A complete Software testing package involves 3 subjects

1. Manual testing
2. Core Java
3. Selenium (automation)

Manual Testing Syllabus:

1. **Introduction of the course**
   - What is software testing
   - Why it is necessary
   - Advantages of software testing
2. **Software development life cycle [SDLC]**
   - What is SDLC?
   - What are the different types of SDLC MODELS?
   - What is waterfall model? Advantages and disadvantages
   - What is spiral model? Advantages and disadvantages
   - What is prototype model? Advantages and disadvantages
   - What is V-V model? Advantages and disadvantages
3. **White box testing /Unit testing**
   - What is Unit testing? Its types.
   - What is Statement coverage with example
   - What is decision coverage with example
   - What is Branch coverage with example
   - What is condition coverage with example
   - Advantages and disadvantages of Unit testing.
4. **Black Box Testing**
   - What is black box testing
   - Types of Black box testing
   - What is functional testing? and its types
   - What is component testing? With example
   - What is Smoke testing? With example
   - What is Smoke testing? With example
   - What is Integration testing? its types ?with example
   - What is Regression testing? With example

- What is system testing? With example
- What is UAT?
- What is compatibility testing? With example .And its advantages and disadvantages
- What is exploratory testing? With example and its advantages and disadvantages
- What is API testing ?and its types
- What is Globalization testing? And its types
- What is Internationalization testing [I18N testing]?
- What is Localization testing [L10N testing]?
- What is Ad-hoc testing?

5. **Non-Functional Testing**
   - What is Performance testing?
   - What is Security testing?
   - What is Reliability testing?
   - What is survivalability testing?
   - What is Availability testing?
   - What is Usability testing?
   - What is Scalability testing?
   - What is interoperability testing?
   - What is efficiency testing?
   - What is flexibility testing?
   - What is portability testing?
   - What is load testing?
6. **Test Plan**
   - What is test plan? Different components of Test plan
7. **Test Case**
   - What is test case document
   - Practices to write good test case
   - Why do we write test case
   - What is Test scenario
   - How to write test scenario
   - What is RTM?
   - How to prepare RTM document and its advantages
   - What are test design techniques
   - What is boundary value analysis [BVA]
   - What is Equivalence class partitioning [ECP]

- What is Error guessing

8. **Test Data**
   - What is test data
   - Criteria of test data
   - Test data generation approaches
9. **Software test life cycle [STLC]**
   - What is STLC?
   - What are different steps in STLC
   - Advantages of STLC
10. **Defect Life cycle**
   - What is defect life cycle?
   - Different steps of Defect life cycle
   - What is Defect Report?

Core Java Syllabus

1. **Introduction of Java**
   - What is Java?
   - Why Java ?
   - Setting up the environment in Java
   - A First Java Program
   - Java Naming Conventions
   - How JVM Works – JVM Architecture?
   - Differences between JDK, JRE and JVM
   - Run Program in Different IDE(Eclipse , NetBeans) and Command Prompt.

2. **OOP concept**
   - Introduction to OOP Concept
   - Inheritance in Java
   - Encapsulation in Java
   - Abstraction in Java
   - Polymorphism in Java
   - Why Java is not a purely Object-Oriented Language?

3. **Data types , Variables and Arrays**
   - Java Identifiers
   - Data types
   - How to define our own data type in java(enum)

- Literals in Java (Numeric Literals, Character Literals, String Literals)
- Variable & Declarations of Variable
- Scope of Variables
- Final Variable
- Type Conversion and Casting
- Arrays

4. **Operators and Expressions**
   - Expressions
   - Arithmetic Operators
   - Bitwise Operators
   - Relational Operators
   - Logical Operators
   - Assignment Operator
   - Increment and Decrement Operators
   - The Conditional Operator
   - Operator Precedence
5. **Control Flow Statements**
   - Selection Statement (if , Switch)
   - Iteration Statements (while, do-while , for , for each & Nested Loop)
   - Jump Statements (break , Continue, Return)
   - Does Java support goto?

6. **Important Keywords**

   - List of all Java Keywords
   - Important Keywords in Java
   - this keyword
   - super Keyword
   - static keyword
   - final keyword
   - final, finally and finalize in Java
   - abstract Keyword
   - transient keyword in Java
   - volatile keyword in Java
   - strictfp keyword

7. **Classes and objects**
   - Classes and Objects
   - Java object storage
   - Different ways to create objects in Java

- Association, Composition and Aggregation
- Access and Non-Access Modifiers in Java
- Access Modifiers
- this reference
- Object class
- Static class in Java
- Method Overloading
- Method Overriding
- Understanding “static” in “public static void main” in Java
- Overloading or Overriding static methods
- Shadowing of static methods(Also called Method Hiding)
- Static methods vs Instance methods in Java
- Assigning values to static final variables in Java
- Covariant return types
- Flexible nature of java.lang.Object
- Overriding equals method of Object class
- Overriding toString() method of Object class
- Instance Variable Hiding
- Static blocks in Java
- initializer block in java
- instance initializer block in java(non-static block)
- Static vs Dynamic Binding

