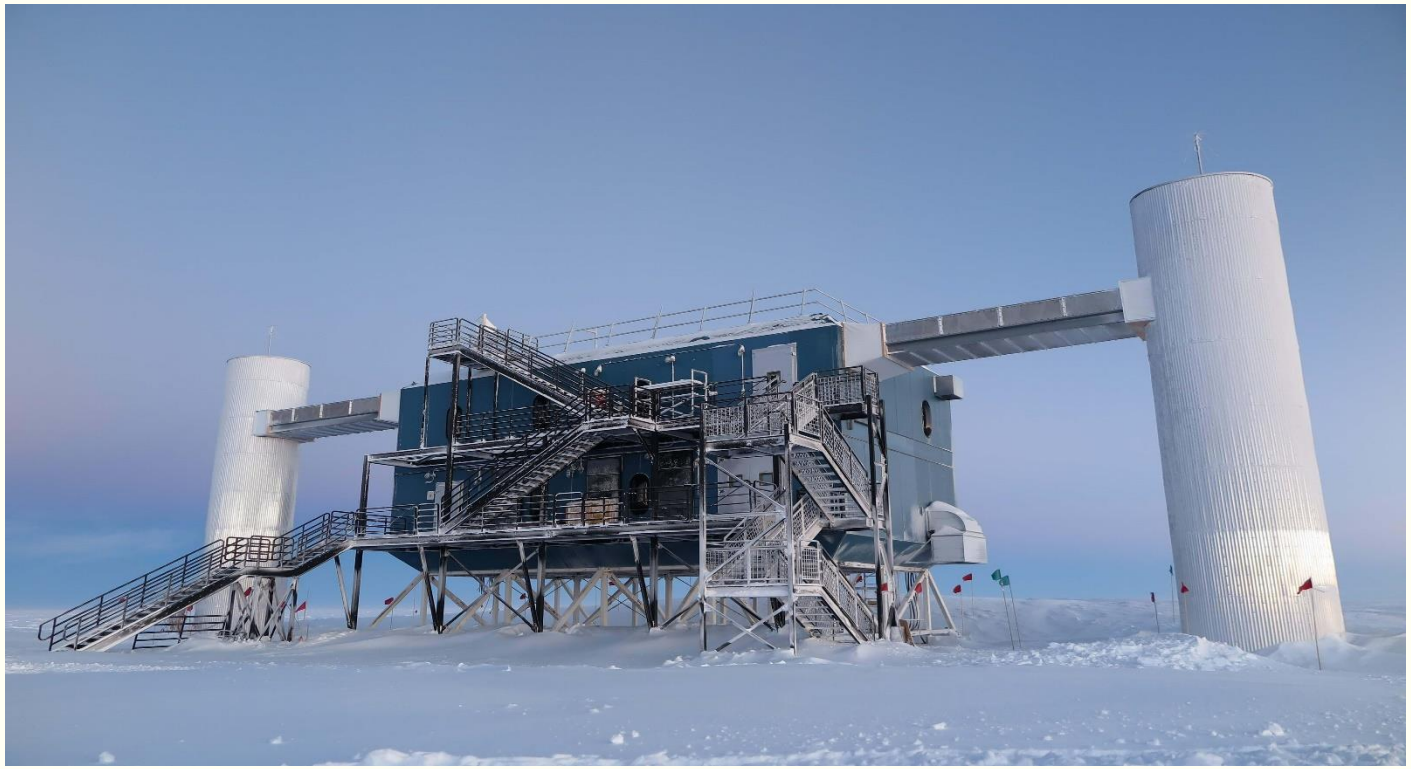
LIGO GRAVITATIONAL WAVE DETECTOR

Subject: General Theory of Relativity

@ USA

Some Mega Experimental Physics Projects on Earth

ICECUBE DETECTOR



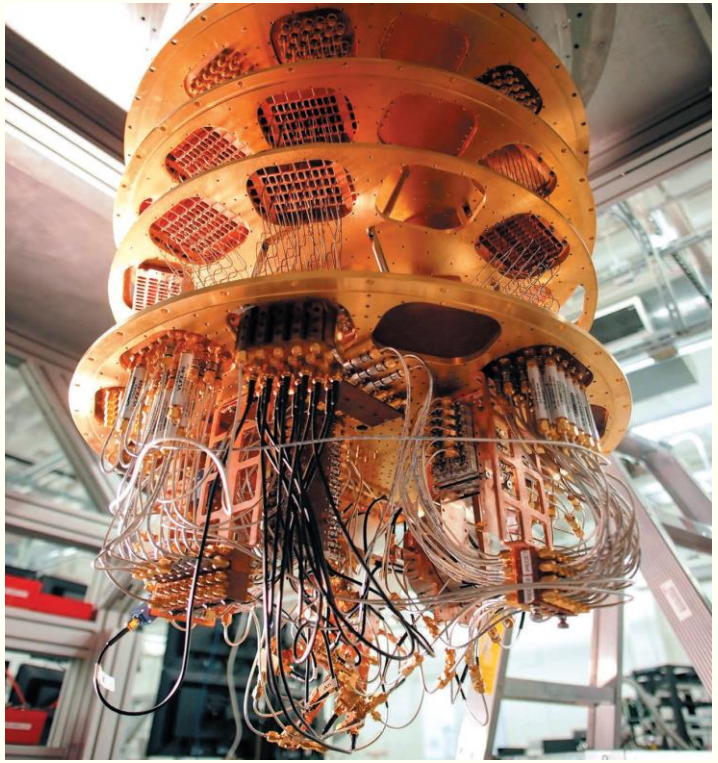
