Python Master

1. Introduction to Python

- What is Python
- The application areas of Python
- Download and install Python
- Execute Python program from command prompt and using IDLE
- Save programs with .py extension and execute it from prompt

2. Python Basics

- Data types and variables
- Operators and operator precedence
- Data type conversions
- Command line argument
- Data input
- Comments
- Import modules

3. Python Flow Control

- If statement
- If.. elif.. else statement
- While loop
- For loop
- Break & continue
- Else clause

4. Introduction to Python IDE – PyCharm

5. Python Sequences

- Range
- String
- List
- Tuple

  - Dictionary
  - Set

6. Shallow and deep copy

7. Functions and modules

  - What is function
  - Define a function
  - Pass arguments
  - Arguments with default values
  - Arbitrary arguments
  - Local and global variables
  - Return a value from function
  - Return multiple values
  - Documentation Strings

8. Python built in functions

  - Mathematical functions
  - Random number functions
  - Mathematical constants

9. Python Modules

  - What is module?
  - Import module using import statement
  - Use from... import statement
  - Use from ... import* statement
  - Location modules
  - PYTHONPATH variable
  - Namespaces and scoping
  - Dir(), globals(), locals() and reload()

10. File Handling

  - Reading
  - Writing
  - File manipulations
  - Directories

11. Exception Handling

- What is exception?
- Python built-in exceptions
- Try
- Except
- Finally
- Raise exceptions
- User defined exception
- Assertions

12. Python classes and objects

- Class definition
- Creating objects
- Constructors
- Accessing attributes
- Built-in class attributes
- Destructors
- Inheritance
- Overriding
- Overloading
- Data hiding

13. Regular Expressions

- Match()
- Search()
- Search and replace
- Modifiers
- Patterns
- Character classes
- Repetitions

14. Database programming

- With SQLite
  - ➢ Installing SQLite browser
  - ➢ Creating database
  - ➢ CRUD operations
- With MySQL
  - ➢ MySql datatypes
  - ➢ CRUD operations
  - ➢

15. Python Graphics

- Turtle

16. Python GUI Programming with Tkinter

- Widgets

- Geometry managers / layout managers

- Variable classes

- Events and binds

17. Packages

- Creating packages

- Installing packages using PIP

18. Functional Programming

- Iterators

- Generators

- The lambda construct

- Comprehensions

- Map, reduce and filter

19. Introduction to web programming

- Web server

- Web client

- HTML

- CSS

- jQuery

20. Python CGI Programming
- What is CGI?
- CGI architecture
- Web server support and configuration
- HTTP header
- CGI environment variables
- GET/POST methods
- Cookies
- File upload

21. Python Web framework – Django
- Installation
- Configuration
- Urls and Views
- App creation
- Controllers
- Model
- Template integration
- Form Processing
- Database connection

22. Introduction to Data analysis and machine learning
- Learning methods
  - Supervised learning
  - Unsupervised learning
  - Reinforcement Learning
  - Semi-supervised Learning
  - Active Learning
- Data

- Algorithms
  - o Linear Regression
  - o Logistic Regression
  - o Clustering
  - o Decision Tree induction
  - o Support vector machines
  - o Naive Bayes

23. Data Analysis and Machine Learning with Python

- NumPy
- SciPy
- Matplotlib
- Pandas
- Scikit-Learn