8. Constructor in Java

- Constructors
- Constructors in Java
- Default constructor
- Assigning values to static final variables
- Copy Constructor
- Constructor Chaining
- Private Constructors and Singleton Classes
- Singleton Class
- Constructor Overloading

9. Inheritance in Java

- Inheritance in Java
- Multiple Inheritance
- Why Java does’nt support Multiple Inheritance – The Diamond Problem
- Java Object Creation of Inherited Class
- Inheritance and constructors
- Interfaces and Inheritance

- Using final with Inheritance
- Override private methods
- More restrictive access to a derived class method in Java
- Parent and Child classes having same data member
- Object Serialization with Inheritance
- Referencing Subclass objects with Subclass vs Superclass reference
- Does overloading work with inheritance

10. Packages

- Packages Introduction
- java.io package
- java.lang package
- java.util package

11. Exception Handling

- Exceptions
- OutOfMemoryError Exception
- Different ways to print Exception messages in Java
- flow control in try-catch-finally
- Types of Exceptions
- Catching base and derived classes as exceptions
- Checked vs Unchecked Exceptions
- Throw and Throws
- User-defined Custom Exception
- Infinity or Exception?
- Multicatch
- Chained Exceptions
- Null Pointer Exception

12. Input/output Streams

- Character Stream Vs Byte Stream
- DoubleStream mapToObj() in Java
- Command Line arguments
- Scanner Class
- Scanner and nextChar()
- Scanner vs BufferReader Class
- Formatted output
- Fast I/O for Competitive Programming
- Reading input from console

13. Collection Framework

- The Collections Framework
- The Set Interface
- Set Implementation Classes
- The List Interface
- List Implementation Classes
- The Map Interface
- Map Implementation Classes

14. Interfaces and Abstract Classes

- Interfaces
- Access specifier for methods in interfaces
- Access specifiers for classes or interfaces
- Abstract Classes
- Difference between Abstract Class and Interface in Java
- Comparator Interface
- Java Interface methods
- Nested Interface
- Nested Classes in Java
- Inner class in java
- Local Inner Class in Java
- Anonymous Inner Class in Java
- Functional Interfaces
- What is a Marker interface
- Questions on Abstract Classes and Interfaces
- Static method in Interface in Java
- Function Interface in Java

15. Multithreading

- Introduction to Multithreading
- Lifecycle and states of a thread
- Main thread
- Methods to prevent thread execution
- inter thread communication
- Java.lang.Thread class
- Start() function in multithreading
- Java Thread Priority
- Joining Threads in Java
- Naming a thread and fetching name of current thread in Java
- Synchronization
- Method and Block Synchronization
- Producer-Consumer solution

- Thread Pools in Java
- Semaphore in Java
- Java.util.concurrent.Semaphore class in Java
- CountDownLatch
- Deadlock in java
- Daemon thread
- Reentrant Lock
- Cyclic Barrier in Java
- Callable and Future in Java
- Runtime Class

16. File Handling in Java

- File class
- Ways of Reading a text file in Java
- file permissions in java

17. Strings in Java

- String Class
- StringBuffer Class
- StringBuilder Class
- StringTokenizer class
- StringJoiner in Java8

18. Reflection

- Reflection in Java
- Method Class in Java
- Reflect Array class in Java
- util.Arrays vs reflect.Array in Java
- new operator vs newInstance()
- instanceof operator vs isInstance()

19. Annotations in Java

- Introduction
- Built-In Java Annotations
- Java Custom Annotations

20. Useful and/or Advanced Features

- Generics
- Wildcards in Java
- Assertions

- Annotations
- Serialization and Deserialization
- Lambda Expressions – Java 8
- Stream
- BigInteger Class

21. Applets , AWT and Swing in Java

- Introduction to applets
- Architecture of Applets
- Event Handling in Applets
- AWT Controls
- Event Handling in AWT
- Basic Difference Between Swing and Applets
- Swing Controls
- Event Handling in Swing

22. JDBC

- Introduction to JDBC
- Architecture of JDBC
- Type of JDBC Architecture
- Difference Between ODBC and JDBC
- Driver Types
- Statement Ojects
- Resultset
- Transaction Processing

Selenium Testing

Oops concepts –

Selenium:

Architecture of Selenium Webdriver

Architecture of Webdriver API

WEB ELEMENT:

Locators

SYNCHRONIZATION

1. Implicit Wait
2. Explicit Wait

Few Sample Codes

Handling Listbox

POM Concept in selenium

TestNG

TestNG Suit

POM: Page Object Model

Page Factory in Selenium

Framework

AUTOMATION FRAMEWORK DESIGN

Steps to configure Automation Framework

JENKINS

Architecture of the framework

Automation Framework Design Details:

Architecture Details

Handling Pop-up’s

List of Exceptions