

ADVANCED JAVA – COMPLETE VIVA VOCE MATERIAL (MCA – Mumbai University)

Practical 1 – Java Generics

Q: What are Generics in Java?

A: Generics allow classes, methods, and interfaces to operate on different data types with type safety.

Q: Why are Generics used?

A: They provide compile-time type checking and avoid ClassCastException.

Q: What is a Generic Class?

A: A class defined with a type parameter, for example class Box.

Q: What is a Generic Method?

A: A method that introduces its own type parameter.

Q: What are Wildcards?

A: They provide flexibility in generics using ?, ? extends, and ? super.

Practical 2 – List Interface

Q: What is List Interface?

A: List is an ordered collection that allows duplicate elements.

Q: Difference between List and Set?

A: List allows duplicates and maintains order, Set does not allow duplicates.

Q: What is ListIterator?

A: It allows traversal of list in both forward and backward direction.

Q: Can List store null values?

A: Yes, List can store multiple null values.

Practical 3 – Set Interface

Q: What is Set Interface?

A: Set is a collection that does not allow duplicate elements.

Q: Why HashSet does not maintain order?

A: Because it uses hashing mechanism internally.

Q: How to traverse Set in reverse order?

A: Convert Set into List and use ListIterator.

Q: What is contains() method?

A: It is used to search an element in the set.

Practical 4 – Map Interface

Q: What is Map Interface?

A: Map stores data in key-value pairs.

Q: Does Map allow duplicate keys?

A: No, keys must be unique.

Q: Difference between HashMap and Hashtable?

A: HashMap is not synchronized, Hashtable is synchronized.

Q: What is entrySet()?

A: It returns a set view of key-value pairs.

Practical 5 – Lambda Expressions

Q: What is Lambda Expression?

A: It is an anonymous function introduced in Java 8.

Q: What is Functional Interface?

A: An interface with exactly one abstract method.

Q: Why Lambda Expressions are used?

A: To reduce code and improve readability.

Q: Can Lambda have return statement?

A: Yes, with or without return keyword.

Practical 6 – JSP

Q: What is JSP?

A: JSP is a server-side technology used to create dynamic web pages.

Q: Difference between JSP and Servlet?

A: JSP is HTML-centric, Servlet is Java-centric.

Q: What are JSP Scriptlets?

A: Java code embedded inside JSP using `<% %>`.

Q: What is JDBC?

A: It is used to connect Java applications with databases.

Q: What is PreparedStatement?

A: It is used to execute parameterized SQL queries.

Q: What is Tomcat?

A: It is a web server and servlet container.

Practical 7 – Spring Framework

Q: What is Spring Framework?

A: A lightweight framework for enterprise Java applications.

Q: What is IoC?

A: Inversion of Control means object creation is handled by Spring container.

Q: What is Dependency Injection?

A: Providing dependencies to an object externally.

Q: Difference between Setter and Constructor Injection?

A: Setter uses setters, Constructor uses constructors.

Q: What is Autowiring?

A: Automatic dependency injection by Spring container.

Practical 8 – Spring AOP

Q: What is AOP?

A: Aspect Oriented Programming separates cross-cutting concerns.

Q: What is Advice?

A: An action taken by aspect at a particular join point.

Q: What is Before Advice?

A: Runs before target method execution.

Q: What is Around Advice?

A: Runs before and after method execution.

Q: What is Pointcut?

A: An expression that defines where advice should be applied.

Q: What is After Throwing Advice?

A: Executes when method throws exception.