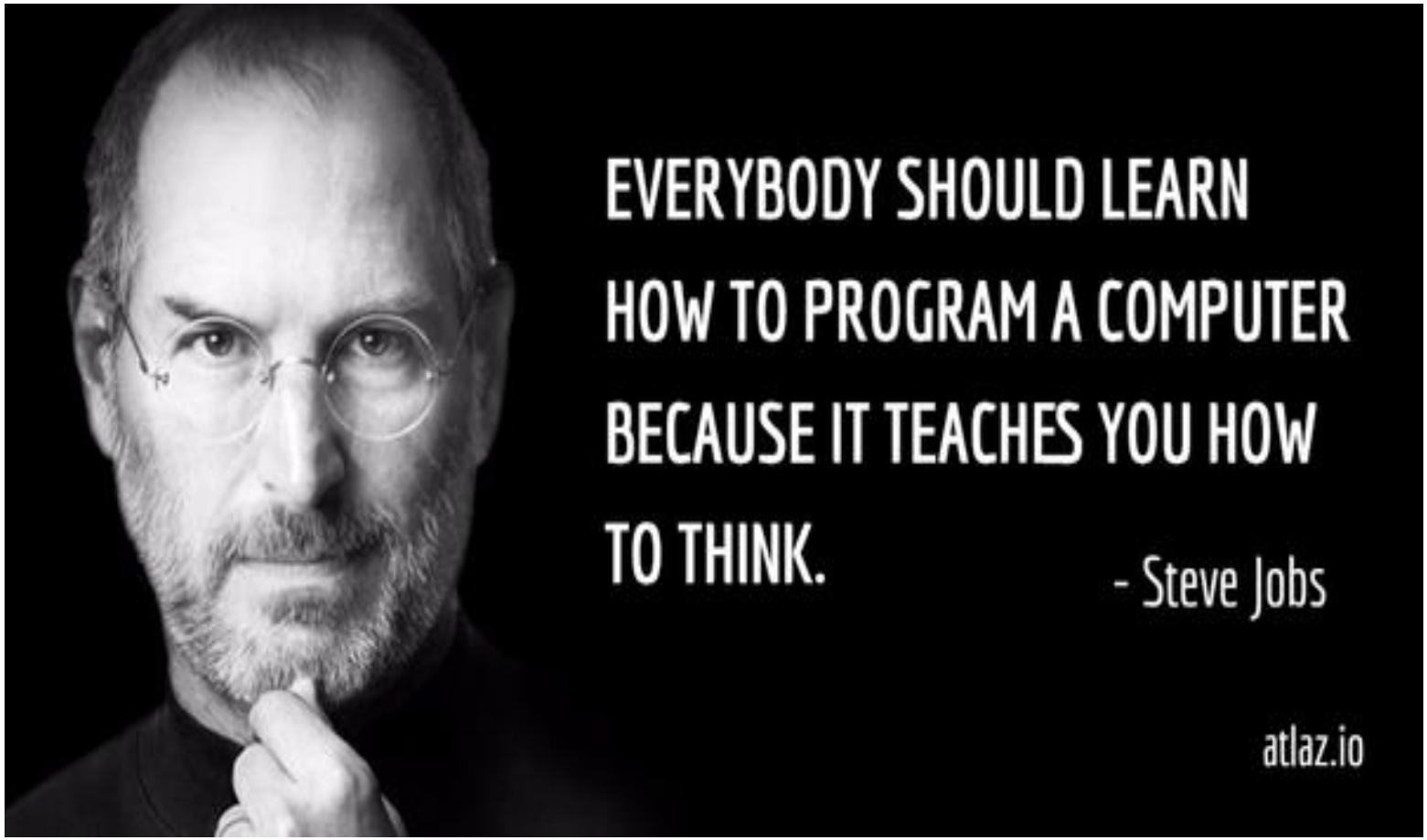
