150+ Core Java Interview Questions and Answers for Freshers and Experienced in 2023

Java Interview Questions for Freshers

So let’s get started with the first set of basic core Java technical interview questions which is primarly useful for freshers.

1. What are the differences between C++ and Java?

* Concept.

C++ is not platform-independent; the principle behind C++ programming is “write once, compile anywhere.”

In contrast, because the byte code generated by the Java compiler is platform-independent, it can run on any machine, Java programs are written once and run everywhere.

Also Read: [Learn C++ Programming](https://www.simplilearn.com/tutorials/cpp-tutorial/learn-cpp-basics)

* Languages Compatibility.

C++ is a programming language that is based on the [C programming language](https://www.simplilearn.com/c-programming-article). Most other high-level languages are compatible with C++.

Most of the languages of Java are incompatible. Java is comparable to those of C and C++.

* Interaction with the library.

It can access the native system libraries directly in C++. As a result, it’s better for programming at the system level.

Java’s native libraries do not provide direct call support. You can use Java Native Interface or access the libraries.

* Characteristics.

C++ distinguishes itself by having features that are similar to procedural and object-oriented languages. The characteristic that sets Java apart is automatic garbage collection. Java doesn’t support destructors at the moment.

* The semantics of the type.

Primitive and object types in C++ have the same kind of semantics. The primitive and [object and classes of Java](https://www.simplilearn.com/tutorials/java-tutorial/java-classes-and-objects), on the other hand, are not consistent.

* In the context of Compiler and Interpreter.

Java refers to a compiled and interpreted language. In contrast, C++ is only a compiled language.

In Java, the source code is the compiled output is a platform-independent byte code.

In C++, the source program is compiled into an object code that is further executed to produce an output.

2. List the features of the Java Programming language?

A few of the significant features of [Java Programming Language](https://www.simplilearn.com/tutorials/java-tutorial/java-programming) are:

Easy: Java is a language that is considered easy to learn. One fundamental concept of OOP Java has a catch to understand.

Secured Feature: Java has a secured feature that helps develop a virus-free and tamper-free system for the users.

OOP: OOP stands for Object-Oriented Programming language. OOP signifies that, in Java, everything is considered an object.

Independent Platform: Java is not compiled into a platform-specific machine; instead, it is compiled into platform-independent bytecode. This code is interpreted by the Virtual Machine on which the platform runs.

3. What do you get in the Java download file? How do they differ from one another?

We get two major things along with the Java Download file.

JDK - [Java Development Kit](https://www.simplilearn.com/tutorials/java-tutorial/jdk-in-java)

JRE - Java Runtime Environment

|  |  |
| --- | --- |
| JDK | JRE |
| Abbreviation for JavaDevelopment Kit | Abbreviation for Java Runtime Environment |
| JDK is a dedicated kit for solely software development | JRE is a set of software and library designed for executing Java Programs |
| Unlike JVM, JDK is Platform Dependent | Unlike JVM, JRE is also Platform Dependent |
| JDK package is a set of tools for debugging and Developing | JRE Package is one that only supports files and libraries for a runtime environment |
| JDK package will be provided with an installer file | JRE Package does not get an installer but has only a runtime environment |

4. What is a ClassLoader?

A classloader in Java is a subsystem of Java Virtual Machine, dedicated to loading class files when a program is executed; ClassLoader is the first to load the executable file.

Java has Bootstrap, Extension, and Application classloaders.

Also Read: [What is Bootstrap and How to Embed Bootstrap into Angular?](https://www.simplilearn.com/tutorials/angular-tutorial/angular-bootstrap)

5. What are the Memory Allocations available in JavaJava?

Java has five significant types of memory allocations.

* Class Memory
* Heap Memory
* Stack Memory
* Program Counter-Memory
* Native Method Stack Memory

6. What are the differences between Heap and Stack Memory in Java?

[Stack memory in data structures is](https://www.simplilearn.com/tutorials/data-structure-tutorial/stacks-in-data-structures) the amount of memory allocated to each individual programme. It is a fixed memory space. Heap memory, in contrast, is the portion that was not assigned to the Java code but will be available for use by the Java code when it is required, which is generally during the program's runtime.

7. Will the program run if we write static public void main?

Yes, the program will successfully execute if written so. Because, in Java, there is no specific rule for the order of specifiers

8. What is the default value stored in Local Variables?

Neither the Local Variables nor any primitives and Object references have any default value stored in them.

9. Explain the expected output of the following code segment?

public class Simplilearn

{

    public static void main (String args[])

    {

        System.out.println(100 + 100 +“Simplilearn");

        System.out.println(“E-Learning Company" + 100 + 100);

    }

}

The answers for the two print statements are as follows.

* 200Simplilearn
* E-Learning Company100100

10. What is an Association?

An Association can be defined as a relationship that has no ownership over another. For example, a person can be associated with multiple banks, and a bank can be related to various people, but no one can own the other.

11. What do you mean by aggregation?

The term aggregation refers to the relationship between two classes best described as a “whole/part” and “has-a” relationship. This kind is the most specialized version of an association relationship. It contains the reference to another class and is said to have ownership of that class.

12. Define Copy Constructor in Java

A Copy Constructor in Java is a constructor that initializes an object through another object of the same class.

13. What is a Marker Interface?

An empty[interface in Java](https://www.simplilearn.com/tutorials/java-tutorial/java-interface) is referred to as a Marker interface. Serializable and Cloneable are some famous examples of Marker Interface.

14. What is Object Cloning?

An ability to recreate an object entirely similar to an existing object is known as Object Cloning in Java. Java provides a clone() method to clone a current object offering the same functionality as the original object.

15. Can Java be said to be the complete object-oriented programming language

No, Java cannot be treated as a complete object-oriented programming language.

16. What is an object-oriented paradigm?

A Paradigm that is based on the concepts of “Objects.” It contains data and code. Data that is in the form of fields, and regulation, that is in the form of procedures. The exciting feature of this paradigm is that the object’s procedures can access and often modify the data fields themselves.

17. Define Wrapper Classes in Java.

In Java, when you declare primitive datatypes, then Wrapper classes are responsible for converting them into objects(Reference types).

18. What is a singleton class in Java? And How to implement a singleton class?

A class that can possess only one object at a time is called a singleton class. To implement a singleton class given steps are to be followed:

* 1. Make sure that the class has only one object
  2. Give global access to that object

19. Define package in Java.

The package is a collective bundle of classes and interfaces and the necessary libraries and JAR files. The use of packages helps in code reusability.

20. Can you implement pointers in a Java Program?

Java Virtual Machine takes care of memory management implicitly. Java's primary motto was to keep programming simple. So, accessing memory directly through pointers is not a recommended action. Hence, pointers are eliminated in Java.

21. Differentiate between instance and local variables.

For instance, variables are declared inside a class, and the [scope of variables in javascript](https://www.simplilearn.com/tutorials/javascript-tutorial/scope-of-variables-in-javascript) is limited to only a specific object.

A local variable can be anywhere inside a method or a specific block of code. Also, the scope is limited to the code segment where the variable is declared.

22. Explain Java String Pool.

A collection of strings in Java's Heap memory is referred to as Java String Pool. In case you try to create a new string object, JVM first checks for the presence of the object in the pool. If available, the same object reference is shared with the variable, else a new object is created.

23. What is an Exception?

An [Exception handling in Java](https://www.simplilearn.com/tutorials/java-tutorial/exception-handling-in-java) is considered an unexpected event that can disrupt the program's normal flow. These events can be fixed through the process of Exception Handling.

24. What is the final keyword in Java?

The term final is a predefined word in Java that is used while declaring values to variables. When a value is declared using the final keyword, then the variable's value remains constant throughout the program's execution.

25. What happens when the main() isn't declared as static?

When the main method is not declared as static, then the program may be compiled correctly but ends up with a severe ambiguity and throws a run time error that reads "NoSuchMethodError."

26. Why is Java a platform independent language?

One of the most well-known and widely used programming languages is Java. It is a programming language that is independent of platforms. Java doesn't demand that the complete programme be rewritten for every possible platform. The Java Virtual Machine and Java Bytecode are used to support platform independence. Any JVM operating system can run this platform-neutral byte code. The application is run after JVM translates the byte code into machine code. Because Java programmes can operate on numerous systems without having to be individually rewritten for each platform, the language is referred to as "Write Once, Run Anywhere" (WORA).

27. Why is the main method static in Java?

Java's main() function is static by default, allowing the compiler to call it either before or after creating a class object. The main () function is where the compiler begins programme execution in every Java programme. Thus, the main () method needs to be called by the compiler. If the main () method is permitted to be non-static, the JVM must instantiate its class when calling the function.

28. What part of memory - Stack or Heap - is cleaned in the garbage collection process?

On Heap memory, garbage collection is employed to release the memory used by objects with no references. Every object created in the Heap space has access to the entire application and may be referred to from anywhere.

29. What is the difference between the program and the process?

A programme is a non-active entity that includes the collection of codes necessary to carry out a specific operation. When a programme is run, an active instance of the programme called a process is launched. A process is begun by a programme once it has been run. The process carries out the program's specified instructions.

30. What are the differences between constructor and method of a class in Java?

Initializing the state of the object is done by constructors. A function Object () { [native code] }, like methods, contains a group of statements (or instructions) that are carried out when an object is created. A method is a group of statements that work together to complete a certain task and return the outcome to the caller. A method has the option of working without returning anything.

31. Which among String or String Buffer should be preferred when there are a lot of updates required to be done in the data?

Because StringBuilder is quicker than StringBuffer, it is advised to utilize it wherever possible. However, StringBuffer objects are the best choice if thread safety is required.

32. What happens if the static modifier is not included in the main method signature in Java?

The main function is called by the JVM even before the objects are created, thus even if the code correctly compiles, there will still be an error at runtime.

33. Can we make the main() thread a daemon thread?

This technique designates whether the active thread is a user thread or a daemon thread. For instance, tU.setDaemon(true) would convert a user thread named tU into a daemon thread. On the other side, executing tD.setDaemon(false) would convert a Daemon thread, tD, into a user thread.

