

# Python



## Python

Duration: 2.5 Months

### Introduction To Python

- Why Python
- Application areas of python
- Python implementations
  - Cpython
  - Jython
  - Ironpython
  - Pypy
- Python versions
- Installing python
- Python interpreter architecture
  - Python byte code compiler
  - Python virtual machine(pvm)

### Writing and Executing First Python Program

- Using interactive mode
- Using script mode
  - General text editor and command window
  - Idle editor and idle shell
- Understanding print() function
- How to compile python program explicitly

### Python Language Fundamentals

- Character set
- Keywords
- Comments
- Variables
- Literals
- Operators
- Reading input from console
- Parsing string to int, float

### Python Conditional Statements

- If statement
- If else statement
- If elif statement
- If elif else statement
- Nested if statement

### Looping Statements

- While loop
- For loop
- Nested loops
- Pass, break and continue keywords

### Standard Data Types

- Int, float, complex, bool, nonetype
- Str, list, tuple, range
- Dict, set, frozenset

## String Handling

- What is string
- String representations
- Unicode string
- String functions, methods
- String indexing and slicing
- String formatting

## Python List

- Creating and accessing lists
- Indexing and slicing lists
- List methods
- Nested lists
- List comprehension

## Python Tuple

- Creating tuple
- Accessing tuple
- Immutability of tuple

## Python Set

- How to create a set
- Iteration over sets
- Python set methods
- Python frozenset

## Python Dictionary

- Creating a dictionary
- Dictionary methods
- Accessing values from dictionary
- Updating dictionary
- Iterating dictionary
- Dictionary comprehension

## Python Functions

- Defining a function
- Calling a function
- Types of functions
- Function arguments
  - Positional arguments, keyword arguments
  - Default arguments, non-default arguments
  - Arbitrary arguments, keyword arbitrary arguments
- Function return statement
- Nested function
- Function as argument
- Function as return statement
- Decorator function
- Closure
- Map(), filter(), reduce(), any() functions
- Anonymous or lambda function

## Modules & Packages

- Why modules
- Script v/s module
- Importing module
- Standard v/s third party modules
- Why packages
- Understanding pip utility

## File I/O

- Introduction to file handling
- File modes
- Functions and methods related to file handling
- Understanding with block

## Regular Expressions(Regex)

- Need of regular expressions
- Re module
- Functions /methods related to regex
- Meta characters & special sequences

## Object Oriented Programming

- Procedural v/s Object Oriented Programming
- OOP Principles
- Defining a Class & Object Creation
- Inheritance
- Encapsulation
- Polymorphism
- Abstraction
- Garbage Collection
- Iterator & Generator

## Exception Handling

- Difference Between Syntax Errors and Exceptions
- Keywords used in Exception Handling
  - try , except , finally , raise , assert
- Types of Except Blocks
- User-defined Exceptions

## GUI Programming

- Introduction to Tkinter Programming
- Tkinter Widgets
- Layout Managers
- Event handling
- Displaying image

## Multi-Threading Programming

- Multi-processing v/s Multi-threading
- Need of threads
- Creating child threads
- Functions /methods related to threads
- Thread synchronization and locking

# SQL Using MySQL

## Introduction to RDBMS

- What is Relational Database Package
- Difference between SQL & Database
- Installing MySQL Server database

## SQL Basic

- DDL: Create, Alter, Drop, etc.
- DML: Insert, Update, Delete ,etc.
- DQL : Select
- Autoincrement field
- SQL Comments
- SQL Aliases
- Savepoint & rollback

## SQL Constraints

- Not NULL, Unique key
- Primary key, Check
- Default, Foreign key

## SQL Operators

- Arithmetic operators
- Logical operators
- Conditional operators
- Like, between, in operators

## SQL Clauses

- Order by
- Where
- Limit/top
- Group by
- having

## SQL Joins

- Inner Join
- Left Join
- Right Join
- Full Join

## SQL View

- creating view
- updating view
- fetching data from view

## SQL Functions

- String functions
- Aggregate functions
- Date & time functions

## Stored Procedures & Functions

- Understanding stored procedures and their key benefits
- Working with stored procedures
- Studying user-defined functions

## Working with CSV Files:

- How to write result to csv file
- How to read csv file

## Python Database Connectivity

- Database Drivers and connectors
- Creating connection object
- Understanding cursor object
- Executing SQL statements using cursor
- Fetching records from cursor
- Storing and retrieving Date and Time

# MONGODB

## Introduction To MongoDB

- Understanding NoSQL DB
- NoSQL vs. SQL DB
- Understanding Mongo DB
- Downloading & Installation
- Introduction of MongoDB shell and Compass
- Understanding database, collection & document

## Crud Operations

- Insert Document
- Delete Document



- Update Document
- Query Document

### Operators In MongoDB

- Query and Projection operators
- Update operator
- Aggregation Pipeline operators

### Methods In MongoDB

- limit and sort
- bulk methods
- other methods

### Indexing And Relationships

- Types of Indexes
- Creating an Indexes
- Dropping an Indexes
- Defining Relationships between Documents

### Python Connectivity With MongoDB

- Introduction to pymongo
- Installing pymongo module
- MongoClient
- Getting database and collection
- CRUD operations
- Range Queries

Partners :



Java

**DUCAT**  
The IT Training School

E-mail: [info@ducatindia.com](mailto:info@ducatindia.com)  
Visit us: [www.ducatinidia.com](http://www.ducatinidia.com)  
[www.facebook.com/ducateducation](http://www.facebook.com/ducateducation)

#### NOIDA

A-43 & A-52, Sector-16,  
Noida - 201301, (U.P.) INDIA  
☎ 70-70-90-50-90  
☎/📠 +91 99-9999-3213

#### 2.0 NOIDA SEC-63

H-43 Sector-63  
Noida-201301  
☎ 70-70-90-50-90  
☎/📠 +91 7042175774

#### GHAZIABAD

1, Anand Industrial Estate,  
Near ITS College, Mohan Nagar,  
Ghaziabad (U.P.)  
☎ 70-70-90-50-90  
+91 9810851363

#### PITAMPURA (DELHI)

Plot No. 366, 2nd Floor,  
Kohat Enclave, Pitampura,  
( Near- Kohat Metro Station)  
Above Allahabad Bank,  
New Delhi- 110034.  
☎ 70-70-90-50-90

#### SOUTH EXTENSION (DELHI)

D-27, South Extension-1  
New Delhi-110049  
☎ 70-70-90-50-90  
☎ +91 98-1161-2707

#### VIKASPURI (DELHI)

4, A-Block, Vikaspuri, Delhi,  
Nearest Metro Janakpuri West,  
Pillar No. 628, New Delhi - 110018  
☎ 85-95-52-67-42  
☎ +91 98-1161-2707

#### GURGAON

1808/2, 2nd floor old DLF,  
Near Honda Showroom,  
Sec.-14, Gurgaon (Haryana)  
☎ 70-70-90-50-90

#### FARIDABAD

16/5 Mathura Road, Sector 19,  
Behind Metro Pillar No 687,  
Faridabad  
☎ 70-70-90-50-90  
☎ +91-9355333011