Subject: Neutrino Physics

@ Antarctica

Some Mega Experimental Physics Projects on Earth

Quantum Technology @ IBM

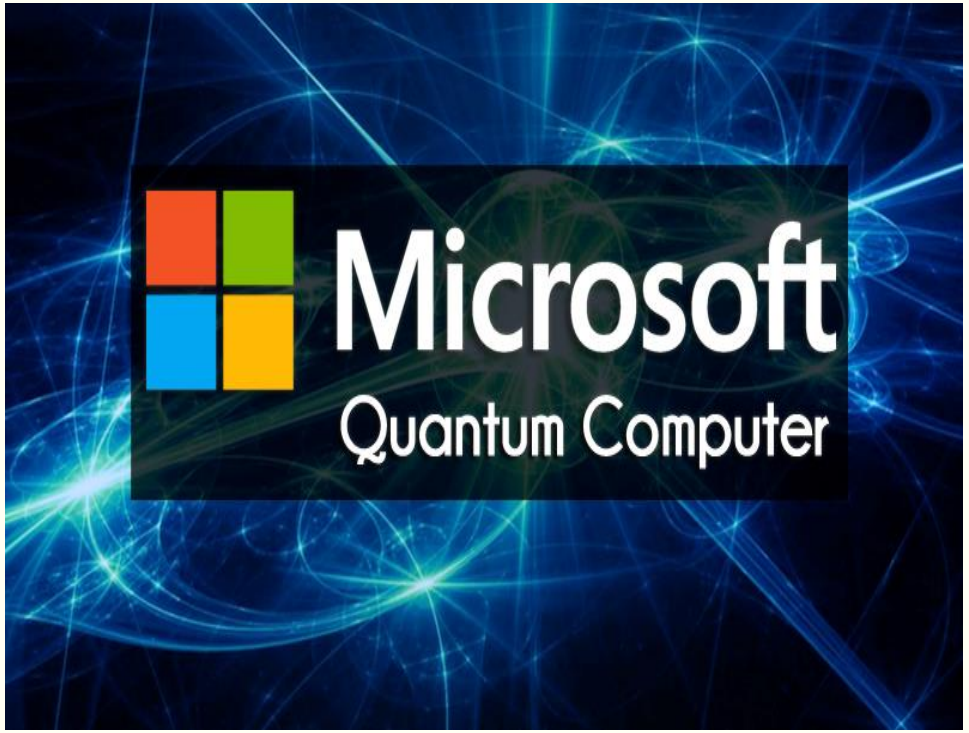
Quantum Technology @ Google



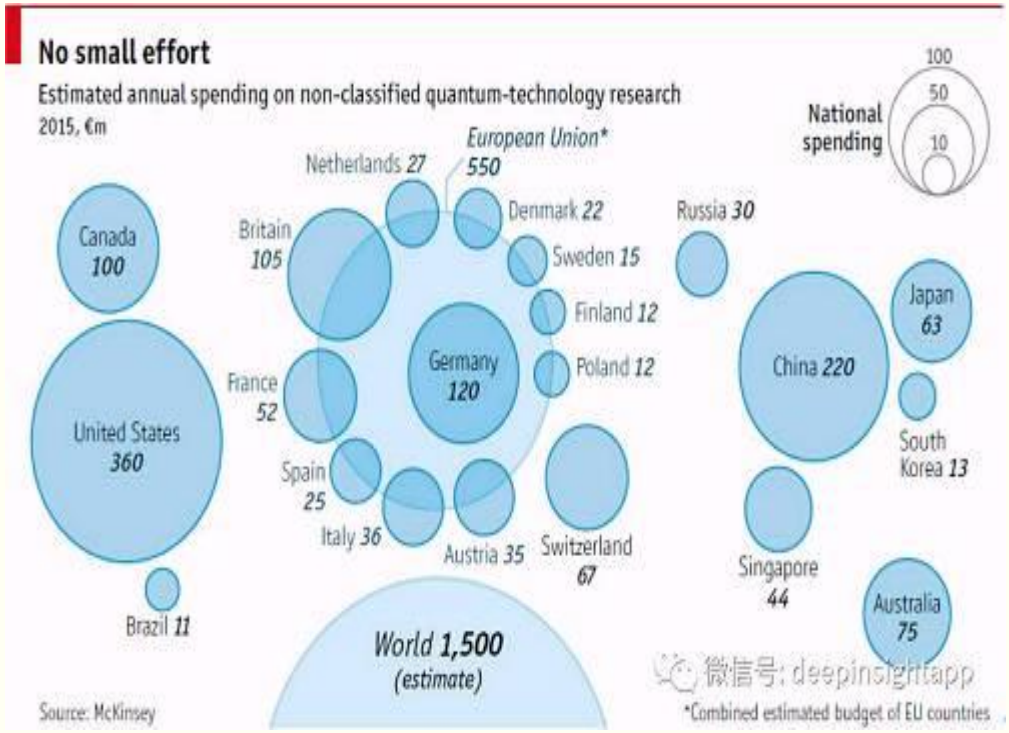