34. What happens if there are multiple main methods inside one class in Java?

There is no limit to the number of major approaches you can use. Overloading is the ability to have main methods with different signatures than main (String []), and the JVM will disregard those main methods.

35. How does an exception propagate in the code?

In the event that an exception is not caught, it is initially thrown from the top of the stack and then moves down the call stack to the preceding method. The runtime system looks for a way to handle an exception that a method throws. The ordered list of methods that were called to get to the method where the error occurred is the collection of potential "somethings" that can be used to manage the exception. The call stack is the list of methods, and exception propagation is the search technique.

36. How do exceptions affect the program if it doesn't handle them?

If you don't deal with an exception once it occurs, the programme will end abruptly and the code after the line where the exception occurred won't run.

37. Is it mandatory for a catch block to be followed after a try block?

Each attempt block does not necessarily have to be followed by a catch block. Either a catch block or a final block ought to come after it. Additionally, any exceptions that are expected to be thrown should be mentioned in the method's throws clause.

38. Can you call a constructor of a class inside another constructor?

Yes, a class may include any number of constructors, and each function Object () {[native code] } may call the others using the this() function Object() { [native code] } call function [please do not mix the this() function Object() { [native code] } call function with this keyword]. The constructor's first line should be either this () or this(args). Overloading of constructors is what this is called.

39. Contiguous memory locations are usually used for storing actual values in an array but not in ArrayList. Explain.

Primitive data types like int, float, and others are typically present in an array. In such circumstances, the array immediately saves these elements at contiguous memory regions. While an ArrayList does not contain primitive data types. Instead of the actual object, an ArrayList includes the references to the objects' many locations in memory. The objects are not kept in consecutive memory regions because of this.

40. Why does the java array index start with 0?

The distance from the array's beginning is just an offset. There is no distance because the first element is at the beginning of the array. Consequently, the offset is 0.

41. Why is the remove method faster in the linked list than in an array?

Because there is no background scaling of an array, insertion, addition, and removal operations are quicker with a LinkedList. Only references in adjacent items need to update when a new item is added in the middle of the list.

42. How many overloaded add() and addAll() methods are available in the List interface? Describe the need and uses.

List is an interface in the Java Collections Framework. The add() and addAll() methods      are the main methods at the List interface. The add() method is used to add an element to the list, while the addAll() method is used to add a collection of elements to the list.

The List interface contains two overloaded versions of the add() method:

The first add() method accepts a single argument of type E, the element to be added to the list.

The second add() method accepts a variable number of arguments of type E, which are the elements to be added to the list.

The List interface also contains two overloaded versions of the addAll() method:

The first addAll() method accepts a single argument of type Collection<? Extends E>, which is the collection of elements to be added to the list.

The second addAll() method accepts a variable number of arguments of type E, which are the elements to be added to the list.

43. How does the size of ArrayList grow dynamically? And also state how it is implemented internally?

A resizable array implementation in Java is called ArrayList. Dynamically expanding array lists make it possible to add new elements at any time. The underlying data structure of the ArrayList is an array of the Object class. The ArrayList class in Java has three constructors. There are available readObject and writeObject methods specific to it. The Object Array in an ArrayList is temporary. There are implemented and Serialization-capable versions of RandomAccess, Cloneable, and java.io (that are Marker Interface in Java).

44. Although inheritance is a popular OOPs concept, it is less advantageous than composition. Explain.

A class's testability is improved through composition over inheritance. If a class is comprised of another class, it is simple to create a mock object to simulate the combined class for testing purposes. This privilege is not given by inheritance. Even while Composition and Inheritance both let you reuse code, Inheritance has the drawback of breaking encapsulation. If the function of the subclass depends on the superclass's action, it suddenly becomes vulnerable. Sub-class functionality may be broken without any alteration on the part of the super-class when its behaviour changes.

45. What are Composition and Aggregation? State the difference.

Aggregation (HAS-A) and composition are its two forms (Belongs-to). In contrast to composition, which has a significant correlation, the aggregation has a very modest association. Aggregation can be thought of as a more confined version of the composition. Since all compositions are aggregates but not all aggregates are compositions, aggregate can be thought of as the superset of composition.

46. How is the creation of a String using new() different from that of a literal?

The new () operator always produces a new object in heap memory when creating a String object. The String pool may return an existing object if we build an object using the String literal syntax, such as "Baeldung," on the other hand.

47. How is the ‘new' operator different from the ‘newInstance()' operator in java?

Both the new operator and the newInstance() method are used to create objects in Java. If we already know the kind of object to create, we can use the new operator; however, if the type of object to create is supplied to us at runtime, we must use the newInstance() function.

48. Is exceeding the memory limit possible in a program despite having a garbage collector?

Yes, even with a garbage collector in place, the programme could still run out of memory. Garbage collection aids in identifying and removing programme objects that are no longer needed in order to release the resources they use. When an object in a programme cannot be reached, trash collection is executed with respect to that object. If there is not enough memory available to create new objects, a garbage collector is used to free up memory for things that have been removed from the scope. When the amount of memory released is insufficient for the creation of new objects, the program's memory limit is exceeded.

49. Why is synchronization necessary? Explain with the help of a relevant example.

Multiple threads trying to access the same resources in a multi-threaded software may frequently result in unexpected and incorrect outcomes. Therefore, it must be ensured through some form of synchronization that only one thread can access the resource at any given time. Java offers a method for setting up threads and synchronizing their operations with the aid of synchronized blocks. The synchronized keyword in Java is used to identify synchronized blocks. In Java, a synchronized block is one that is tied to an object. Only one thread can be running at a time inside synchronized blocks since they are all synchronized on the same object. Until the thread inside the synchronized block exits the block, all other threads trying to enter the block are blocked.

50. Define System.out.println().

System.out.println() in Java outputs the argument that was supplied to it. On the monitor, the println() method displays the findings. An objectname is typically used to call a method.

51. Can you explain the Java thread lifecycle?

A thread can be in any of the following states in Java. These are the states:

* New: A new thread is always in the new state when it is first formed. The function hasn't been run yet, thus it hasn't started to execute for a thread in the new state.
* Active: A thread switches from the new state to the active state when it calls the start() method. The runnable state and the running state are both contained within the active state.
* Blocked or Waiting: A thread is either in the blocked state or the waiting state when it is inactive for a while (but not indefinitely).
* Timed waiting: When we use the sleep () method on a particular thread, we are actually engaging in timed waiting. The thread enters the timed wait state using the sleep () function. The thread awakens when the allotted time has passed and resumes execution where it left off.
* Termination: A thread that has been terminated means it is no longer active in the system. In other words, the thread is inactive and cannot be revived (made active again after being killed).

52. What could be the tradeoff between the usage of an unordered array versus the usage of an ordered array?

When opposed to an unordered array, which has a time complexity of O, an ordered array's search times have a time complexity of O(log n) (n). Due to the need to shift the elements with higher values to create room for the new member, an ordered array has a temporal complexity of O(n) during the insertion process. Instead, an unordered array's insertion operation requires a constant O amount of time (1).

53. Is it possible to import the same class or package twice in Java and what happens to it during runtime?

The same package or class may be imported more than once. Neither the JVM nor the compiler raise an objection. Even if you import the same class several times, the JVM will only internally load it once.

54. In case a package has sub packages, will it suffice to import only the main package? e.g. Does importing of com.myMainPackage.\* also import com.myMainPackage.mySubPackage.\*?

Sub-packages won't be imported when a package is imported. When you import a package, all of its classes and interfaces—with the exception of those from its sub-packages—are imported.

55. Will the final block be executed if the code System.exit(0) is written at the end of the try block?

The system is established as the last line to be run, after which nothing will happen, therefore both the catch and finally blocks are essentially ignored.

56. Explain the term “Double Brace Initialisation” in Java?

The outer braces of the double-brace initialization construct an anonymous class that is descended from the provided class and gives an initializer block for that class (the inner braces).

57. Why is it said that the length() method of String class doesn't return accurate results?

Since this char [] array is used by the Java String class internally, the length variable cannot be made public.

58. What are the possible ways of making objects eligible for garbage collection (GC) in Java?

If a reference variable for an object is removed from the programme while it is running, the object may be trash collected. They are also referred to as inaccessible objects occasionally.  The new operator returns a reference to an object after dynamically allocating memory for it.

59. In the below Java Program, how many objects are eligible for garbage collection?

I don't know about the program, but generally, three objects are eligible for garbage collection.

The first object is created when the program is started and is no longer needed when the program ends.

The second object is created when the user inputs their name and is no longer required when the program ends.

The third object is created when the user inputs their address and is no longer needed when the program ends.

60. What is the best way to inject dependency? Also, state the reason.

Constructor injection. A class requesting its dependencies through its function Object() { [native code] } is the most typical instance of dependency injection. Since the client cannot be constructed without the required dependencies, this guarantees that it is always in a correct state.

61. How we can set the spring bean scope. And what supported scopes does it have?

There are four ways to set the scope of a Spring bean: singleton, prototype, request, and session.

The singleton scope creates a single instance of a bean, which is shared by all objects that request it.

The prototype scope creates a new instance of a bean for each object that requests it.

The request and session scopes are only available in a web-based context. The request scope creates a new bean instance for each HTTP request, and the session scope creates a single instance of a bean shared by all objects in a single HTTP session.

62. What are the different categories of Java Design patterns?

The three categories of Java design patterns are creational, structural, and behavioural design patterns.

63. What is a Memory Leak? Discuss some common causes of it.

A memory leak is the slow degradation of system performance over time brought on by the fragmentation of a computer's RAM as a result of shoddy application design or programming that fails to release memory chunks when they are no longer required. These memory leaks frequently result from session items in excess, insertion into Collection objects without deletion, infinite caches, excessive page switching on the operating system, listener methods that are not called, and bespoke data structures that are poorly written.

64. Assume a thread has a lock on it, calling the sleep() method on that thread will release the lock?

No, the thread might release the locks using notify, notifyAll(), and wait() methods.