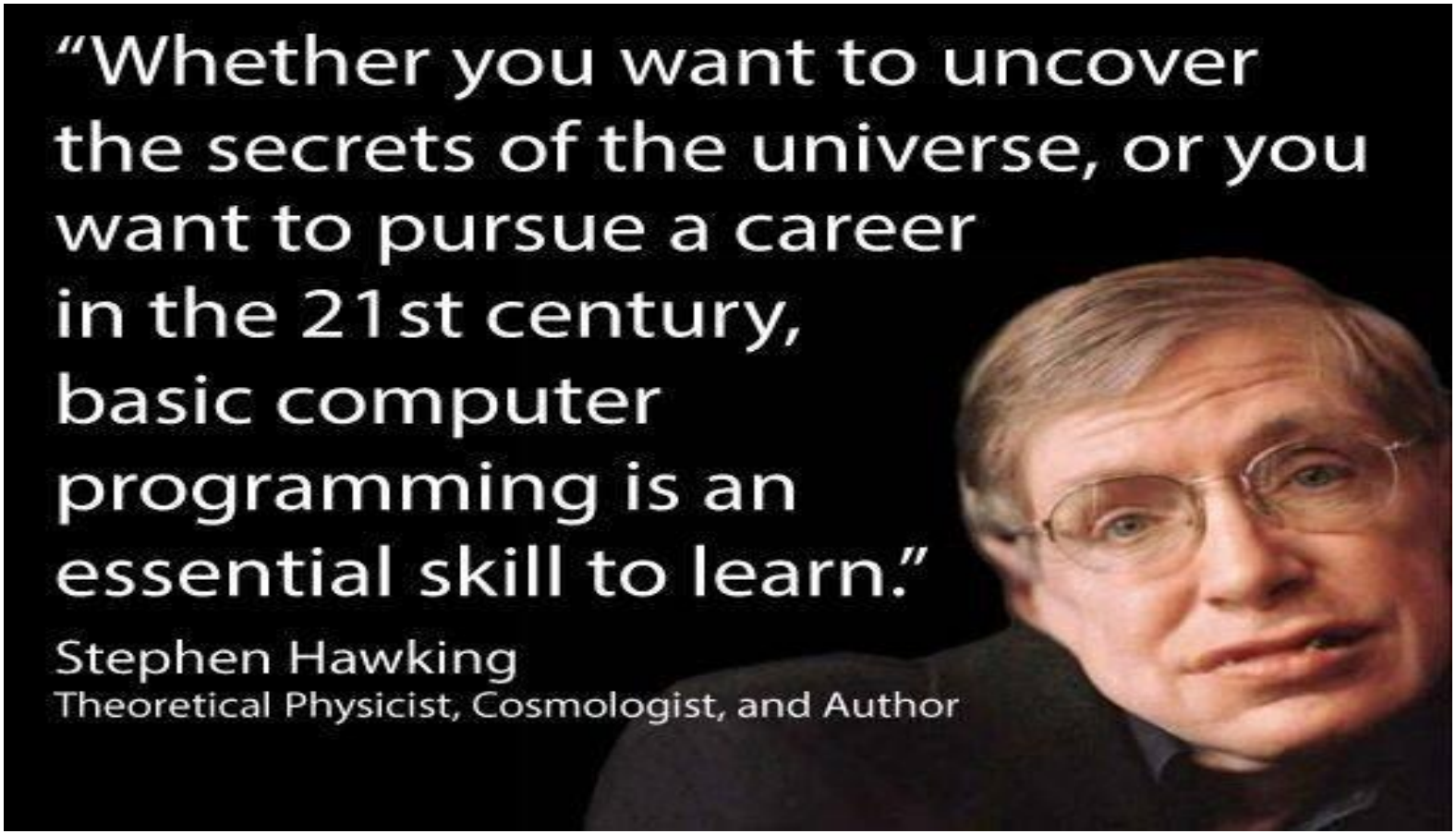
So Let us Start