Subject: Quantum Information Theory

Some Mega Experimental Physics Projects on Earth

QT @ Microsoft

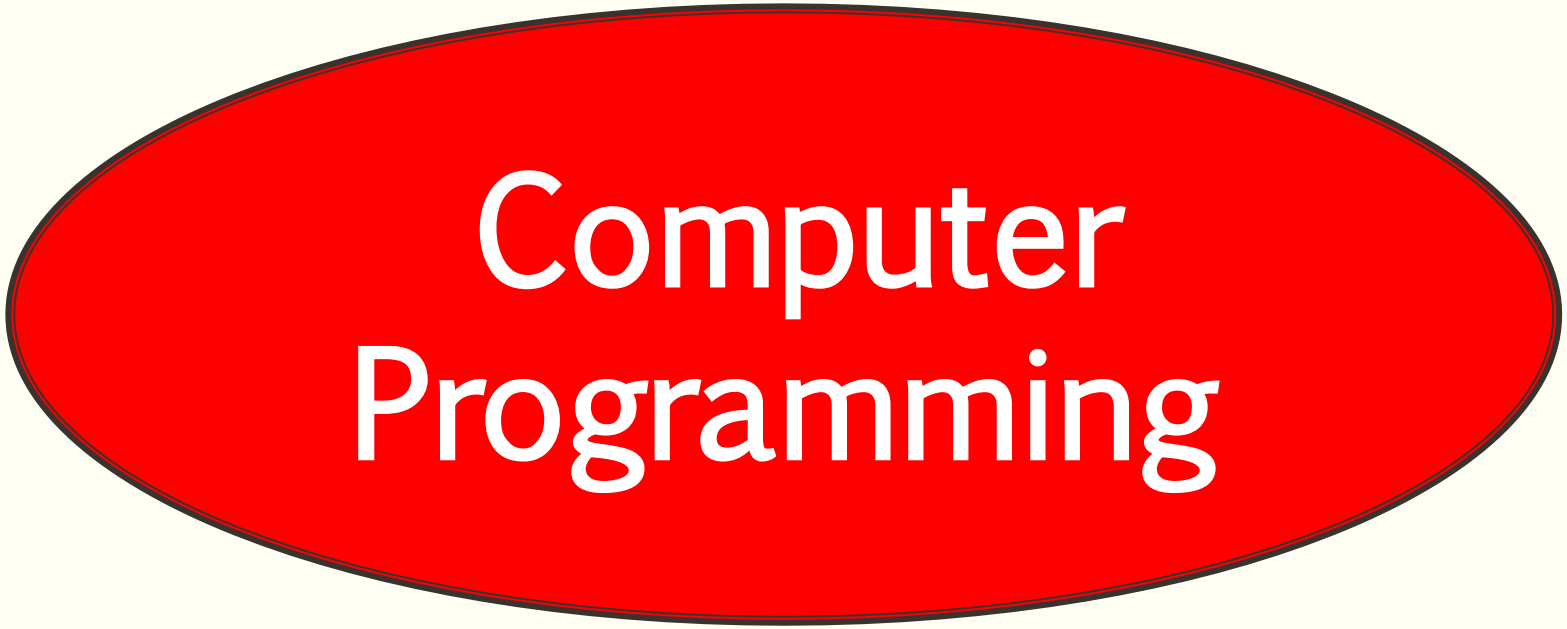


Worldwide Investment in QT!



Subject: Quantum Information Theory

Common Element in Theory or in all Experiments



Top 10 Programming Languages!

JavaScript

PHP

Objective-C

Python

SQL

Java

Swift

C/C++

Ruby

C#

Which programming language I should learn?

Tens of options!

Which one is my path?

Brain storming!