65. Write a Java Program to print Fibonacci Series using Recursion.

class FibonacciExample2{

 static int n1=0,n2=1,n3=0;

 static void printFibonacci(int count){

    if(count>0){

         n3 = n1 + n2;

         n1 = n2;

         n2 = n3;

         System.out.print(" "+n3);

         printFibonacci(count-1);

     }

 }

 public static void main(String args[]){

  int count=10;

  System.out.print(n1+" "+n2);//printing 0 and 1

  printFibonacci(count-2);//n-2 because 2 numbers are already printed

 }

 }

66. Write a Java program to check if the two strings are anagrams.

import java.util.Arrays;

public class AnagramString {

    static void isAnagram(String str1, String str2) {

        String s1 = str1.replaceAll("\\s", "");

        String s2 = str2.replaceAll("\\s", "");

        boolean status = true;

        if (s1.length() != s2.length()) {

            status = false;

        } else {

            char[] ArrayS1 = s1.toLowerCase().toCharArray();

            char[] ArrayS2 = s2.toLowerCase().toCharArray();

            Arrays.sort(ArrayS1);

            Arrays.sort(ArrayS2);

            status = Arrays.equals(ArrayS1, ArrayS2);

        }

        if (status) {

            System.out.println(s1 + " and " + s2 + " are anagrams");

        } else {

            System.out.println(s1 + " and " + s2 + " are not anagrams");

        }

    }

    public static void main(String[] args) {

        isAnagram("Keep", "Peek");

        isAnagram("Mother In Law", "Hitler Woman");

    }

}

Output

Keep and Peek are anagrams

MotherInLaw and HitlerWoman are anagrams

67. Write a Java Program to find the factorial of a given number.

4! = 4\*3\*2\*1 = 24

5! = 5\*4\*3\*2\*1 = 120

68. Given an array of non-duplicating numbers from 1 to n where one number is missing, write an efficient java program to find that missing number.

Input: arr[] = {1, 2, 4, 6, 3, 7, 8}, N = 8

             Output: 5

            Explanation: The missing number between 1 to 8 is 5

69. Write a Java Program to check if any number is a magic number or not. A number is said to be a magic number if after doing the sum of digits in each step and in turn doing the sum of digits of that sum, the ultimate result (when there is only one digit left) is 1.

  // Java program to check if

// a number is Magic number.

class GFG

{

public static boolean isMagic(int n)

{

            int sum = 0;

            // Note that the loop continues

            // if n is 0 and sum is non-zero.

            // It stops when n becomes 0 and

            // sum becomes single digit.

            while (n > 0 || sum > 9)

            {

                           if (n == 0)

                           {

                                          n = sum;

                                          sum = 0;

                           }

                           sum += n % 10;

                           n /= 10;

            }

            // Return true if sum becomes 1.

            return (sum == 1);

}

// Driver code

public static void main(String args[])

            {

            int n = 1234;

            if (isMagic(n))

                           System.out.println("Magic Number");

            else

                           System.out.println("Not a magic Number");

            }

}

class InvalidAgeException  extends Exception

{

    public InvalidAgeException (String str)

    {

// calling the constructor of parent Exception

        super(str);

    }

}

70. Write a Java program to create and throw custom exceptions.

// class that uses custom exception InvalidAgeException

public class TestCustomException1

{

    // method to check the age

    static void validate (int age) throws InvalidAgeException{

       if(age < 18){

        // throw an object of user defined exception

        throw new InvalidAgeException("age is not valid to vote");

    }

       else {

        System.out.println("welcome to vote");

        }

     }

    // main method

    public static void main(String args[])

    {

        try

        {

            // calling the method

            validate(13);

        }

        catch (InvalidAgeException ex)

        {

            System.out.println("Caught the exception");

            // printing the message from InvalidAgeException object

            System.out.println("Exception occured: " + ex);

        }

        System.out.println("rest of the code...");

    }

}

71. Write a Java program to rotate arrays 90 degree clockwise by taking matrices from user input.

public class RotateMatrixClockwise

{

public static void main(String args[])

{

//matrix to rotate

int a[][]= {{1,2,3},{4,5,6},{7,8,9}};

System.out.println("Original Matrix: \n");

//loop for rows

for(int i=0;i<3;i++)

{

//loop for columns

for(int j=0;j<3;j++)

{

//prints the elements of the original matrix

System.out.print(" "+a[i][j]+"\t");

}

System.out.println("\n");

}

System.out.println("Rotate Matrix by 90 Degrees Clockwise: \n");

for(int i=0;i<3;i++)

{

for(int j=2;j>=0;j--)

{

//prints the elements of the rotated matrix

System.out.print(""+a[j][i]+"\t");

}

System.out.println("\n");

}

}

}

72. Write a java program to check if any number given as input is the sum of 2 prime numbers.

// C program to check if a prime number

// can be expressed as sum of

// two Prime Numbers

#include <stdio.h>

#include <math.h>

#include <stdbool.h>

// Function to check whether a number

// is prime or not

bool isPrime(int n)

{

            if (n <= 1)

                           return false;

            for (int i = 2; i <= sqrt(n); i++)

            {

                           if (n % i == 0)

                                          return false;

            }

            return true;

}

// Function to check if a prime number

// can be expressed as sum of

// two Prime Numbers

bool isPossible(int N)

{

            // if the number is prime,

            // and number-2 is also prime

            if (isPrime(N) && isPrime(N - 2))

                           return true;

            else

                           return false;

}

// Driver code

int main()

{

            int n = 13;

            if (isPossible(n))

                           printf("%s", "Yes");

            else

                           printf("%s", "No");

            return 0;

}

73. Write a Java program for solving the Tower of Hanoi Problem.

 // Java recursive program to solve tower of hanoi puzzle

class GFG

{

            // Java recursive function to solve tower of hanoi puzzle

            static void towerOfHanoi(int n, char from\_rod, char to\_rod, char aux\_rod)

            {

                           if (n == 1)

                           {

                                          System.out.println("Move disk 1 from rod " + from\_rod + " to rod " +to\_rod);

                                          return;

                           }

                           towerOfHanoi(n-1, from\_rod, aux\_rod, to\_rod);

                           System.out.println("Move disk " + n + " from rod " + from\_rod + " to rod " +to\_rod);

                           towerOfHanoi(n-1, aux\_rod, to\_rod, from\_rod);

            }

            // Driver method

            public static void main(String args[])

            {

                           int n = 4; // Number of disks

                           towerOfHanoi(n, \'A\', \'C\', \'B\'); // A, B and C are names of rods

            }

}

74. Implement Binary Search in Java using recursion.

// Java Program to Illustrate Recursive Binary Search

// Importing required classes

import java.util.\*;

// Main class

class GFG {

            // Method 1

            // Recursive binary search

            // Returns index of x if it is present

            // in arr[l..r], else return -1

            int binarySearch(int arr[], int l, int r, int x)

            {

                           // Restrict the boundary of right index

                           // and the left index to prevent

                           // overflow of indices

                           if (r >= l && l <= arr.length - 1) {

                                          int mid = l + (r - l) / 2;

                                          // If the element is present

                                          // at the middle itself

                                          if (arr[mid] == x)

                                                         return mid;

                                          // If element is smaller than mid, then it can

                                          // only be present in left subarray

                                          if (arr[mid] > x)

                                                         return binarySearch(arr, l, mid - 1, x);

                                          // Else the element can only be present

                                          // in right subarray

                                          return binarySearch(arr, mid + 1, r, x);

                           }

                           // We reach here when element is not present in

                           // array

                           return -1;

            }

            // Method 2

            // Main driver method

            public static void main(String args[])

            {

                           // Creating object of above class

                           GFG ob = new GFG();

                           // Custom input array

                           int arr[] = { 2, 3, 4, 10, 40 };

                           // Length of array

                           int n = arr.length;

                           // Custom element to be checked

                           // whether present or not

                           int x = 10;

                           // Calling above method

                           int result = ob.binarySearch(arr, 0, n - 1, x);

                           // Element present

                           if (result == -1)

                                          // Print statement

                                          System.out.println("Element not present");

                           // Element not present

                           else

                                        // Print statement

                                          System.out.println("Element found at index "

                                                                                                      + result);

            }

}

75. Is delete, next, main, exit or null keyword in java?

No, these keywords do not exist in Java. Delete, Next, Exit are the operations performed in the Java program, Main is the predefined method, and Null is the default String type.

With this we are done with the first section that is Basic Java Interview Question, Now, lets move on to our next section of Intermediate Java Interview Questions.

Java Interview Coding Questions For Intermediate

Now, let's have a look at some of the most asked Java technical interview questions for intermediate experienced professionals.

76. What is JDK? Mention the variants of JDK?

JDK is an abbreviation for Java Development Kit. It is a combined Package of JRE and Developer tools used for [designing Java Applications](https://www.simplilearn.com/popular-java-applications-article) and Applets. Oracle has the following variants.

* JDK Standard Edition
* JDK Enterprise Edition
* JDK Micro Edition

77. What is the difference between JDK, JRE, and JVM?

JVM has a Just in Time (JIT) compiler tool that converts all the Java source code into the low-level compatible machine language. Therefore, it runs faster than the regular application.

JRE has class libraries and other JVM supporting files. But it doesn’t have any tool for java development such as compiler or debugger.

JDK has tools that are required to write Java Programs and uses JRE to execute them. It has a compiler, Java application launcher, and an applet viewer.

78. What is a JIT compiler?

JIT compiler refers to Just in Time compiler. It is the simplest way of executing the computer code that takes in compilation during the execution of a program rather than before performance. It commonly uses bytecode translation to machine code. It is then executed directly.

79. What are Brief Access Specifiers and Types of Access Specifiers?

Access Specifiers are predefined keywords used to help JVM understand the scope of a variable, method, and class. We have four access specifiers.

* Public Access Specifier
* Private Access Specifier
* Protected Access Specifier
* Default Access Specifier

80. How many types of constructors are used in Java?

There are two [types of constructors in Java](https://www.simplilearn.com/tutorials/java-tutorial/constructor-in-java).

Parameterized Constructors: Parameterized constructor accepts the parameters with which users can initialize the instance variables. Users can initialize the class variables dynamically at the time of instantiating the class.