What is Programming and why do we need it ?


EVERYBODY SHOULD LEARN
HOW TO PROGRAM A COMPUTER
BECAUSE IT TEACHES YOU HOW
TO THINK.
- Steve Jobs
atlaz.io


"Whether you want to uncover the secrets of the universe, or you want to pursue a career in the 21st century, basic computer programming is an essential skill to learn."
Stephen Hawking
Theoretical Physicist, Cosmologist, and Author

- It is a way to represent the logic to get some work done by machine(computer).
- It is needed in order to create instruction in proper sequence.

What is a computer Language and why to learn it?

- Computer Language is a medium of communication with the computer.
- To use computer and get our work done we need to learn it.

What are various types of Computer languages?

Mainly divided into three types :-

- Low level language(Binary/Machine Language).
- Middle level language(Assembly Language).
- High level language.

Why Python for Data Science ?

- Simple to learn
- Open source
- Consists of nearly 72000 + libraries and are still adding on
- Provides complete support for Data analysis related operations

Top 10 Programming Languages of 2019

Recently IEEE spectrum comes with the ranking sheet of top programming language 2019 according to their popularity – Programming Languages Popularity

Brief History & Versions of python

- Conceived in late 1980's by Guido van Rossum.
- Rossum is Dutch, born in Netherlands.
- Got it's name from Monty Python's Flying Circus.
- ABC programming language is said to be the predecessor of Python language.
- Python is influenced by following programming languages:
  - ABC language.
  - Modula-3.

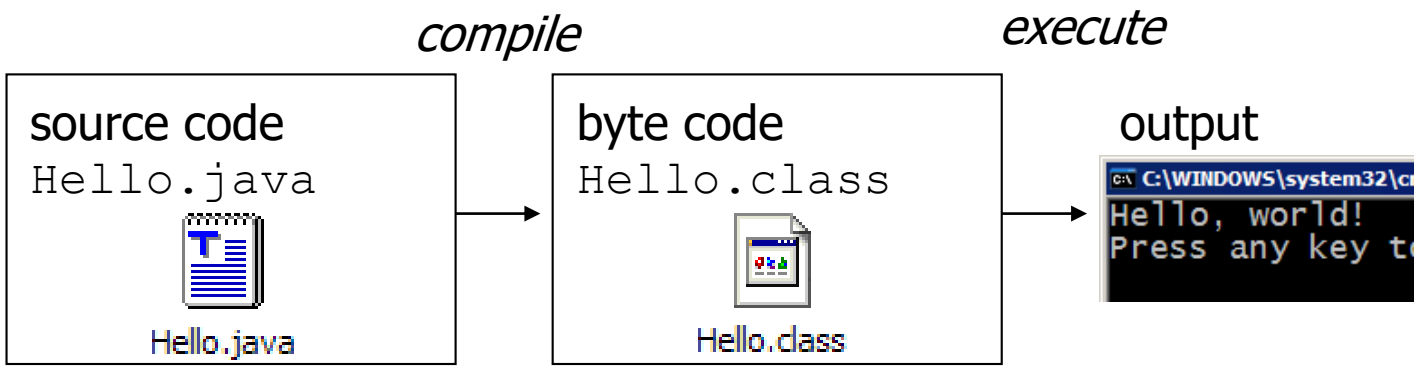
Python Version	Released Date
Python 1.0	January 1994
Python 1.5	December 31, 1997
Python 1.6	September 5, 2000
Python 2.0	October 16, 2000
Python 2.1	April 17, 2001
Python 2.2	December 21, 2001
Python 2.3	July 29, 2003
Python 2.4	November 30, 2004
Python 2.5	September 19, 2006
Python 2.6	October 1, 2008
Python 2.7	July 3, 2010
Python 3.0	December 3, 2008
Python 3.1	June 27, 2009
Python 3.2	February 20, 2011
Python 3.3	September 29, 2012
Python 3.4	March 16, 2014
Python 3.5	September 13, 2015
Python 3.6	December 23, 2016
Python 3.7	June 27, 2018

Why Python ?