Skill gives Career

Enhance your Skill

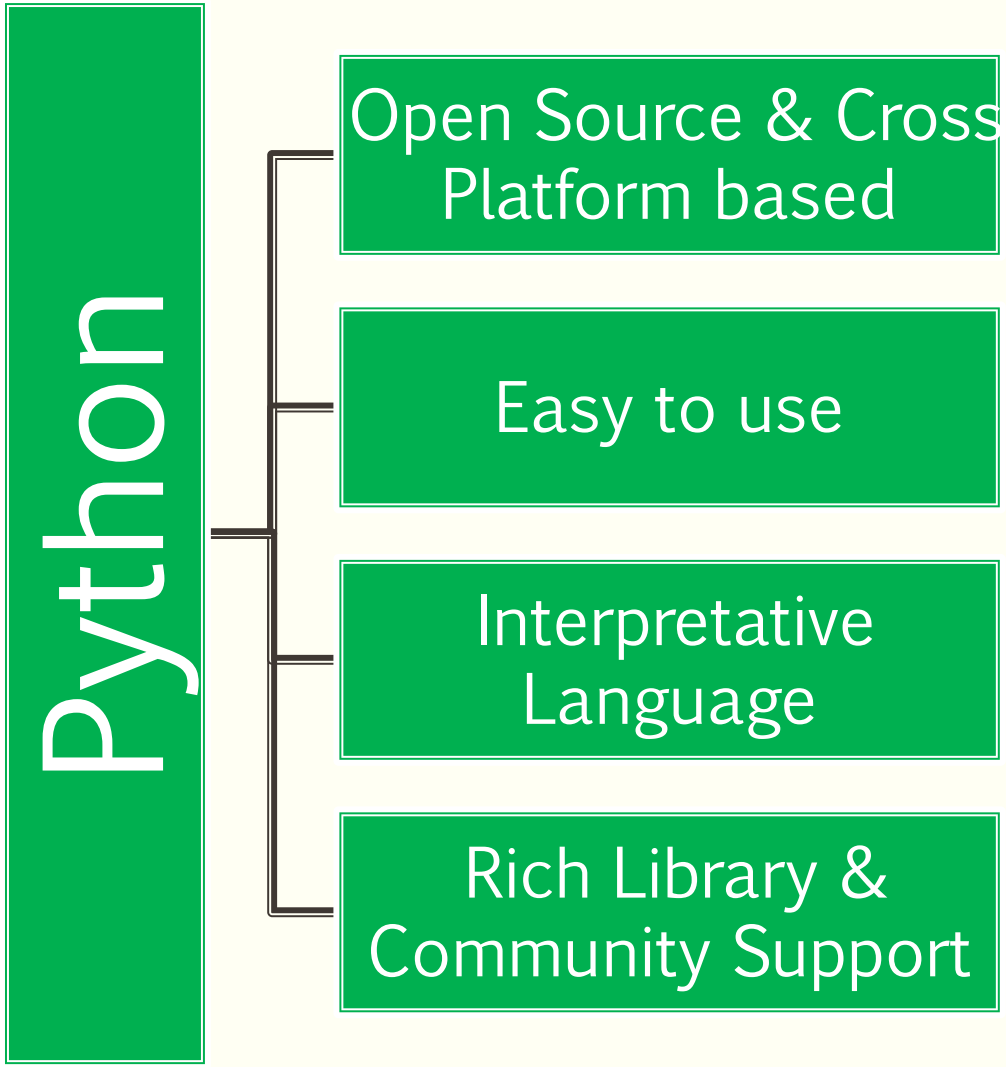
Achieve your Career

PYTHON: Our Programming Language

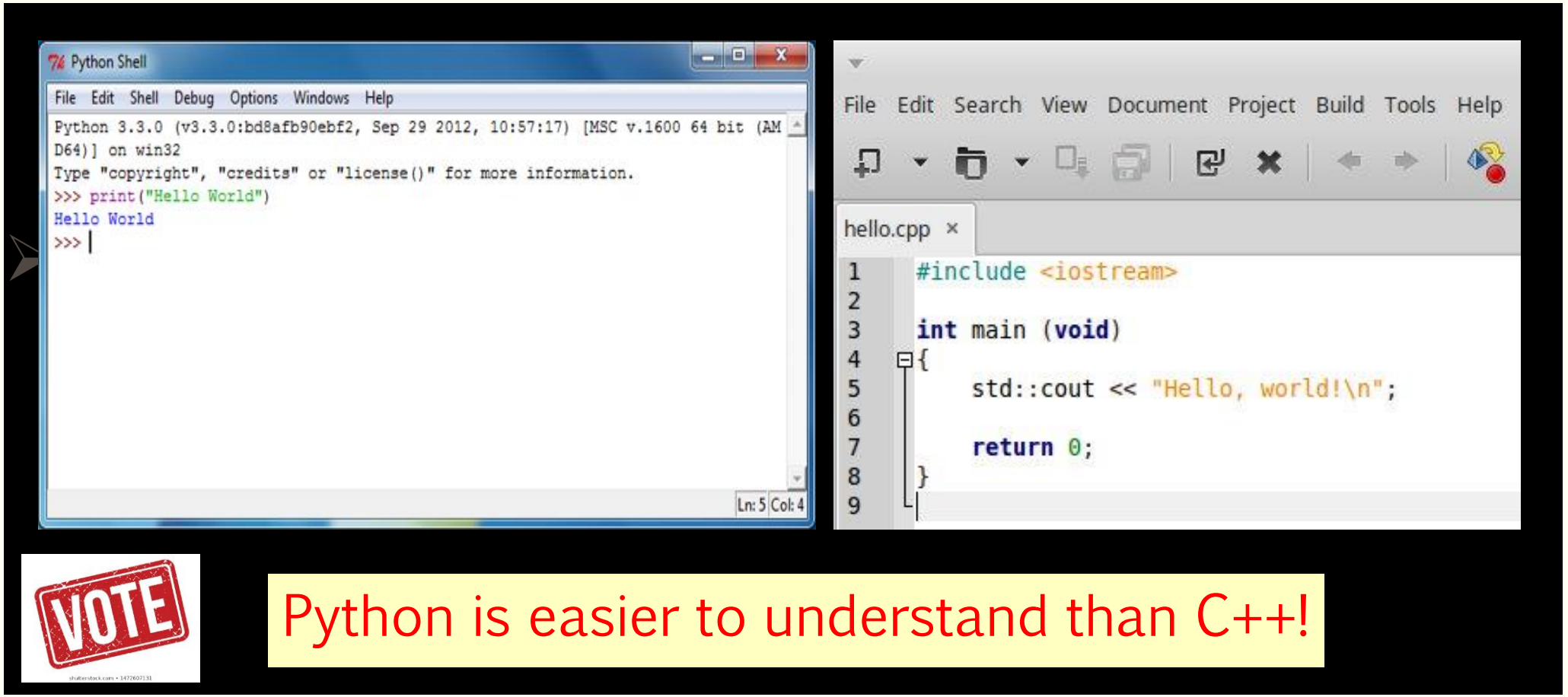
Our Programming Language

Need Guidance

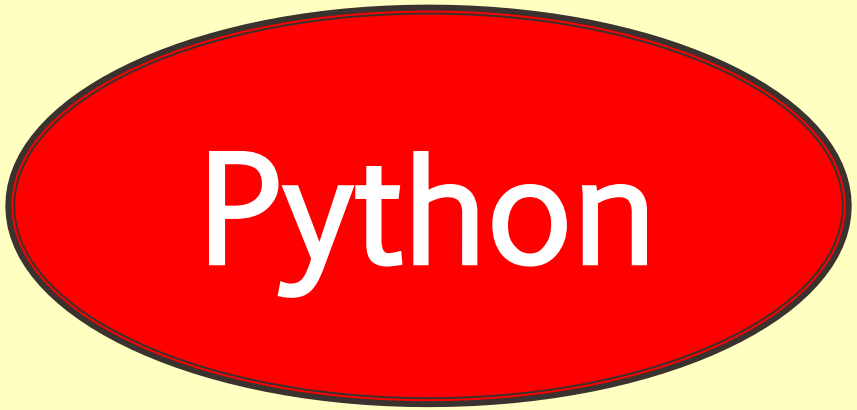
Why Python?


Python
Open Source & Cross Platform based
Easy to use