Default constructors: This type doesn’t accept any parameters; rather, it instantiates the class variables with their default values. It is used mainly for object creation.

81. Can a constructor return a value?

Yes, A constructor can return a value. It replaces the class's current instance implicitly; you cannot make a constructor return a value explicitly.

82. Explain ‘this’ keyword in Java.

The term "this" is a particular keyword designated as a reference keyword. The "this" keyword is used to refer to the current class properties like method, instance, variable, and constructors.

83. Explain ‘super’ keyword in Java.

The term "super" is a particular keyword designated as a reference keyword. The "super" keyword refers to the immediate parent class object.

84. Explain Method Overloading in Java.

The process of creating multiple method signatures using one method name is called Method Overloading in Java. Two ways to achieve method overloading are:

1. Varying the number of arguments
2. Changing the return type of the Method

85. Can we overload a static method?

No, Java does not support the Overloading of a [static method.](https://www.simplilearn.com/tutorials/java-tutorial/static-keyword-in-java) The process would throw an error reading "static method cannot be referenced."

86. Define Late Binding.

Binding is a process of unifying the method call with the method's code segment. Late binding happens when the method's code segment is unknown until it is called during the runtime.

87. Define Dynamic Method Dispatch.

The Dynamic method dispatch is a process where the method call is executed during the runtime. A reference variable is used to call the super-class. This process is also known as Run-Time Polymorphism.

88. Why is the delete function faster in the linked list than an array?

Delete Function is faster in [linked lists in Java](https://www.simplilearn.com/tutorials/java-tutorial/linked-list-in-java) as the user needs to make a minor update to the pointer value so that the node can point to the next successor in the list

89. Give a briefing on the life cycle of a thread.

The life cycle of a thread includes five stages, as mentioned below.

1. New Born State
2. Runnable State
3. Running State
4. Blocked State
5. Dead State

90. Explain the difference between >> and >>> operators.

Although they look similar, there is a massive difference between both.

* >> operator does the job of right shifting the sign bits
* >>> operator is used in shifting out the zero-filled bits

91. Brief the life cycle of an applet.

The life cycle of an applet involves the following.

1. Initialization
2. Start
3. Stop
4. Destroy
5. Paint

92. Why are generics used in Java Programming?

Compile-time type safety is provided by using generics. Compile-time type safety allows users to catch unnecessary invalid types at compile time. Generic methods and classes help programmers specify a single method declaration, a set of related methods, or related types with an available class declaration.

93. Explain the Externalizable interface.

The Externalizable interface helps with control over the process of serialization. An "externalisable" interface incorporates readExternal and writeExternal methods.

94. What is the Daemon Thread?

The Daemon thread can be defined as a thread with the least priority. This Daemon thread is designed to run in the background during the Garbage Collection in Java.

The setDaemon() method creates a Daemon thread in Java.

95. Explain the term enumeration in Java.

Enumeration or [enum is an interface in Java](https://www.simplilearn.com/tutorials/java-tutorial/enum-in-java). Enum allows the sequential access of the elements stored in a collection in Java.

96. Why is Java is Dynamic?

Java is designed to adapt to an evolving environment. Java programs include a large amount of runtime information that is used to resolve access to objects in real-time.

97. Can you run a code before executing the main method?

Yes, we can execute any code, even before the main method. We will be using a static block of code when creating the objects at the class's load time. Any statements within this static block of code will get executed at once while loading the class, even before creating objects in the main method.

98. How many times is the finalize method called?

The finalize method is called the Garbage collector. For every object, the Garbage Collector calls the finalize() method just for one time.

Java Interview Questions for Experienced

Now, lets move on to our last section of Advanced Core Java Interview Questions which is primarly useful for experienced and working professionals.

99. Can "this" and "super" keywords be used together?

No, "this" and "super" keywords should be used in the first statement in the class constructor. The following code gives you a brief idea.

public class baseClass {

     baseClass() {

         super();

         this();

         System.out.println(" baseClass object is created");

     }

     public static void main(String []args){

         baseClass bclass = new baseClass();

     }

}

100. What is a JSP page?

JSP is an abbreviation for Java Servlet Page. The JSP page consists of two types of text.

* Static Data
* JSP elements

|  |  |  |  |  |  |  |  |  |  |  |  |  |
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101. What is JDBC?

JDBC is an abbreviation for Java Database Connector.

JDBC is an abstraction layer used to establish connectivity between an existing database and a Java application

102. Explain the various directives in JSP.

Directives are instructions processed by JSP Engine. After the JSP page is compiled into a Servlet, Directives set page-level instructions, insert external files, and define customized tag libraries. Directives are defined using the symbols below:

start with "< %@" and then end with "% >"

The various types of directives are shown below:

* Include directive

It includes a file and combines the content of the whole file with the currently active pages.

* Page directive

Page Directive defines specific attributes in the JSP page, like the buffer and error page.

* Taglib

Taglib declares a custom tag library, which is used on the page.

103. What are the observer and observable classes?

Objects that inherit the "Observable class" take care of a list of "observers."

When an Observable object gets upgraded, it calls the update() method of each of its observers.

After that, it notifies all the observers that there is a change of state.

The Observer interface gets implemented by objects that observe Observable objects.

104. What is Session Management in Java?

A session is essentially defined as the random conversation's dynamic state between the client and the server. The virtual communication channel includes a string of responses and requests from both sides. The popular way of implementing session management is establishing a session ID in the client's communicative discourse and the server.

105. Briefly explain the term Spring Framework.

Spring is essentially defined as an application [framework in Java](https://www.simplilearn.com/tutorials/java-tutorial/java-frameworks) and inversion of control containers for Java. The spring framework creates enterprise applications in Java. Especially useful to keep in mind that the spring framework's central features are essentially conducive to any Java application.

106. How to handle exceptions in Spring MVC Framework?

Spring MVC has two approaches for handling the exceptions:

* Exception handler method: In this kind of exception handling, the user will get the @ExceptionHandler annotation type used to annotate a method to handle exceptions.
* XML Configuration: The user can use the SimpleMappingExceptionResolver bean in Spring’s application file and map the exception.

107. What is JCA in Java?

Java Cryptography Architecture gives a platform and provides architecture and application programming interfaces that enable decryption and encryption.

Developers use Java Cryptography Architecture to combine the application with the security applications. Java Cryptography Architecture helps in implementing third party security rules and regulations.

Java Cryptography Architecture uses the hash table, encryption message digest, etc. to implement the security.

108. Explain JPA in Java.

The Java Persistence API enables us to create the persistence layer for desktop and web applications. Java Persistence deals in the following:

1. Java Persistence API
2. Query Language
3. Java Persistence Criteria API
4. Object Mapping Metadata

109. Explain the different authentications in Java Servlets.

Authentication options are available in Servlets: There are four different options for authentication in servlet:

* Basic Authentication:

Usernames and passwords are given by the client to authenticate the user.

* Form-based authentication:

In this, the login form is made by the programmer by using HTML.

* Digest Authentication:

It is similar to basic authentication, but the passwords are encrypted using the Hash formula. Hash Formula makes digest more secure.

* Client certificate Authentication:

It requires that each client accessing the resource has a certificate that it sends to authenticate itself. Client Authentication requires the SSL protocol.

110. Explain FailFast iterator and FailSafe iterator along with examples for each.

FailFast iterators and FailSafe iterators are used in Java Collections.

FailFast iterators do not allow changes or modifications to the Java Collections, which means they fail when the latest element is added to the collection or an existing element gets removed from the collection. The FailFast iterators tend to fail and throw an exception called ConcurrentModificationException.

Ex: ArrayList, HashMap

Whereas, on the other hand, FailSafe iterators allow changes or modifications to be done on the Java Collections. It is possible, as the FailSafe iterators usually operate on the cloned copy of the collection. Hence, they do not throw any specific exception.

Ex: CopyOnWriteArrayList

111. How do we reverse a string?

The [string can be reversed](https://www.simplilearn.com/tutorials/java-tutorial/reverse-a-string-in-java) by using the following program.

package simplilearnJava;

public class StringReverse {

public static void main(String args[]) {

String str = "Simplilearn";

String reverse = new StringBuffer(str).reverse().toString();

System.out.printf("Actual Word: %s, Word after reversing %s", str, reverse);

}

public static String reverse(String source) {

if (source == null || source.isEmpty()) {

return source;

}

String reverse = "";

for (int i = source.length() - 1; i >= 0; i--) {

reverse = reverse + source.charAt(i);

}

return reverse;

}

}

Expected Output:

Actual Word: Simplilearn, Word after reversing nraelilpmiS

112. Write a program to find the square root of a number.

The Square root of a number can be found by using the following program.

package simplilearnJava;

import java.util.Scanner;

public class SRoot {

public static void main(String args[]) {

try (Scanner sc = new Scanner(System.in)) {

System.out.println("Input a number to find square root: ");

double square = sc.nextDouble();

double squareRoot = Math.sqrt(square);

System.out.printf("The square root is: %f ", squareRoot);

}

}

}

Expected Output:

Input a number to find square root:

25

The

113. Write a program that detects the duplicate characters in a string.

The program that finds the duplicate elements in a string is written below:

package simplilearnJava;

import java.util.HashMap;

import java.util.Map;

import java.util.Set;

public class FindDuplicate {

public static void main(String args[]) {

printDuplicateCharacters("Simplilearn");

}

public static void printDuplicateCharacters(String word) {

char[] characters = word.toCharArray();

Map<Character, Integer> charMap = new HashMap<Character, Integer>();

for (Character ch : characters) {

if (charMap.containsKey(ch)) {

charMap.put(ch, charMap.get(ch) + 1);

} else {

charMap.put(ch, 1);

}

}

Set<Map.Entry<Character, Integer>> entrySet = charMap.entrySet();

System.out.printf("List of duplicate characters in String '%s' %n", word);

for (Map.Entry<Character, Integer> entry : entrySet) {

if (entry.getValue() > 1) {

System.out.printf("%s: %d %n", entry.getKey(), entry.getValue());

}

}

}

}

Expected output:

List of duplicate characters in String 'Simplilearn.'