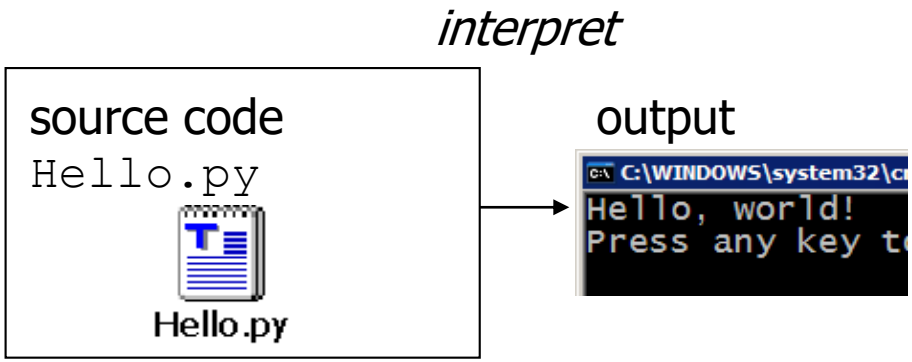
- Portable & extensible.
- Simple & easy to learn.
- Platform independent.
- Reduced syntax.
- High Level and Interpreted language.
- Object oriented.
- Popular & high salary.
- Used in Data Science.
- Used in scripting & automation.
- Supports Testing.
- Provides Graphics.
- Used in Artificial Intelligence.
- Used in Web Development.

Compiler vs Interpreter

- Many languages require you to compile (translate) your program into a form that the machine understands.



- Python is instead directly interpreted into machine instructions.



Who use python?

The popular YouTube video sharing system is largely written in Python

Google makes extensive use of Python in it's web search system

Dropbox storage service codes both its server and client software primarily in Python

The Raspberry Pi single-board computer promotes Python as its educational language

Google

Dropbox

RaspberryPi

COMPANIES USING PYTHON

BitTorrent

NETFLIX

BitTorrent peer-to-peer file sharing system began its life as a Python Program

NASA uses Python for specific Programming Task

The NSA uses Python for cryptography and intelligence analysis

Netflix and Yelp have both documented the role of Python in their software infrastructures

What Python can do ?

- Create Web applications.
- Create Software workflows.
- Provide any database connectivity.
- Use to handle big data and complex mathematics problem.
- Can be used for rapid prototyping.

Python 2.x and 3.x

Python 2	Python 3
Python 2 has two sting types : Unicode strings and non-Unicode strings.	All strings are Unicode strings by default .
The xrange() function is used to create iterable objects.	The xrange() function is replaced by the range() function.
Separate int and long types for non-floating-point numbers	There is only one integer type, called int, which behaves like the long type.
The return type of division of integers is “int” meaning 5/4 will return 1 instead of 1.25	The return type of integer division is “float” meaning 5/4 returns 1.25.
Print is a special statement rather than a function.	Print() is a built in function in Python 3
It is the more stable and transparent version of the python programming language.	It is the future of python designed to address the design flaws in the previous versions.

How to install Python (python 3.7 default editor)

Python Install.pdf

Shell & Script in Python

Python IDE’s

IDE's for Python Programming

www.IndianAIExpert.com

& Many more .....

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Installation of Anaconda

Anaconda Installation.pdf

Why Anaconda?

- Simple Interface, Easy to understand.
- Anaconda bundles a whole bunch of Python packages that are commonly used by people using Python for scientific computing and/or data science.
- It provides a single download and an install program/script that installs all the packages in one go.
- Anaconda is a scientific Python distribution.

