**Day 1**

**Section 1:**

Java Technology Introduction

Features of java,

Introduce JDK, JRE, JVM, JVM Big Picture and Architecture,

environment variable setting to run JAVA from command prompt,

Introduction to Classes, methods and their naming conventions,

main() method,

Operators, Keywords,

Conditional construct (If-else ,

else-if ladder, nested if –else),

Iteration construct (loops),

Selection constructs

(Switch case),

Array (single, multi) for primitive data types,

Enhance for loop (FOR-IS, Object iteration using FOR Loop),

Q&A session,

Getter setter method,

Constructor,

Object creation process (use of “new” keyword), “this” keyword use,

Different steps to create object,

JVM Memory Architecture(Stack , heap , static),

Object creation process in JVM

**Section 2:**

Classes and Objects

Array with Classes,

Garbage collection process,

Java packages and eclipse IDE introduction,

Different type of variables and their scope (local, instance, static),

**Day 2**

Introduction of package through command prompt,

Static and instance block,

Static method and instance methods,

Packages (introduction to Pre define API and java documentation),

User define package creation and introduction to classpath(using bat file),

Has-A relationship in java (Contentment type),

Composite Has-A Relationship,

Aggregate Has-A Relationship, Is-A relationship(Inheritance),

Super keyword use, Method overriding (dynamic polymorphism),

Static and Dynamic binding,

Abstract keyword use (class, method),

final keyword use,

Object class method’s introduction,

Introduction of Interface,

Difference between Abstract class and Interface,

Marker interface (Clonable),

Cloning in java(shadow and deep cloning )

**Day 3**

**Section 3:**

Layered Architecture,

Exceptions, Collections, Generics

Layered Architecture,

String class methods (StingBuffer/StringBuilder), Enums,

Wrapper classes, Problem with C style error handling,

Introduction to OO type Exception handling,

Different types of exceptions in java

(Error, Runtime, Checked), Try , catch, throws , throw , finally keyword use

Multithreading

Different ways to create threads

The Thread class and Runnable interface

Various thread methods

Thread priority

Thread Synchronization

Inter Thread communication

**Day 4**

Introduction and need of Generic programing,

Introduction to collection API (List, Set, Map),

Significance of equals and hash Code,

Comparable and Comparator

Design Patterns

Definition of a design pattern

Contents of a design pattern

Classification of pattern

Singleton Pattern,Factory Method,Abstract Factory,Proxy Pattern,Builder Pattern

Annotations and Reflections

Annotations in Java.

Levels of annotations

Built-In Annotations – Custom Annotations

Reflection API

JUnit 5

Overview

Unit Testing and JUnit Overview

JUnit 5 Library Components

Naming Conventions and Organizing Tests

Writing Test Methods

Assertions

**Day 5**

ORM

Introduction to Hibernate Framework

Object Persistence

O/R Mismatch

Object Relational Mapping (ORM)

Java ORM/Persistent Frameworks

Introduction to JPA

Hibernate and JPA relationship

Why JPA?

Using Hibernate/JPA

Using annotations for persistence mapping

Configuration of the persistence context

Understanding EntityManagerFactory

Working with EntityManager for persisting objects

Transactions and flushing

Persistent Classes

POJOs

JavaBeans - Basic Mapping

Class to Table Mappings - Property Mapping

Identifiers – Generators

Working with Persistent Objects

Transient State - Persistent State

**Day 6**

**Section 4:**

Spring Core and Cloud Concepts

Spring Container -

Bean Factory, Application Context, Beans in Spring, IOC,

Configuring beans though XML - constructor injection, setter injection,

Configuring beans through annotations, Annotations - Autowired , Component ,

Repository , Service , Resource , Required, Qualifier, Value,

Spring MVC - DispatcherServlet as FrontController, HandlerMapping and

ViewResolver, Controllers,

Introduction to cloud. Benefits and Risks,

what are public, private and hybrid clouds, IaaS, PaaS and SaaS in Cloud Computing

**Day 7**

**Section 5:**

Spring Boot

Introduction - What is spring boot, Spring and its problems, setting up dev. Env,

Maven basics, Creating spring boot project,

Starting spring boot application, Bootstrapping steps,

Adding REST controller,

Returning objects from Controller,

Embedded servlet container,

Demo/ basics of building an API in spring boot,

Adding business logic, Create, Update and delete APIS,

Using spring initializer,

Spring data JPA basics,

Creating spring Data JPA repository,

Crud operations with Spring boot + Data JPA

**Day 8**

Securing application using Spring Security

Registering Users

InMemory Authentication

DAO Authentication

OAuth (Okta)

Authorization Server and Resource Servers