i: 2

l: 2

114. Write a Program to remove duplicates in an ArrayList.

The following program can be implemented to remove duplicate elements in an ArrayList

package simplilearnJava;

import java.util.ArrayList;

import java.util.LinkedHashSet;

import java.util.List;

import java.util.Set;

public class ArrayDuplicate {

public static void main(String args[]) {

List<Integer> num = new ArrayList<Integer>();

num.add(1);

num.add(2);

num.add(3);

num.add(4);

num.add(5);

num.add(6);

num.add(3);

num.add(4);

num.add(5);

num.add(6);

System.out.println("Your list of elements in ArrayList : " + num);

Set<Integer> primesWithoutDuplicates = new LinkedHashSet<Integer>(num);

num.clear();

num.addAll(primesWithoutDuplicates);

System.out.println("list of original numbers without duplication: " + num);

}

}

Expected Output:

Your list of elements in ArrayList : [1, 2, 3, 4, 5, 6, 3, 4, 5, 6]

list of original numbers without duplication: [1, 2, 3, 4, 5, 6]

115. Find the word count in a string using HashMap Collection.

The following program can be used for word count.

package simplilearnJava;

import java.util.HashMap;

public class WordCount {

public static void main(String[] args) {

String str = "Hello World, Welcome to Simplilearn";

String[] split = str.split(" ");

HashMap<String, Integer> map = new HashMap<String, Integer>();

for (int i = 0; i < split.length; i++) {

if (map.containsKey(split[i])) {

int count = map.get(split[i]);

map.put(split[i], count + 1);

} else {

map.put(split[i], 1);

}

}

System.out.println(map);

}

}

Expected Output:

{Hello=1, Simplilearn=1, Welcome=1, to=1, World,=1}

116. Write a program to find the Second Highest number in an ArrayList

The following program can be used to find the second biggest number in an array list.

package simplilearnJava;

public class NextHighest {

public static void main(String[] args)

    {

        int array[] = { 1, 2, 3, 4, 11, 12, 13, 14, 21, 22, 23, 24, 31, 32};

        int high = 0;

        int nextHigh = 0;

        System.out.println("The given array is:");

        for (int i = 0; i < array.length; i++)

        {

            System.out.print(array[i] + "\t");

        }

        for (int i = 0; i < array.length; i++)

        {

            if (array[i] > high)

            {

                nextHigh = high;

                high = array[i];

            }

            else if (array[i] > nextHigh)

            {

                nextHigh = array[i];

            }

        }

        System.out.println("Second Highest is:" + nextHigh);

        System.out.println("Highest Number is: "  +high);

    }

}

Expected Output:

The given array is:

1 2 3 4 11 12 13 14 21 22 23 24 31 32

Second Highest is:31

The highest number is: 32

117. What is the difference between System.out, System.err, and System.in?

System.out and System.err represent the monitor by default and thus can be used to send data or results to the monitor. System.out is used to display normal messages and results. System.eerr is used to display error messages. System.in represents InputStream object which by default represents standard input device, i.e., keyboard.

118. Could you provide some implementation of a Dictionary having a large number of words?

The simplest implementation that can be given is that of a List wherein one can place ordered words and perform a Binary search. The other implementation with a better search performance is HashMap where the key is used as the first character of the word and the value as a LinkedList.

Up another level, there are HashMaps like:

hashmap {

a (key) -> hashmap (key-aa , value (hashmap(key-aaa,value)

b (key) -> hashmap (key-ba , value (hashmap(key-baa,value)

z (key) -> hashmap (key-za , value (hashmap(key-zaa,value)

}

Up to n levels where n is the average size of the word in the dictionary.

119. How would you tackle it if you might have to encounter pattern programs in Java?

Solution - [Top 25 Most Frequently asked Pattern Programs in Java](https://www.simplilearn.com/tutorials/java-tutorial/pattern-programs-in-java)

With this, we have come to the end of this Java Interview Questions article. Moving ahead, we will look into the next crucial steps that you could pursue, to master Java.

120. What do you understand by an instance variable and a local variable?

Generally, instance variables are declared in a class but outside methods whereas a local variable is declared within the blocks of code.

//Local Variable

import Java.io.\*;

class Main {

public static void main(String[] args)

{

int var = 145;

System.out.println("Local Variable: " + var);

}

}

//Instance variable

import Java.io.\*;

class Main {

public int value = 12;

public static void main(String[] args)

{

Main va = new Main();

System.out.println("My value is: " + va.value);

}

}

121. Can the main method be overloaded?

Yes, the main method can be overloaded as many times as we want. Nevertheless, JVM prefers to call the main method with the help of its predefined calling method.

Example:

class Main {

    public static void main(String args[]) {

        System.out.println(" Main Method");

    }

    public static void main(int[] args){

        System.out.println("Overloaded Integer array Main Method");

    }

    public static void main(char[] args){

        System.out.println("Overloaded Character array Main Method");

    }

    public static int main(double[] args){

        System.out.println("Overloaded Double array Main Method");

    }

    public static void main(float args){

        System.out.println("Overloaded float Main Method");

    }

}

122. Comment on method overloading and overriding by citing relevant examples.

Method overloading occurs during the compile time, whereas method overriding occurs during the run time. Static binding is used during overloading, whereas dynamic binding is used during methods overriding.

//Function overloading

#function1

void addPodium(int a, int b)

{

System.out.println(a + b);

}

#function2

float addPodium(float a, float b, float c)

{

System.out.println(a + b + c);

}

//Function overriding

class Parent {

    void show()

    {

        System.out.println("I am Parent");

    }

}

class Child extends Parent {

    void show()

    {

        System.out.println("I am Child");

    }

}

class Main {

    public static void main(String[] args)

    {

        Parent obja = new Parent();

        obja.show();

        Parent objb = new Child();

        objb.show();

    }

}

123. A single try block and multiple catch blocks can co-exist in a Java Program. Explain.

One or more catch blocks can follow a try block. Each catch block must have a unique exception handler. So, if you want to perform multiple tasks in response to various exceptions, use the Java multi-catch block.

124. Do final, finally and finalize keywords have the same function?

No, final, finally and finalize keywords have different functionalities.

Final is used to restrict classes, variables, or methods, the final keyword.

Finally is used to execute the code written inside the block without handling any exceptions.

Finalize is used to call the function of the implementation of cleaning the garbage collection of an object.

125. When can you use the "super" keyword?

Basically, the super keyword is used to refer to the parent class. When there are the same fields in both parent and child classes, then one can use a super keyword to access data members of the parent class.

126. What are shallow copy and deep copy in Java?

In the case of a shallow copy, primitive data types are copied, whereas in the case of a deep copy along with primitive data types the object references are also copied.

127. Using relevant properties highlight the differences between interfaces and abstract classes.

An abstract class can have a combination of both abstract and non-abstract methods, whereas an interface has only abstract methods in it.

128. What are the different ways of thread usage?

There are two ways to define and implement a thread in Java. They are by implementing the runnable interface and extending the thread class.

Extending the Thread class

class InterviewBitThreadExample extends Thread{

   public void run(){

       System.out.println("Thread runs...");

   }

   public static void main(String args[]){

       InterviewBitThreadExample ib = new InterviewBitThreadExample();

       ib.start();

   }

}

Implementing the Runnable interface

class InterviewBitThreadExample implements Runnable{

   public void run(){

       System.out.println("Thread runs...");

   }

   public static void main(String args[]){

       Thread ib = new Thread(new InterviewBitThreadExample());

       ib.start();

   }

}

Implementing a thread using the method of Runnable interface is more preferred and advantageous as Java does not have support for multiple inheritances of classes.

start() method is used for creating a separate call stack for the thread execution. Once the call stack is created, JVM calls the run() method for executing the thread in that call stack.

129. What is the difference between the ‘throw' and ‘throws' keyword in Java?

The throw keyword is often used to explicitly throw an exception. It can only throw one exception at a time whereas throws can be used to declare multiple exceptions.

130. Identify the output of the below Java program and Justify your answer.

class Main {

    public static void main(String args[]) {

        Scaler s = new Scaler(5);

    }

}

class InterviewBit{

    InterviewBit(){

        System.out.println(" Welcome to InterviewBit ");

    }

}

class Scaler extends InterviewBit{

    Scaler(){

        System.out.println(" Welcome to Scaler Academy ");

    }

    Scaler(int x){

        this();

        super();

        System.out.println(" Welcome to Scaler Academy 2");

    }

}

The above code will throw the compilation error. It is because the super() is used to call the parent class constructor. But there is the condition that super() must be the first statement in the block. Now in this case, if we replace this() with super() then also it will throw the compilation error. Because this() also has to be the first statement in the block. So in conclusion, we can say that we cannot use this() and super() keywords in the same block.

131. Java works as a “pass by value” or “pass by reference” phenomenon?

Java works as a “pass by value” phenomenon, because “pass by reference” needs the help of pointers. But there are no pointers in Java.

132. How to not allow serialization of attributes of a class in Java?

One approach to not allow serialization of attributes of a class in Java is by using writeObject() and readObject() methods in the subclass and throwing a not Serializable exception.

133. What are the default values assigned to variables and instances in Java?

By default, for a numerical value it is 0, for the boolean value it is false and for objects it is NULL.

134. What do you mean by data encapsulation?

Data encapsulation is one of the properties of OOPS concepts, where all the data such as variables and methods are enclosed together as a single unit.

135. Can you tell the difference between equals() method and equality operator (==) in Java?

Equality operator (==) is used to check the equality condition between two variables. But the equals() method is used to check the equality condition between two objects.

136. How is an infinite loop declared in Java?

An infinite loop can be declared in Java by breaking the logic in the instruction block.  For example,

for(int i = 1; i > 0; i++)

{

//statements

}

The above code forms an infinite loop in Java.

137. Briefly explain the concept of constructor overloading

The concept of constructor overloading refers to having multiple methods in a class with their name being the same as the class name. The difference lies in the set of parameters passed to the functions.

138. Explain the use of the final keyword in variable, method and class.

In Java, one can apply the final keyword to a variable, methods, and class. With the help of the final keyword, the variable turns out to be a constant, the method cannot be inherited and the class cannot be overridden.

