Programming using JAVA (2months)

Fundamental Concept (1st Month)
- Installing JAVA
- Environment Setup
- **Java Program Development**
  - Compilation
  - Executions
- Hello World Program
- How to do input in Java Program?
- Java Evolution & History
- Features of JAVA
- Data types & Variables
- Brief of Programming Practices
  - Conditional
  - Looping
  - Ternary
- Different types of Comments
- Keywords & Constant

Object – Oriented Programming Concept (1st Month)
- **Fundamentals of Object-Oriented Programming**
  - What is OOPS?
  - Why we need OOPS?
- Programming practices based on OOPS
- Java Naming Convention
- Object & Classes

Java Editor (1st Month)
- Download & Install editor
- Setup environment of editor
- Execute a JAVA Project
- Setup Build Path
- Debugging using editor
- Java Package based Programming

Object Oriented Principles (1st Month)
- Abstraction
- Encapsulation
- Inheritance
- **Java Beans**
  - Design of Accessors & Mutators
- **Constructor in Java**
  - Constructor chaining

- o Constructor Overloading
- o Use of this & super keyword
- o Use of this & super functions
- **Polymorphism**
  - o Overloading in Java
  - o Overriding in Java

Array, Casting & Scopes (1st Month)

- **Arrays**
  - o Single dimensional Array
  - o Double dimensional Array
  - o String based Array handling
- Casting in Java
  - o Auto Widening & Explicit Narrowing
  - o Object Casting
- Scope of Variables

JAVA Modifiers (1st Month)

- Access Specifiers
  - o Private
  - o Public
  - o Protected
  - o Package - private
- Static
- Final
- Abstract Class
- Interface

Wrapper Class (1st Month)

- Constructors
- Class Methods
- Instance Methods
- Auto boxing / Unboxing
- Other Utilities methods

Exception Handling (2nd Month)

- Exception Hierarchy
- Exception handling using try, catch & finally
- Exception Propagation using throw & throws
- Custom Exception

String Handling (2nd Month)

- String literal
- Concatenation
- String functions

- String Splitting
- String based programming paradigms

File Input / Output (2nd Month)
- What is Streams?
- Types of Streams
- OutputStream Classes
- InputStream Classes
- File Handling
  - Read & Write into file
  - Append data into file
  - Delete a file
  - Copy file

Collection Framework (2nd Month)
- What & Why collection framework?
- Class Hierarchy
- Benefits of Collection Framework
- Set Interface
- List Interface
- Map Interface
- Comparable & Comparator

Database Handling (JDBC) (2nd Month)
- Database Installation & Environment Setup
- Types of JAVA Drivers
- Steps to Create Database Connection
- Database URL's
- SQL Scrapbook
- Read data using Statement
- Read data using Prepared Statement
- Difference between Statement & Prepared Statement
- Read data using Datasource
- Insert data into database
- Update data into database
- Delete date into database

Multithreading / Concurrency (2nd Month)
- Multiprocessing & Multitasking
- What is JAVA thread?
- What is Multithreading & Why required?
- Life Cycle of Thread
- **Creating Java Thread**
  - Thread class
  - Runnable Interface

- Thread Synchronization

AWT & Swing (1st & 2nd Month)

- What is AWT & Swing?
- Hierarchy Classes
- Difference between AWT & Swing
- AWT Components
- AWT Containers
- Event handling
- Layout Manager

Assignments (1st & 2nd Month)

- More than 50 programs to build up Logic
- Using Simple Statement, Conditional, Looping, Multiple-If
- Using Jars
- Using Switch Case, Ternary Operator
- Using Command Line Argument
- Using Arrays
- Using OOP like Polymorphism
- Using Exception Handling
- Using String Handling
- Using IO & Serialization
- Others Java topics like Threading, Collections, JDBC, etc