Interpretative Language
Rich Library & Community Support

`Hello' Programing: Python versus C++



Decided to Learn Python!



Python Downloads & Installation

1. Latest Python Kernel from:

   www.python.org (Version: 3.8)

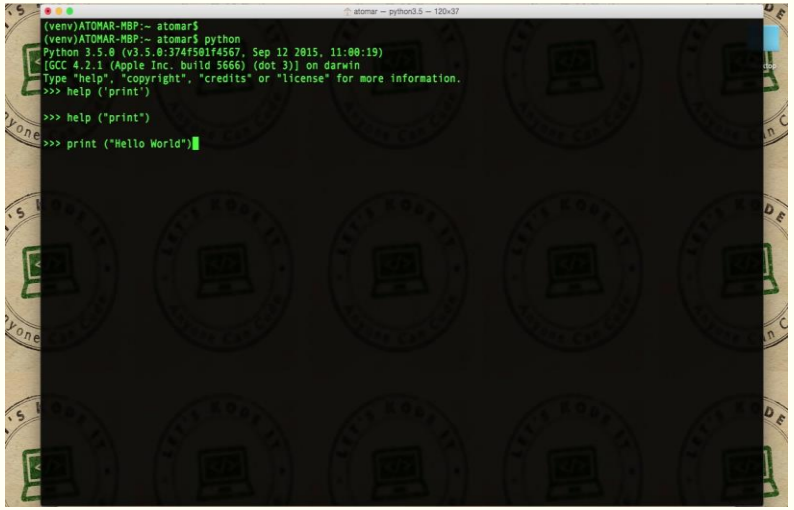
   (Comes with `*Command line Editor*' called IDLE)