139. Is it possible that the ‘finally' block will not be executed? If yes then list the case.

Yes, there is a possibility that the ‘finally’ block cannot get executed. Here are some of the cases where the above situation occurs.

1. During the time of fatal errors such as memory exhaustion, memory access error, etc.
2. During the time of using System.exit()

140. Difference between static methods, static variables, and static classes in Java.

A variable, method, or class can be made static by using the static keyword. A static class cannot be instantiated. When both objects or instances of a class share the same variables, this is referred to as static variables. Static methods are simply methods that refer to the class in which they are written.

141. What is the main objective of garbage collection?

The main goal of using garbage collection is to free the heap memory by eliminating unnecessary objects.

142. Apart from the security aspect, what are the reasons behind making strings immutable in Java?

Because of security, synchronization, concurrency, caching, and class loading, the String is immutable in Java. The reason for making string final would be to destroy its immutability and help stop others from trying to extend it. String objects are cached in the String pool, making them immutable.

143. Which of the below generates a compile-time error? State the reason.

int[] n1 = new int[0];

boolean[] n2 = new boolean[-200];

double[] n3 = new double[2241423798];

char[] ch = new char[20];

We get a compile-time error in line 3. The error we will get in Line 3 is - the integer number too large. It is because the array requires size as an integer.  And Integer takes 4 Bytes in the memory. And the number (2241423798) is beyond the capacity of the integer. The maximum array size we can declare is - (2147483647).

Because the array requires the size in integer, none of the lines (1, 2, and 4) will give a compile-time error. The program will compile fine. But we get the runtime exception in line 2. The exception is - NegativeArraySizeException.

Here what will happen is - At the time when JVM will allocate the required memory during runtime then it will find that the size is negative. And the array size can’t be negative. So the JVM will throw the exception.

144. How would you differentiate between a String, StringBuffer, and a StringBuilder?

The string class is immutable but the other two are mutable in nature. StringBuffer is synchronous whereas the StringBuilder is asynchronous. String uses string pool as memory storage whereas the other two use heap memory for storage purposes.

145. What is a Comparator in Java?

A comparator is an interface, which is used to sort the objects.

146. In Java, static as well as private method overriding is possible. Comment on the statement.

In Java, you could indeed override a private or static method. If you create a similar method in a child class with the same return type and method arguments, it will hide the super class method; this is known as method hiding. Similarly, you cannot override a private method in a subclass because it is not accessible from that.

147. What makes a HashSet different from a TreeSet?

In a HashSet, the elements are unsorted and work faster than a Tree set.  It is implemented using a hash table.

148. Why is the character array preferred over string for storing confidential information?

Because Strings are immutable, any change will result in the creation of a new String, whereas char[] allows you to set all of the elements to blank or zero. So storing a password in a character array clearly reduces the security risk of password theft.

149. What are the differences between HashMap and HashTable in Java?

|  |  |
| --- | --- |
| HashMap | HashTable |
| 1. Asynchronous in nature | 1. Synchronous in nature |
| 1. Not thread-safe | 2. Thread safe |
| 1. It allows one null key and null values | 3. It doesn’t allow null keys and values. |

150. What is the importance of reflection in Java?

Reflection is a property of Java, enabling the Java code to inspect itself. A Java class, for example, can get the names of all its members and showcase them.

151. What are the different types of Thread Priorities in Java? And what is the default priority of a thread assigned by JVM?

There are different types of thread properties in Java. They are MIN\_PRIORITY, MAX\_PRIORITY, and NORM\_PRIORITY. By default, the thread is assigned NORM\_PRIORITY.

152. What is the ‘IS-A ‘ relationship in OOPs Java?

‘IS-A’ relationship is related to the Inheritance property of OOPs Java. It is a kind of parent-child relationship that is established between two classes.

**Basic Selenium Interview Questions for Freshers**

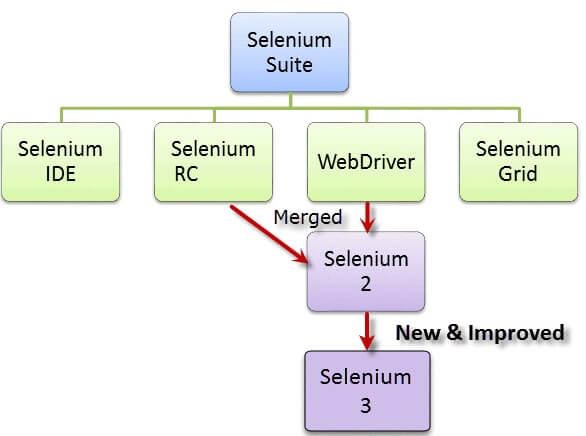
**1) What is Selenium and what is composed of?**

Selenium is a suite of tools for automated web testing.  It is composed of

* **Selenium IDE (Integrated Development Environment) :**It is a tool for recording and playing back.  It is a firefox plugin
* **WebDriver and RC:**  It provide the APIs for a variety of languages like Java, .NET, PHP, etc. With most of the browsers Webdriver and RC works.
* **Grid:**With the help of Grid you can distribute tests on multiple machines so that test can be run parallel which helps in cutting down the time required for running in browser test suites

**2) What is Selenium 2.0?**

Web[Testing](https://www.guru99.com/software-testing.html)tools Selenium RC and WebDriver are consolidated in single tool in Selenium 2.0



What is Selenium 2.0

**3) Mention what is Selenium 3.0?**

Selenium 3.0 is the latest version of Selenium. It has released 2 beta versions of selenium 3.0 with few of the below changes:

Here are few new features added to Selenium 3.0

|  |  |
| --- | --- |
| **Beta 1 updates** | **Beta 2 updates (Only for Java)** |
| * Minimum[Java](https://www.guru99.com/java-tutorial.html)version is now 8+ | * System property webdriver.gecko.driver now forces the server in marionette or legacy firefox driver mode, ignoring any related Desired Capability |
| * It will support for Firefox Via Mozilla’s geckodriver | * Grid fixes NPE’s on registration when -browser not specified |
| * Support for Edge is provided by MS * It now supports Safari on MacOS via Apple’s own Safari driver | * Update GeckoDriver –port argument in all bindings |

**4) How will you find an element using Selenium?**

In Selenium every object or control in a web page is referred as an elements, there are different ways to find an element in a web page they are

* ID
* Name
* Tag
* Attribute
* CSS
* Linktext
* PartialLink Text
* Xpath etc

**5) List out the test types that are supported by Selenium?**

For web based application testing selenium can be used

The test types can be supported are

a) Functional, Learn More about [Functional Testing.](https://www.guru99.com/functional-testing.html)

b) Regression

For post release validation with continuous integration [automation tool](https://www.guru99.com/automated-testing-tools.html) could be used

a) Jenkins

b) Hudson

c) Quick Build

d) CruiseCont

**6) Explain what is assertion in Selenium and what are the types of assertion?**

Assertion is used as a  verification point. It verifies that the state of the application conforms to what is expected.  The types of assertion are “assert” , “verify” and “waitFor”.

**7) Mention what is the use of X-path?**

X-Path is used to find the WebElement in web pages. It is also useful in identifying the dynamic elements.

Refer Complete Guide on [XPath](https://www.guru99.com/xpath-selenium.html)

**8) Explain the difference between single and double slash in X-path?**

Single slash ‘/ ’

* Single slash ( / ) start selection from the document node
* It allows you to create ‘absolute’ path expressions

Double Slash ‘// ’

* Double slash ( // ) start selection matching anywhere in the document
* It enables to create ‘relative’ path expressions

**9) List out the technical challenges with Selenium?**

Technical challenges with Selenium are

* Selenium supports only web based applications
* It does not support the Bitmap comparison
* For any reporting related capabilities have to depend on third party tools
* No vendor support for tool compared to commercial tools like HP UFT
* As there is no object repository concept in Selenium, maintainability of objects becomes difficult

**10) What is the difference between type keys and type commands?**

TypeKeys() will trigger[JavaScript](https://www.guru99.com/interactive-javascript-tutorials.html)event in most of the cases whereas .type() won’t. Type key populates the value attribute using JavaScript whereas .typekeys() emulates like actual user typing

**11) What is the difference between verify and assert commands?**

**Assert:**  Assert allows to check whether an element is on the page or not. The test will stop on the step failed, if the asserted element is not available. In other words, the test will terminated at the point where check fails.

**Verify:** Verify command will check whether the element is on the page, if it is not then the test will carry on executing.  In verification, all the commands are going to run guaranteed even if any of test fails.

**12) What is JUnit Annotations and what are different types of annotations which are useful?**

In JAVA a special form of syntactic meta-data can be added to Java source code, this is know as Annotations.  Variables, parameters, packages, methods and classes are annotated some of the[Junit](https://www.guru99.com/junit-tutorial.html)annotations which can be useful are

* Test
* Before
* After
* Ignore
* BeforeClass
* AfterClass
* RunWith

**13) While using click command can you use screen coordinate?**

To click on specific part of element, you would need to use clickAT command.  ClickAt command accepts element locator and x, y co-ordinates as arguments-

clickAt (locator, cordString)

**14)  What are the advantages of Selenium?**

* It supports C#, PHP, Java, Perl, Phython
* It supports different OS like Windows,[Linux](https://www.guru99.com/unix-linux-tutorial.html)and Mac OS
* It has got powerful methods to locate elements (Xpath, DOM , CSS)
* It has highly developer community supported by Google

**15) Why testers should opt for Selenium and not QTP?**

Selenium is more popular than[QTP](https://www.guru99.com/quick-test-professional-qtp-tutorial.html)as

* Selenium is an open source whereas QTP is a commercial tool
* Selenium is used specially for testing web based applications while QTP can be used for testing client server application also
* Selenium supports Firefox, IE, Opera, Safari  on operating systems like Windows, Mac, Linux etc. however QTP is limited to Internet Explorer on Windows.
* Selenium supports many programming languages like Ruby, Perl,[Python](https://www.guru99.com/python-tutorials.html)whereas QTP supports only VB script

**Advanced Selenium Automation Testing Interview Questions for 3/5/10 Years Experienced**

Following are the top Selenium interview questions for experience candidates:

**16) What are the four parameter you have to pass in Selenium?**

Four parameters that you have to pass in Selenium are

* Host
* Port Number
* Browser
* URL

**17) What is the difference between setSpeed() and sleep() methods?**

Both will delay the speed of execution.

