# Pre-requisite

* Basic knowledge of computers
* Basic Programming knowledge (Preferable C/C++

# Workshop Contents

Note: Considering 8 hours per day for the training, following is the day wise agenda

**CORE JAVA**

**DAY 1 :**

* **Java technology overview**
  + Components that make up the Java programming language
  + Java Features
  + Compiled and Interpreted Language
  + Java development environment
    - JRE
    - JDK
    - JVM
* **Compiling and Running a Simple Program**
  + Java Platform
  + Setting Up Your Computer
  + Introduction to IntellliJ
  + Writing a Program
  + Compiling the Program
  + Interpreting and Running the Program
* **Basics I: Programming basics**
  + Variables
  + Data Types
  + Literals
  + Operators
    - Unary
    - Binary
    - Ternary
    - Assignment
  + Type Conversion/ Type casting
* **Basics II: Flow Control in Java**
  + Decision making flows
    - if-else blocks
    - switch-case blocks
  + Iterative flows
    - while loop
    - do-while loop
    - for loop
    - break and continue
    - Nested Loops

**DAY 2:**

* **Basics III: Multiple Items Storage**
  + Introduction to arrays
  + Create arrays
  + Initialize Arrays
  + VarArgs
  + For-Each
* **Object Oriented Programming using Java**
  + OOPS Principles
    - Abstraction
    - Encapsulation
    - Polymorphism
    - Inheritance
  + Create a class
  + Class Properties
  + Methods
    - Why need methods
    - Method Parameters
    - Method Return Values
  + Creating Objects
  + Access specifiers
  + Constructors
  + Constructor Overloading
  + Method Overloading
  + this keyword
  + toString()

**DAY 3:**

* + String class
  + Has-A relationship
  + Inheritance in Java
  + Inheriting classes
  + Overriding methods
  + Creating Abstract classes
  + Final Modifier
  + Static Modifier
  + Packages
  + import keyword
  + Static Import

**DAY 4:**

* + Array Of Objects
  + Interface
    - Anonymous inner class
    - Functional Interface
    - Lambda expressions
* **Collections and Generics Framework**
* Collections framework
  + Collection
  + List
  + Set
  + Map
  + Collections
  + Comparable and Comparator interfaces
  + Equals and hashcode

**DAY 5:**

* **Exceptions/Error Handling**
  + Define exceptions
  + Use try, catch, throw, throws and finally statements
  + Describe exception categories
  + User Defined exceptions
* **I/O Fundamentals**
* Distinguish readers and writers from streams
* File Handling
* File Reading and Writing
* **Java Database Connectivity (JDBC)**
* Introduction to JDBC API
* Understanding JDBC Interfaces
  + - Connection
    - Statement
    - PreparedStatement
    - ResultSet
    - CallableStatement
* Create, Read, Update & Delete Queries
* Fetching of results

**Servlets and JSP**

**DAY 6 :**

* **Web Application Development**
  + Introduction & Overview
  + Request – Response Cycle
  + HTTP methods
  + Servlet Basics
  + Servlet API
  + GET and POST Request
  + Servlet Chaining & Use of RequestDispatcher
  + Concept of Forward & Response Redirect
  + Filter
  + Introduction to HttpSession

**DAY 7 :**

* **JSP Basics**
  + Need of JSP
  + Various elements in JSP page
    - JSP tags
    - Directives
    - Declaration
    - Scriplets

**SPRING**

**DAY 14 :**

* **Introduction & Overview**
  + Introduction to Spring
  + Need for Spring
  + Dependency Injection
  + AOP(Aspect Oriented Programming)
* **Spring Core**
  + Getting started with Spring
  + Spring Architecture
  + Dependency Injection
    - Setter
    - constructor
    - Autowiring By AutoDetect
  + Spring Annotations
    - @Component
    - @Autowired
    - @Qualifier
    - @Value

**DAY 15 :**

* + Spring Bean
    - Bean Lifecycle
    - Bean Scopes
    - Collection Bean
    - Bean Reference
    - @Bean
    - Java Based Configuration

**DAY 16 :**

* Spring JDBC
  + JdbcTemplate
  + Examples of JdbcTemplate class usage
  + NamedParameterJdbcTemplate
  + Executing statements
  + Running queries
  + Updating the database
  + MVC Introduction

**DAY 17 :**

* Spring MVC Overview
  + DispatcherServlet
  + @Controlller
  + @RequestMapping
  + @ResponseBody
  + Map form data

**SPRING BOOT**

**DAY 18 :**

* SPRING BOOT INTRODUCTION
  + Introduction to Spring Boot
  + Getting started with Spring Boot
  + Understand the configuration
  + Opinionate Frameowrk
  + Auto Configuration
  + Spring Core example using Spring Boot
* Spring Boot CrudRepository
  + CRUD operations
  + How CrudRepository works in Spring Boot JDBC
  + Use in-memory database

**DAY 19:**

* + CrudRepository vs JPARepository
  + Custom methods
* Spring REST
  + Understand what is REST and Web Services
  + REST principles
  + REST API guidelines
    - HTTP methods
    - HTTP status codes
    - HTTP Headers
  + Create a Spring REST application
    - @RestController
    - @RequestMapping

**DAY 20:**

* + - Entity to DTO conversion
    - @RequestBody
    - @GetMapping
    - @PostMapping
    - @PutMapping
    - @DeleteMapping
    - @PathVariable
  + Content Negotiation
  + Understand CORS
  + @ResponseStatus
  + ResponseEntity to manipulate HTTPResponse