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## Course Syllabus: Core Java

**Batch Name: Java-Python**

**Eligibility: 12th**

**Course Start: 06/04/2020**

**Course Duration: 180 Hours**

**Papers 1**

**Core java**

**Papers 2**

**Core Python**

### Module 1:

#### 1: Introduction of Java

- 1.1 Introduction
- 1.2 History
- 1.3 Introduction to JVM, JDK and JRE
- 1.4 Writing first program: hello world
- 1.5 Understanding the structure and syntax of Java
- 1.6 Java programming style

- 5.3 Member Accessing
- 5.4 Super Keyword and This Keyword
- 5.5 Overloading and Overriding
- 5.6 Final Keyword
- 5.7 Abstraction
- 6.8 Encapsulation

#### 10: Multithreading

- 10.1 Introduction
- 10.2 Life cycle of threads
- 10.3 Creating threads
- 10.4 Thread scheduler
- 10.5 Sleeping a thread
- 10.6 Joining a thread
- 10.7 Thread Priority
- 10.8 Thread pooling
- 10.9 Thread Group
- 10.10 Garbage Collection
- 10.11 Runnable Class

#### 2: Principle of OOP

- 2.1 Introduction to OOP
- 2.2 OOP vs Procedural oriented programming
- 2.3 objects
- 2.4 Classes
- 2.5 Encapsulation
- 2.6 Abstraction
- 2.7 Polymorphism
- 2.8 Inheritance
- 2.9 Applications of OOP

#### 6: Packages

- 6.1 Introduction
- 6.2 Defining a Package
- 6.3 ClassPath
- 6.4 Importing a package
- 6.5 Qualified Path
- 6.6 Unqualified Path
- 6.7 Access Specifier

#### 7: Interfaces

- 7.1 Introduction
- 7.2 Member Access
- 7.3 Defining Interface
- 7.4 Multiple Inheritance using Interface
- 7.5 Hybrid Inheritance using Interface

#### 3: Java Fundamentals

- 3.1 Introduction
- 3.2 Variables
- 3.3 Data types
- 3.4 Operators
- 3.5 Expressions
- 3.6 Control Structure

#### 8: String Handling

- 8.1 Introduction
- 8.2 Immutable String
- 8.3 String comparison
- 8.4 String Concatenation
- 8.5 Substring
- 8.6 Methods of String class
- 8.7 StringBuffer class
- 8.8 StringBuilder class
- 8.9 Creating Immutable class
- 8.1 toString method

#### 4: Classes and Object

- 4.1 Introduction
- 4.2 Declaring a Class
  - Data members
  - Member function
  - Private and public members
  - Accessing member functions
- 4.4 Objects
  - Creating an object
  - Accessing members using objects
- 4.5 Method overloading

#### 9: Exception Handling

- 9.1 Introduction
- 9.2 Throwable Class
- 9.3 try and catch block
- 9.4 Multiple catch Block
- 9.5 Nested try statement
- 9.6 finally block
- 9.7 throw keyword
- 9.8 throes keyword
- 9.9 Exception handling with method overriding
- 9.10 User define exception

#### 5: Inheritance

- 5.1 Introduction
- 5.2 Types of Inheritance
  - Single inheritance
  - Multilevel Inheritance
  - Hierarchical inheritance

# Course Syllabus: Core Python

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## Papers 2

### Core Python

#### Module 1 Paper 2: Core Python

#### 1: Introduction to Python

- 1.1 History
- 1.2 Features
- 1.3 Setting up Path
- 1.4 Working With Python
- 1.5 Basic Syntax
- 1.6 Variables and Data types
- 1.7 Operators

#### 2: Control Statements

- 2.1 if Statement
- 2.2 if-else Statements
- 2.3 Nested if-else

#### 3: Looping

- 3.1 For Loop
- 3.2 While Loop
- 3.3 Nested Loops

#### 4: Control Statements

- 4.1 Break
- 4.2 Continue
- 4.3 Pass

#### 5: String Manipulation

- 5.1 Accessing Strings
- 5.2 Basic Operations
- 5.3 String Slices
- 5.4 Functions and Methods

#### 6: Lists

- 6.1 Introduction
- 6.2 Accessing List
- 6.3 Operations
- 6.4 Working with Lists
- 6.5 Functions and Methods

#### 7: Tuple

- 7.1 Introduction
- 7.2 Accessing Tuples
- 7.3 Operations
- 7.4 Working
- 7.5 Functions and Methods

#### 8: Dictionaries

- 8.1 Introduction
- 8.2 Accessing Values in Dictionaries
- 8.3 Working with Dictionaries
- 8.4 Properties
- 8.5 Functions

#### 9: Functions

- 9.1 Defining a Function
- 9.2 Calling a Function
- 9.3 Types of Functions
- 9.4 Functions Arguments
- 9.5 Anonymous Function
- 9.6 Global and Local Variables

#### 10: Modules

- 10.1 Importing Modules
- 10.2 Math Module
- 10.3 Random Module
- 10.4 Packages
- 10.5 Composition

#### 11: Input-Output

- 11.1 Printing on Screen
- 11.2 Reading Data From Keyboard
- 11.3 Opening and Closing File
- 11.4 Reading and Writing Files
- 11.5 Functions

#### 12: Exception Handling

- 12.1 Exception
- 12.2 Exception Handling
- 12.3 Except Clause
- 12.4 Try? Finally Clause
- 12.5 User Define Exception