Thread.sleep () :

It will stop the current (java) thread for the specified period of time.  Its done only once

* It takes a single argument in integer format

Ex: thread.sleep(2000)- It will wait for 2 seconds

* It waits only once at the command given at sleep

SetSpeed () :

For specific amount of time it will stop the execution for every selenium command.

* It takes a single argument in integer format

Ex: selenium.setSpeed(“2000”)- It will wait for 2 seconds

* Runs each command  after setSpeed delay by the number of milliseconds mentioned in set Speed

This command is useful for  demonstration purpose or if you are using a slow web application

**18) What is same origin policy? How you can avoid same origin policy?**

The **“Same Origin Policy”** is introduced for security reason, and it ensures that content of your site will never be accessible by a script from another site.  As per the policy, any code loaded within the browser can only operate within that website’s domain.

To avoid “Same Origin Policy” proxy injection method is used, in proxy injection mode the Selenium Server acts as a client configured **HTTP proxy** , which sits between the browser and application under test and then masks the AUT under a fictional URL

**19) What is heightened privileges browsers?**

The purpose of heightened privileges is similar to Proxy Injection, allows websites to do something that are not commonly permitted.  The key difference is that the browsers are launced in a special mode called heightened privileges.  By using these browser mode, Selenium core can open the AUT directly and also read/write its content without passing the whole AUT through the Selenium RC server.

**20) How you can use “submit” a form using Selenium?**

You can use “submit” method on element to submit form-

element.submit () ;

Alternatively you can use click method on the element which does form submission

**21) What are the features of TestNG and list some of the functionality in TestNG which makes it more effective?**

TestNG is a testing framework based on JUnit and NUnit to simplify a broad range of testing needs, from [Unit Testing](https://www.guru99.com/unit-testing-guide.html) to [Integration Testing](https://www.guru99.com/integration-testing.html). And the functionality which makes it efficient testing framework are

* Support for annotations
* Support for data-driven testing
* Flexible test configuration
* Ability to re-execute failed test cases

**22) Mention what is the difference between Implicit wait and Explicit wait?**

Implicit Wait: Sets a timeout for all successive Web Element searches. For the specified amount of time it will try looking for element again and again before throwing a NoSuchElementException.  It waits for elements to show up.

Explicit Wait :  It is a one-timer, used for a particular search.

**23) Which attribute you should consider throughout the script in frame for “if no frame Id as well as no frame name”?**

You can use…..driver.findElements(By.xpath(“//iframe”))….

This will return list of frames.

You will need to  switch to each and every frame and search for locator which we want.

Then break the loop

**24) Explain what is the difference between find elements () and find element ()?**

find element ():

It finds the first element within the current page using the given “locating mechanism”.  It returns a single WebElement

findElements () : Using the given “locating mechanism” find all the elements within the current page.  It returns a list of web elements.

**25) Explain what are the JUnits annotation linked with Selenium?**

The JUnits annotation linked with Selenium are

* @Before public void method() – It will perform the method () before each test, this method can prepare the test
* @Test public void method() – Annotations @Test identifies that this method is a test method environment
* @After public void method()- To execute a method before this annotation is used, test method must start with test@Before

**26) Explain what is Datadriven framework and Keyword driven?**

**Datadriven framework:**  In this framework, the test data is separated and kept outside the Test Scripts, while[Test Case](https://www.guru99.com/test-case.html)logic resides in Test Scripts.  Test data is read from the external files ( Excel Files) and are loaded into the variables inside the Test Script.  Variables are used for both for input values and for verification values.

**Keyworddriven framework:** The keyword driven frameworks requires the development of data tables and keywords, independent of the test automation.  In a keyword driven test, the functionality of the application under test is documented in a table as well as step by step instructions for each test.

**27) Explain how you can login into any site if it’s showing any authentication popup for password and username?**

Pass the username and password with url

* Syntax-http://username:password@url
* ex- http://creyate:tom@www.gmail.com

**28) Explain how to assert text of webpage using selenium 2.0?**

WebElement el = driver.findElement(By.id(“ElementID”))

//get test from element and stored in text variable

String text = el.getText();

//assert text from expected

Assert.assertEquals(“Element Text”, text);

**29) Explain what is the difference between Borland Silk and Selenium?**

|  |  |
| --- | --- |
| **Silk Test Tool** | **Selenium Test Tool** |
| * Borland Silk test is not a free testing tool | * Selenium is completely free test automation tool |
| * Silk test supports only Internet Explorer and Firefox | * Selenium supports many browsers like Internet Explorer, Firefox, Safari, Opera and so on |
| * Silk test uses test scripting language | * Selenium suite has the flexibility to use many languages like Java, Ruby,Perl and so on |
| * Silk test can be used for client server applications | * Selenium can be used for only web application |

**30) What is Object Repository?**

An object repository is an essential entity in any UI automations which allows a tester to store all object that will be used in the scripts in one or more centralized locations rather than scattered all over the test scripts.

**31) Explain how Selenium Grid works?**

[Selenium Grid](https://www.guru99.com/introduction-to-selenium-grid.html) sent the tests to the hub. These tests are redirected to Selenium Webdriver, which launch the browser and run the test.  With entire test suite, it allows for running tests in parallel.

**32) Can we use Selenium grid for performance testing?**

Yes. But not as effectively as a dedicated [Performance Testing](https://www.guru99.com/performance-testing.html) tool like Loadrunner.

**33)  List the advantages of Webdriver over Selenium Server?**

* If you are using Selenium-WebDriver, you don’t need the Selenium Server as it is using totally different technology
* Selenium Server provides Selenium RC functionality which is used for Selenium 1.0 backwards compatibility
* Selenium Web driver makes direct calls to browser using each browsers native support for automation, while Selenium RC requires selenium server to inject Javascript into the browser

**34)  Mention what are the capabilities of Selenium WebDriver or Selenium 2.0?**

WebDriver should be used when requiring improvement support for

* Handling multiple frames, pop ups , multiple browser windows and alerts
* Page navigation and drag & drop
* Ajax based UI elements
* Multi browser testing including improved functionality for browser not well supported by Selenium 1.0

**35)  While injecting capabilities in webdriver to perform tests on a browser which is not supported by a webdriver what is the limitation that one can come across?**

Major limitation of injecting capabilities is that “findElement” command may not work as expected.

**36)  Explain how you can find broken images in a page using Selenium Web driver?**

To find the broken images in a page using Selenium web driver is

* Get XPath and get all the links in the page using tag name
* In the page click on each and every link
* Look for 404/500 in the target page title

**37)  Explain how you can handle colors in web driver?**

To handle colors in web driver you can use

Use getCssValue(arg0) function to get the colors by sending ‘color’ string as an argument

**38)  Using web driver how you can store a value which is text box?**

You can use following command to store a value which is text box using web driver

driver.findElement(By.id(“your Textbox”)).sendKeys(“your keyword”);

**39)  Explain how you can switch between frames?**

To switch between frames webdrivers **[ driver.switchTo().frame() ]** method takes one of the three possible arguments

* A number:  It selects the number by its (zero-based) index
* A name or ID: Select a frame by its name or ID
* Previously found WebElement: Using its previously located WebElement select a frame

**40)  Mention 5 different exceptions you had in Selenium web driver?**

The 5 different exceptions you had in Selenium web drivers are

* WebDriverException
* NoAlertPresentException
* NoSuchWindowException
* NoSuchElementException
* TimeoutException

**41)  Explain using Webdriver how you can perform double click?**

You can perform double click by using

* **Syntax- Actions act = new Actions (driver);**
* **act.doubleClick(webelement);**

**42) How will you use  Selenium to upload a file?**

You can use “type”command to type in a file input box of upload file. Then, you have to use “Robot” class in JAVA to make file upload work.

**43) Which web driver implementation is fastest?**

HTMLUnit Driver implementation is fastest, HTMLUnitDriver does not execute tests on browser but plain http request, which is far quick than launching a browser and executing tests

**44) Explain how you can handle frames using Selenium 2.0?**

To bring control on HTML frame you can use “SwitchTo” frame method-

driver.switchTo().frame(“frameName”);

To specify a frame you can use index number

driver.switchTo().frame(“parentFrame.4.frameName”);

This would bring control on frame named- “frameName” of the 4th sub frame names “parentFrame”

**45) What is the difference between getWindowhandles() and getwindowhandle()?**

getwindowhandles(): It is used to get the address of all the open browser and its return type is Set <String>

getwindowhandle(): It is used to get the address of the current browser where the control is and return type is string

**46) Explain how you can switch back from a frame?**

To switch back from a frame use method defaultContent()

Syntax-driver.switchTo().defaultContent();

**47) List out different types of locators?**

Different types of locators are

* By.id()
* By.name()
* By.tagName()
* By.className()
* By.linkText()
* By.partialLinkText()
* By.xpath
* By.cssSelector()

**48) What is the command that is used in order to display the values of a variable into the output console or log?**

* In order to display a constant string, command can be used is echo <constant string>
* If order to display the value of a variable you can use command like echo ${variable name>>

Above is using PHP. If you are using Java, replace echo with System.out.println

**49)   Explain how you can use recovery scenario with Selenium?**

Recovery scenarios depends upon the programming language you use.  If you are using Java then you can use exception handling to overcome same.  By using “Try Catch Block” within your Selenium WebDriver Java tests

**50) Explain how to iterate through options in test script?**

To iterate through options in test script you can loop features of the programming language, for example to type different test data in a text box you can use “for” loop in Java

// test data collection in an array

String[ ] testData = { “test1” , “test2” , “test3” } ;