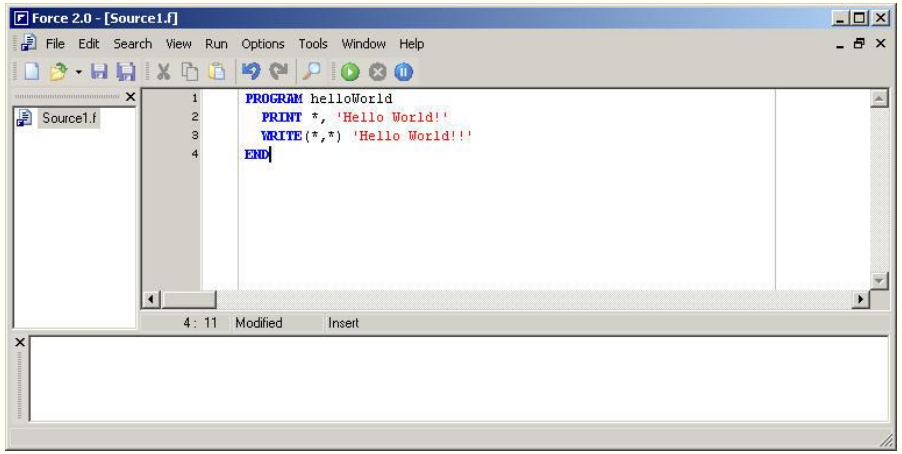
2. ANACONDA Navigator (Jupyter Notebook integrated with modules like Numpy, Scipy, Sympy, Matplotlib, R etc)

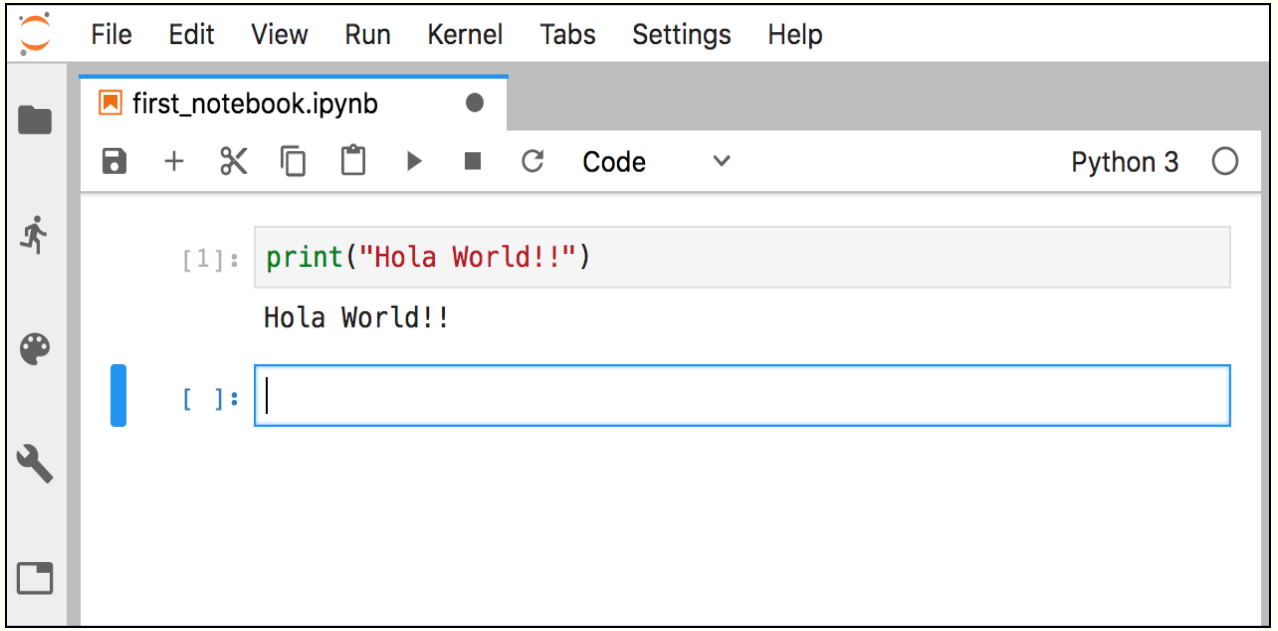
   www.anaconda.org

3. Other popular IDLE : i) Pycherm
   ii) Thonny
   etc

‘Hello Program’ in Jupyter and other Terminal and Jupyter Console







Anaconda & Jupyter

‘pip’ – A Package Manager for Python

```
>>> help(pip)
```

```
>>> pip list
```

```
>>> pip search <package>
```

```
>>> pip list --outdated
```

```
>>> pip -- version
```

```
>>> pip --install –U pip user
```

```
>>> pip install <package> user
```

```
>>> pip install –U <package> user
```

```
>>> pip uninstall <package> user
```

Note: Alternatively you can use ‘Conda’ as package manager


Backspace
Thank You
Page Up
Home
Page Down
Shift
Insert