INNATE TALENT
SMVEC – JAVA COURSE PLAN

Duration: 11 days

Days	Topics
1.	**Basics of Java** ➢ What is Java? ➢ History and Features of Java ➢ C++ vs Java ➢ Hello Java Program ➢ Internal How to set the path? ➢ JDK, JRE, and JVM (Java Virtual Machine) ➢ JVM Memory Management ➢ Internal details of JVM ➢ Unicode System, Operators, Keywords. **Data types in Java** ➢ Data types in Java ➢ Primitive data types ➢ Non-primitive data types ➢ Memory allocation of primitive and non-primitive data types, etc. **Variables, Constants, and Literals** ➢ Variable declaration & initialization ➢ Naming convention ➢ Types of variables such as local variables, instance variables, and static variables ➢ Scope and memory allocation of variables.
2.	**Control Statements** Control Statements like if-else, switch, For loop, while loop, for each etc. **Class, Object, and Types of classes** ➢ Naming convention of Java ➢ Classes, Objects, and Features. ➢ Object declaration and initialization ➢ Life cycle of an object ➢ Anonymous object in Java **Encapsulation** ➢ Encapsulation in Java ➢ How to achieve Encapsulation ➢ Data hiding

3.	**Methods in Java** ➢ Methods in Java ➢ Use of method in Java ➢ Method declaration, method signature ➢ Types of methods in Java: predefined method, user-defined methods: instance method, static method ➢ Calling of method ➢ Java main method ➢ Return type in Java. **Constructor in Java** ➢ What is Constructor in Java? ➢ Types of constructors: Default and Parameterized constructors ➢ Java constructor overloading ➢ Constructor chaining in java ➢ Copy constructor in Java **Java Array** ➢ Array Syntax and examples ➢ Types of array: single dimensional array, multidimensional array, declaration, instantiation, and initialization of Java array ➢ Passing array to a method
4.	**Modifiers in Java** ➢ What is Access modifier and Non-access modifier in Java? ➢ Types of access modifiers like private, default, protected, and public **Static Keyword** ➢ What is Static keyword? ➢ Static variable ➢ Static method ➢ Static block, Instance block ➢ Static Nested Class in Java ➢ Difference between static variable and instance variable, static method and instance method, static block, and instance block. **Inheritance** ➢ Inheritance in Java ➢ Is-A Relationship ➢ Aggregation and Composition(HAS-A) ➢ Types of inheritance: Single level, Multilevel, Hierarchical, Multiple, and Hybrid inheritance. .

5.	**Packages in Java** ➢ How to declare package in a company project ➢ Package naming conventions ➢ Sub packages ➢ Types of packages such as user-defined packages, built-in packages ➢ Importing packages in **Final Keyword** ➢ Final variable ➢ Final method ➢ Final class. **Super and this Keyword** ➢ Super keyword ➢ Calling of superclass instance variable ➢ Superclass constructor ➢ Superclass method. ➢ This keyword ➢ Calling of current class constructor, and method. **Polymorphism** ➢ Types of polymorphism: Compile-time polymorphism and Run-time polymorphism ➢ Static and Dynamic Binding ➢ Method overloading ➢ Method overriding ➢ Rules of method overloading and method overriding, various example programs related to rules of overloading and overriding. ➢ Covariant Return type.
6.	**Garbage Collection** **Abstraction** ➢ Abstraction in Java ➢ Abstract class ➢ Abstract method ➢ Interface in Java ➢ Nested interface, rules, and example programs. **Exception Handling in Java** ➢ Try-catch block ➢ Multiple Catch Block ➢ Nested try block ➢ Finally block ➢ Throw Keyword

	➢ Throws Keyword ➢ Throw vs Throws, Final vs Finally vs Finalize ➢ Exception Handling with Method Overriding Java Custom Exceptions
7.	**String, String Buffer, String Builder** ➢ Immutable String ➢ String Comparision, String concatenation ➢ Substring ➢ String Buffer class ➢ StringBuilder class ➢ toString method ➢ StringTokenizer class **Java Thread** ➢ Java multithreading ➢ Multithreading life cycle of a thread creating ➢ Thread scheduler ➢ Sleeping a thread, Start a thread twice ➢ Calling run() method ➢ Joining a thread ➢ Naming a thread ➢ Thread priority, ➢ Daemon thread ➢ Thread pool ➢ Thread group ➢ Shut down hook ➢ Java Synchronization: synchronized method, synchronized block, static synchronization ➢ Deadlock ➢ Inter-thread Communication ➢ Interrupting Thread
8.	**Collections Framework** ➢ What is Collections Framework? ➢ List, Set, Sorted Set, Queue, Deque, Map, Iterator, List Iterator, and Enumeration. ➢ Array List, Linked List, Hash Set, Linked Hash Set, Tree Set, Array Deque, Priority Deque, Enum Set, Abstract Collection, Abstract List, Abstract Queue, Abstract Set, and Abstract Sequential List. ➢ Map, Map Entry, Sorted Map, and Navigable Map ➢ Hash Map, Linked Hash Map, Tree Map, Identity Hash Map, Weak Hash Map, and Enum Map. ➢ Comparator, Random Access interfaces as well as Observable class.

9.	**JDBC** ➢ JDBC Drivers ➢ Steps to connect to Database ➢ Connectivity with Oracle ➢ Connectivity with MySQL ➢ Connectivity with Access without DSN ➢ Driver Manager ➢ Types of JDBC statements: Statement, Prepared statement, Callable statement ➢ Database Metadata, Result set Metadata ➢ Result Set, types of Result Set.
10.	**Java Swing** ➢ AWT ➢ Introduction ➢ Components ➢ Event-Delegation-Model ➢ Listeners ➢ Layouts ➢ Individual Components Lable, Button, Check Box, Radio Button, ➢ Choice, List, Menu, Text Field, Text Area **SWING (JFC)** ➢ Introduction Diff B/W AWT and SWING ➢ Components hierarchy ➢ Panes ➢ Individual Swings components J Label ➢ J Button, J Text Field, J Text Ares
11.	**Input Output Stream** ➢ File Output Stream, File Input Stream ➢ Buffered Output Stream, Buffered Input Stream ➢ Sequence Input Stream ➢ Byte Array Output Stream, Byte Array Input Stream ➢ Data Output Stream, Data Input Stream ➢ Java Filter Output Stream, Java Filter Input Stream ➢ Java Object Stream, Java Object Stream Field Console ➢ File Permission Writer, Reader, File Writer, File Reader ➢ Buffered Writer, Buffered Reader ➢ Char Array Reader, Char Array Writer ➢ Print Stream, Print Writer ➢ Output Stream Writer, Input Stream Reader ➢ Pushback Input Stream, Pushback Reader ➢ String Writer, String Reader

	➢ Piped Writer, Piped Reader ➢ Filter Writer, Filter Reader, File File Descriptor, Random Access File, and java.util.Scanner