

## **Lesson 1: Introduction to Java**

- Responsibilities of Bytecode verifier, class loader, JIT compiler, JVM

## **Lesson 3: Language Fundamentals**

- Discuss illegal assignments for float, char, byte data types
- What happens when you ignore break in switch, Discuss the valid data types that w.r.t switch case

## **Lesson 4: Classes and Objects**

- Discuss all the important points of enum
- What is the default value of all instance variables
- What will happen if you don't initialize a local variable and try to print it?
- Garbage collector points
  - Not assured even if you call System.gc() method, least priority daemon thread, calls finalize method
- Static methods – discuss all the points
- What is created in heap?
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## **Lesson 5: Exploring Basic Java Class Libraries**

- What are wrapper classes list all the wrapper classes
- What are the possible modifiers for the top level class, instance variables, local variables
- (example final is the only modifier used for local variables and public, private and static is used for class)
- Which type of variables must be initialized-mandatory (ans: final variable)
- String, StringBuffer and StringBuilder – discuss which is mutable and methods (append, concat, etc), equals and == w.r.t String?
- Methods of Object class- list out
- Scanner, use delimiter method
- All new date features, LocalDate methods to get current date, tomorrow's date, yesterday's
- Discuss equals and hashCode()

## **Lesson 6: Inheritance and Polymorphism**

- Difference between overriding and overloading
- Abstract class, interfaces (modifiers of the data members in an interface) – discuss the points
- Aggregation relationship – how will you implement in Java
- instanceof – discuss
- Discuss all points about key word "this" and "super" (while writing constructors)
- How will you write varargs (what conditions must be followed)
- All the points w.r.t final variable, method and class
- Can the final classes be instantiated, inherited?
- Key words that can't be used for final – abstract/extends

## Lesson 7: Abstract Classes and Interfaces

- By default interface data members are \_\_\_\_\_

## Lesson 9:Exception Handling

- List all the checked exception and unchecked exception (discuss on `ClassNotFoundException`, `ClassCastException`, `NumberFormatException`, `SQLException`, `ArrayIndexOutOfBoundsException`, `NullPointerException`, `IOException`)
- Base class of all exception
- How will you create checked and unchecked userdefined exception
- Try catch finally throw throws – all points
- Significance of Try-with-resource feature in exception handling
- Any null reference with method invocation will create null pointer exception example(very important)
  - Example `String var=null , s.op.(var.length())`
- Difference between enhanced for loop and iterator
- Layered architecture with exception handling

## Lesson 13: File IO and Lesson 15: Property Files

- Different types of streams in File IO, `LineNumberReader`, `Buffered Streams`, `flush()`, `Serialization` and `Deserialization`
- Below classes are in `java.io` package `Reader`, `Write`, `InputStream`, `OutputStream`, `FileInputStream`, `FileOutputStream`, `ObjectInputStream`
- Discuss `isFile()`

## Lesson 16: Java Database Connectivity (JDBC 4.0)

- What happens when `rs.next` is not given and we try to access `rs.getXXX()`
- `setDate` method of `rs` will accept only SQL date type
- in transaction management discuss about `setAutoCommit – true and false`, `conn.commit()`, `con.rollback()`
- discuss all type drivers (Type1,2,3,4) and JDBC-ODBC Bridge Driver, Java to Database, Protocol, Java to Native API, Java to Network Protocol
- JDBC steps, What happens if the query does not return any result,
- Discuss `execute`, `executeUpdate`, `executeQuery`, `Class.forName("oracle.jdbc.driver.OracleDriver")`;
- `ResultSet` methods, iterating resultset
- SQL Exception and all the scenarios when it occurs –( eg: what happens if the table does not exist)

- All points about resultset,all statement types
  - Go through SQL Injection.Which interface is used to prevent SQL Injection
  - Stored procedures using Preparecall statement
  - Given the below procedure:
  - PROCEDURE getNameById( id IN NUMBER, name OUT VARCHAR2)
- The above stored procedure can be called as shown below

String sql = "{call getNameById(?, ?)}"

## Lesson 10: Array

- Declare int array ,Boolean array syntax

## Lesson 11: Collection

- Printing the collection using for loop and iterator.
- LinkedList,ArrayList- all collections comparison for ordered,sorted,duplicates ,allows null
- Hashtable and vector are synchronized,
- SortedMap(entries are stored using Comparator,duplicate entries replace original entries,stored as key/value pair)
- Discuss- LinkedList,LinkedHashSet
- Collections.sort(),Arrays.sort(array),ways of iterating the collection, Diff between hashmap and hashtable (key/value pair, not sorted and not ordered)
- TreeSet discuss -(key/value pair,elements in the TreeSet should be of the type that implements comparable.Need to implement either Comparable or Comparator interface to sort user defined objects)
- Go through Comparator and Comparable interface methods
- Discuss clear(),removeAll(),isEmpty()

## Lesson 12:Generics

- Use of Generics (introduced in JDK 1.5,used to avoid runtime exceptions like ClassCastException and casting)
- Why Generics(Is used to avoid runtime cast exceptions and it was introduced in JDK 1.5 version)

## Lesson 14: Introduction to Junit 4 & Lesson 18: Advanced Testing

- Explain @Test with all attributes like timeout ,expected...
- @ignore- explain
- Explain static import of Assert class
- Explain-'@RunWith(Suite.class) ,@Suite.SuiteClasses
- @Before,@After ,@BeforeClass,@AfterClass-explain
- What is parameterized test?

### **Lesson 19: Logging with Log4J**

- What is logger configuration file . How many ways you can implement(XML and property file)
- Log4j API components – discuss
- Log4j levels –discuss
- What is Appender,root logger
- Logger configuration file format

### **Lesson 20: Multithreading**

- Thread API's eg: static method to obtain the current thread,start(), run(),join()-waits for the other thread to terminate),Thread class constructors - discuss
- Thread Lifecycle (Thread States),Thread priority(integer values)
- 2 ways of Creating thread.
- Wait(),notify and notifyAll() are in Object class
- Which exception is thrown by Sleep()

### **Lesson 21: LambdaExpressions**

- Discuss Simple lambda expressions, how to write the functional interface
- Printing the list using lambda expression

### **Lesson 22: Stream API**

- Consumer,BiFunctional,Predicate Functional interfaces – discuss with code snippets from the slides or solved examples
- Discuss below stream operations:  
Array.stream(), list.stream(), Map, filter, forEach(System.out::println),count(),sorted(),distinct(),limit(),reduce
- Which method used to implement parallel stream operation
- How to display lowest 3 values from a list by using stream methods . i.e stream().sorted().limit()