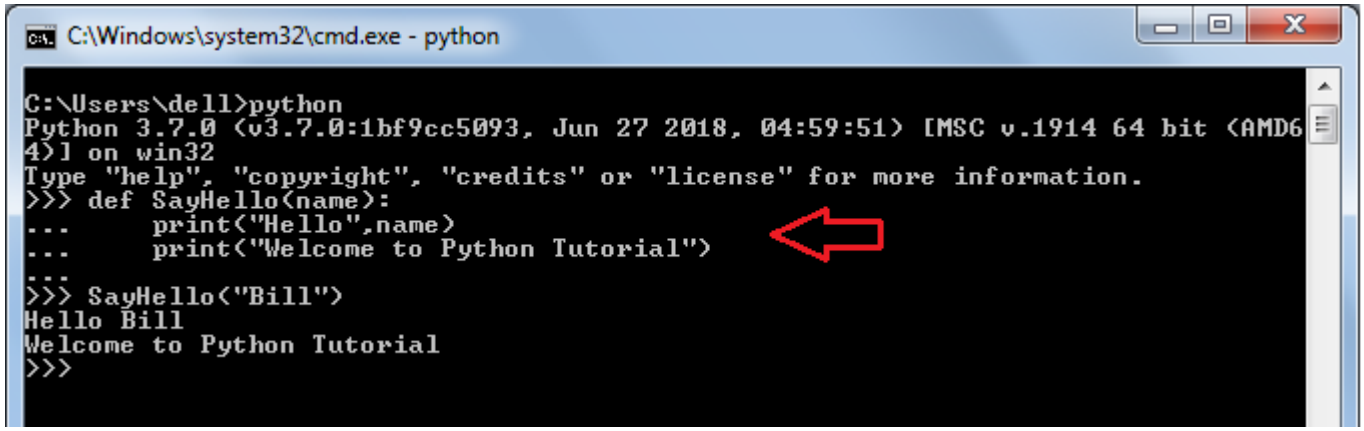
Introduction to Jupyter Notebook

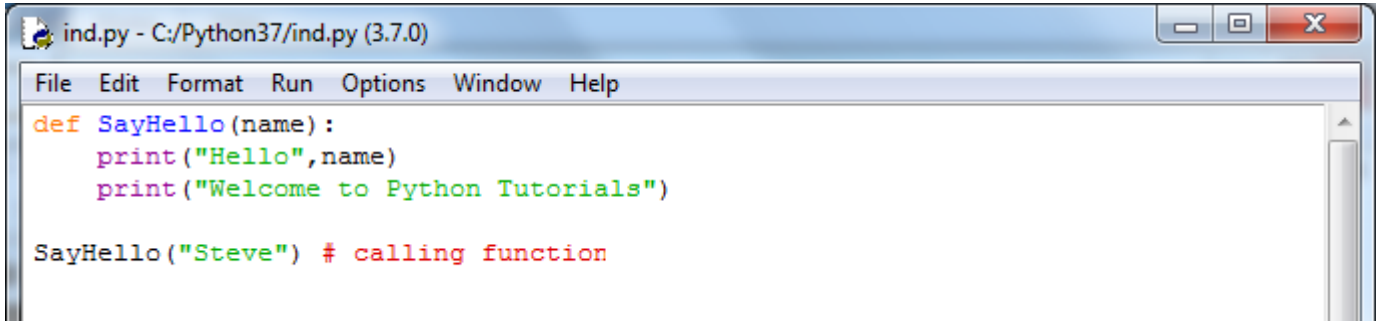
Your First program in Python

Indents in Python

- Python uses uniform indentation to denote a block of statements.
- When a block is to be started, type the colon symbol (**:**) and press Enter.
- Any Python-aware editor (like IDLE) goes to the next line leaving an additional whitespace (called indent).
- Subsequent statements in the block follow the same level of indent.
- The Python interpreter will throw an error if the indentation level in the block is not same.

Indents in Python (contd…)





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Comments in python

➢ Single Line comment

- In a Python script, the symbol **#** indicates the start of a comment line.
- It is effective till the end of the line in the editor.
- If **#** is the first character of the line, then the entire line is a comment.
- It can be used also in the middle of a line.

➢Multiple Line Comment

- A triple quoted multi-line string is also treated as a comment if it is not a docstring of a function or a class.

What in Next session ?

- Tokens
  - Keywords
  - Identifiers
  - Literals
    - ✓ String Literals
    - ✓ Numeric Literals
    - ✓ Boolean Literals
    - ✓ Special Literals
  - Operators
    - ✓Arithmetic operators
    - ✓Assignment Operators
    - ✓Comparison Operators
    - ✓Logical Operators
    - ✓Bitwise Operators
    - ✓Identity Opeartors
    - ✓Membership Operators
- Python Data Type
  - Immutable
  - Mutable

References

- These notes are based on information from several sources:
- “Learning Python,” 2nd edition, Mark Lutz and David Ascher (O'Reilly, Sebastopol, CA, 2004) (Thorough. Hard to get into as a quick read)
- “Dive Into Python,” Mark Pilgrim (http://diveintopython.org, 2004)
- “How to Think Like a Computer Scientist: Learning with Python,” 2nd edition, Jeffrey Elkner, Allen B. Downey, and Chris Meyers (http://openbookproject.net//thinkCSpy/)
- “Programming in Python 3: A Complete Introduction to the Python Language,” Mark Summerfeld (Addison-Wesley, Boston, 2009)
- http://www.python.org