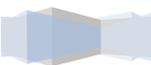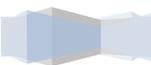# Python Programming Course Content

Core/ Basic Python

- Introduction to Python - technology -

- Python - why only python? -

  - where it is used in Industry -

  - Organization specific uses -

  - project specific uses

  - IT corporates - applications of python

- Python - Features of Python -

  - why it is used

  - advantages

  - kind of projects/applications -

  - Software Development Lifecycle (SDLC) -

  - where does python fit in SDLC

- Python - comparison of other technologies wrt python

- Python's Application in the following :

  - software development -

  - software testing) -

  - other areas of IT Industry

  - open source software vs. paid software

- Versions of python software:

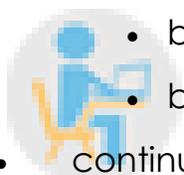 - PYTHON - 2.7.15 –(Industry Used mostly)

- python - 3.7.1 –
- Python tools/IDE –
    - What is an IDE,
    - Advantages of IDE over shell
    - Explanation of python shell (IDLE - default editor)
    - comparison of python shell vs. IDE
    - working from command prompt of python
    - Pycharm - community edition
    - Pycharm - professional edition

- Language fundamentals:
- Variables in Python
- Print statement
    - Print statement with format
    - Print statement with %
- Operations on python
    - +,-,*,/,%
- Python Operators and Operands
    - Is , is not
    - Other operators – in and not in
- How do we Read the Input from the User:
    - Input()
    - raw_input()
- difference between input() and raw_input()
- when to use input() and raw_input() in python 2.7 and python 3.7
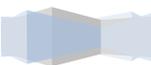- Data types:
    - int()

- numbers

- Strings

- Float

- Bool

- Type() function:

    - Examples on type()

- String Operations:

    - Operations using string Handling - "".format(), {}{}

    - Comments

    - Multiline comments

- break()

    - break with if statement

    - break with for statement

- continue()

- pass()

- when to use Break(), Continue and Pass

- Examples of break(), continue and pass

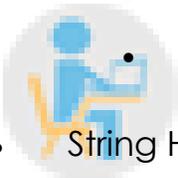- Variable naming conventions

- Python Conditional Statements

    - Simple if condition

    - if with else condition

    - multiple if conditions

    - nested if conditions

    - Examples of the conditional statements

- Python LOOPS -

    - for loop

    - for loop - complex examples

    - for loop with if

    - for loop with else

    - nested for loop

    - for loop with examples

- Python - While loop

    - while loop with if condition

    - while loop with else statement

    - While loop with examples

- String Handling methods

    - How to apply the string handling methods

    - Upper()

    - Lower()

    - Capitalize()

    - Title()

    - Isupper()

    - Islower()

    - Isspace()

    - Isalpha()

    - Isalnum()

    - Other methods (lstrip,rstrip)

- example programs using string methods

- Slicing with strings

  - positive slicing

  - Negative slicing

Sequences or Collections in PYTHON

- Python Lists

  - applications of lists

  - examples of lists of various flavours

- Slicing

  - positive slicing

  - negative slicing

- Python TUPLE

  - applications of Tuples

  - examples of Tuples

  - Tuple Packing

  - Tuple Unpacking

  - various flavours

- Differences between Lists and Tuples

- Python Sets -

  - operations on sets

  - applications of sets

  - examples using sets

- Python Dictionary -

  - operations on dictionary

- applications of dictionary

- examples using dictionary

- Python Functions

    - Functions without return value

    - Functions with Return value

    - Calling functions from the same file

    - Calling functions from a different file

    - Functions which return more than one values

  - Python - Various types of functions

      - functions with parameters

      - functions without parameters

      - functions with default arguments

      - functions with keyword arguments

      - functions with positional arguments

      - Documentation string

      - Special method (__doc__)

  - local scope and global scope in functions

      - How to create global variables

      - How to create local variables

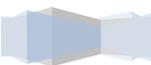   - Examples of local and global variables using functions

Advanced python course

Topic: 1:

Topic Name:

- Python OOPs : classes
    - Objects
    - how to create class
    - how to create objects
    - how to create properties
    - how to create methods
    - how to work with properties
    - How to work with methods
    - Difference between functions and methods
- What is Self-keyword?
    - how to use self,
    - What does self-keyword indicate?
- How to create multiple objects for the same class
    - manipulate the properties/methods
- How to know the memory location of an object reference.

Topic: 2 - Constructors - done

- importance of self-keyword in python constructors
- OOPs concepts (ex:inheritance)
- use of default pre-defined classes,
- use of user-defined classes,
- pre-defined methods
- user-defined methods

- user-defined properties

Topic:3 - Modules (Pre-defined)

- Python Modules
- import keyword
- pre-defined modules:
  - webbrowser
  - sys
- math
- datetime
- date
- time
- various ways of importing modules
- import using * notation
- import using individual functions
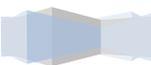- import using "from " syntax
  - from *** import ***

Topic: 4 – Modules (User-defined)

- creation of user defined modules
- operations with each of the modules
- examples with each of the modules

Topic: 5 - Packages in Python

- Diff between packages and modules
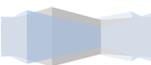- import package/module /sub-packages

Topic: 6 - **File Handling**

- examples of how to create files
- how to open files in various modes
- how to work with files in real-time

Topic: 7 - **python advanced exception handling -**

- collection of types of exceptions
  - syntax error,
  - Indentation error
  - typeerror,
  - valueerror
  - Nameerror,
  - dividebyzero error
  - Index Error

Topic: 8: **examples of types of exceptions**

- how to handle types of exceptions
  - Try-Except- Finally
  - Try- Except-Else-Finally

- comparison of exception handling with other technologies (like java)

Topic: 9 -Python Date and Time

- operations using date and time
- examples of programs using date and time
- date time various switches

Topic: 10 - Python OS Module - (Linux people)

- Creation of directory
- Removing a directory
- Current directory
- Creation of multiple directories
- Removing of multiple directories
- Operations on directory

Programs on Python topics for practice (One more Session)

Questions and Answers to be discussed (One more Session)