// iterate through each test data

For (string s: test data) { selenium.type ( “elementLocator”, testData) ; }

**51) How can you prepare customized html report using TestNG in hybrid framework?**

There are three ways

* Junit: With the help of ANT
* TestNG: Using inbuilt default.html to get the HTML report. Also XST reports from ANT, Selenium,[Testng](https://www.guru99.com/all-about-testng-and-selenium.html)combinations
* Using our own customized reports using XSL jar for converting XML content to HTML

**52) From your test script how you can create html test report?**

To create html test report there are three ways

* TestNG:  Using inbuilt default.html to get the HTML report. Also XLST reports from ANT, Selenium, TestNG combination
* JUnit: With the help of ANT
* Using our own customized reports using XSL jar for converting XML content to HTML

**53)  Explain how you can insert a break point in Selenium IDE?**

In [Selenium IDE](https://www.guru99.com/introduction-selenuim-ide.html) to insert a break point

* Select “Toggle break point” by right click on the command in Selenium IDE
* Press “B” on the keyboard and select the command in Selenium IDE
* Multiple break points can be set in Selenium IDE

**54)  Explain in Selenium IDE how can you debug the tests?**

* Insert a break point from the location from where you want to execute test step by step
* Run the test case
* At the given break point execution will be paused
* To continue with the next statement click on the blue button
* Click on the “Run” button to continue executing all the commands at a time

**55)  What is Selenese and what are the types of Selenese?**

Selenese is a selenium set of command which are used for running the test

There are three types of Selenese

* Actions: It is used for performing the operations and interactions with the target elements
* Assertions: It is used as a check points
* Accessors: It is used for storing the values in a variable

**56)  Explain what are the limitations of Selenium IDE?**

The limitations of Selenium IDE

* Exceptional handling is not present
* Selenium IDE uses only HTML languages
* External databases reading is not possible with IDE
* Reading from the external files like .txt, .xls is not possible
* Conditional or branching statements execution like if,else,  select statements is not possible

**57)  What are the two modes of views in Selenium IDE?**

Either Selenium IDE can be opened as a pop up window or in side bar

**58)  In selenium IDE what are the element locators that can be used to locate elements on web page?**

In selenium there are mainly 4 locators that are used

* X-path locators
* Css locators
* Html id
* Html name

**59)  In Selenium IDE how you can generate random numbers and dates for test data?**

In Selenium IDE you can generate random numbers by using Java Script

type

css=input#s

javascript{Math.random()}

And for

type

css=input#s

javascript{new Date()}

**60)  How you can convert any Selenium IDE tests from Selenese to another language?**

You can use the format option of Selenium IDE to convert tests into another programming language

**61)  Using Selenium IDE is it possible to get data from a particular html table cell?**

You can use the “storeTable” command

Example store text from cell 0,2 from an html table

storeTable

Css=#table 0.2

textFromCell

**62)  Explain what can cause a Selenium IDE test to fail?**

* When a locator has changed and Selenium IDE cannot locate the element
* When element Selenium IDE waiting to access did not appear on the web page and the operation timed out
* When element Selenium IDE was trying to access was not created

**63)  Explain how you can debug the tests in Selenium IDE?**

* Insert a break point from the location where you want to execute step by step
* Run the test case
* At the given break point execution will be paused
* To continues with the next step click on the Blue button
* To run commands at a time click on run button

**64)  From Selenium IDE how you can execute a single line?**

From Selenium IDE single line command can be executed in two ways

* Select “Execute this command” by right clicking on the command in Selenium IDE
* Press “X” key on the keyboard after selecting the command in Selenium IDE

**65)  In which format does source view shows your script in Selenium IDE?**

In Selenium IDE source view shows your script in XML format

**66)  Explain how you can insert a start point in Selenium IDE?**

In two ways selenium IDE can be set

* Press “S” key on the keyboard and select the command in Selenium IDE
* In Seleniun IDE right click on the command and the select  “Set / Clear Start Point”

**67)  What if you have written your own element locator and how would you test it?**

To test the locator one can use “Find Button” of Selenium IDE, as you click on it, you would see on screen an element being highlighted provided your element locator is right or or else an error message will be displayed

**68)  What is regular expressions? How you can use regular expressions in Selenium?**

A regular expression is a special text string used for describing a search pattern. In Selenium IDE regular expression can be used with the keyword- **regexp:**as a prefix to the value and patterns needs to be included for the expected values.

**69)  What are core extension?**

If you want to “extend” the defualt functionality provided by Selenium Function Library , you can create a Core Extension. They are also called “User Extension”. You can even download ready-made Core Extension created by other Selenium enthusiats.

**70)  How will you handle working with multiple windows in Selenium?**

We can use the command **selectWindow**to switch between windows. This command uses the title of Windows to identify which window to switch to.

**71)  How will you verify the specific position of an web element**

You can use verifyElementPositionLeft & verifyElementPositionTop. It does a pixel comparison of the position of the element from the Left and Top of page respectively

**72)  How can you retrive the message in an alert box?**

You can use the storeAlert command which will fetch the message of the alert pop up and store it in a variable.

**73) What is selenium RC (Remote Control)?**

Selenium IDE have limitations in terms of browser support and language support. By using Selenium RC limitation can be diminished.

* On different platforms and  different web browser for automating web application  selenium RC is used with languages like Java, C#, Perl, Python
* Selenium RC is a java based and using any language it can interact with the web application
* Using server you can bypass the restriction and run your automation script running against any web application

**74) Why Selenium RC is used?**

Selenium IDE does not directly support many functions like condition statements, Iteration, logging and reporting of test results, unexpected error handling and so on as IDE supports only HTML language.  To handle such issues Selenium RC is used  it supports the language like Perl, Ruby, Python,[PHP](https://www.guru99.com/php-tutorials.html)using these languages we can write the program to achieve the IDE issues.

**75) Explain what is the main difference between web-driver and RC?**

The main difference between Selenium RC and Webdriver is that, selenium RC injects javascript function into browsers when the page is loaded. On the other hand, Selenium Webdriver drives the browser using browsers built in support

**76) What are the advantages of RC?**

Advantages of RC are

* Can read or write data from/ to .xls, .txt, etc
* It can handle dynamic objects and Ajax based UI elements
* Loops and conditions can be used for better performance and flexibility
* Support many Programming languages and Operating Systems
* For any JAVA script enabled browser Selenium RC can be used

**77) Explain what is framework and what are the frameworks available in RC?**

A collection of libraries and classes is known as Framework and they are helpful when testers has to automate test cases. NUnit, JUnit, TestNG, Bromine, RSpec, unittest are some of the frameworks available in RC .

**78) How can we handle pop-ups in RC?**

To handle pop-ups in RC , using selectWindow method, pop-up window will be selected and windowFocus method will let the control from current window to pop-up windows and perform actions according to script

**79) What are the technical limitations while using Selenium RC?**

Apart from “same origin policy” restriction from js, Selenium is also restricted from exercising anything that is outside browser.

**80) Can we use Selenium RC to drive tests on two different browsers on one operating system without Selenium Grid?**

Yes, it is possible when you are not using JAVA testing framework.  Instead of using Java testing framework if you are using java client driver of selenium then TestNG allows you to do this.  By using “parallel=test” attribute you can set tests to be executed in parallel and can define two different tests, each using different browser.

**81) Why to use TestNG with Selenium RC?**

If you want full automation against different server and client platforms, You need a way to invoke the tests from a command line process, reports that tells you what happened and flexibility in how you create your test suites. TestNG gives that flexibility.

**82) Explain how you can capture server side log Selenium Server?**

To capture server side log in Selenium Server, you can use command

java –jar .jar –log selenium.log

**83) Other than the default port 4444 how you can run Selenium Server?**

You can run Selenium server on java-jar selenium-server.jar-port other than its default port

**84) How Selenium grid hub keeps in touch with RC slave machine?**

At predefined time selenium grid hub keeps polling all RC slaves to make sure it is available for testing.  The deciding parameter is called “remoteControlPollingIntervalSeconds” and is defined in “grid\_configuration.yml”file

**85) Using Selenium how can you handle network latency?**

To handle network latency you can use driver.manage.pageloadingtime for network latency

**86) To enter values onto text boxes what is the command that can be used?**

To enter values onto text boxes we can use command **sendkeys()**

**87) How do you identify an object using selenium?**

To identify an object using Selenium you can use

isElementPresent(String locator)

isElementPresent takes a locator as the argument and if found returns a Boolean

**88) In Selenium what are Breakpoints and Startpoints?**

* **Breakpoints:**When you implement a breakpoint in your code, the execution will stop right there. This helps you to verify that your code is working as expected.
* **Startpoints**Startpoint indicates the point from where the execution should begin. Startpoint can be used when you want to run the testscript from the middle of the code or a breakpoint.

**89) Mention why to choose Python over Java in Selenium?**

Few points that favor[Python](https://www.guru99.com/python-tutorials.html)over Java to use with Selenium is,

* Java programs tend to run slower compared to Python programs.
* Java uses traditional braces to start and ends blocks, while Python uses indentation.
* Java employs static typing, while Python is dynamically typed.
* Python is simpler and more compact compared to Java.

**90) Mention what are the challenges in Handling Ajax Call in Selenium Webdriver?**

The challenges faced in Handling Ajax Call in Selenium Webdriver are

* Using “pause” command for handling Ajax call is not completely reliable. Long pause time makes the test unacceptably slow and increases the testing time. Instead, “waitforcondition” will be more helpful in testing Ajax applications.
* It is difficult to assess the risk associated with particular Ajax applications
* Given full freedom to developers to modify Ajax application makes the testing process challenging
* Creating automated test request may be difficult for testing tools as such AJAX application often use different encoding or serialization technique to submit POST data.

**91) Mention what is IntelliJ?**

Intellij is an IDE that helps you to write better and faster code for Selenium. Intellij can be used in the option to Java bean and Eclipse.

**92) Mention in what ways you can customize TestNG report?**

You can customize TestNG report in two ways,

* Using ITestListener Interface
* Using IReporter Interface

**93) To generate pdf reports mention what Java API is required?**

To generate pdf reports, you need Java API IText.

**94) Mention what is Listeners in Selenium WebDriver?**

In Selenium WebDriver, Listeners “listen” to the event defined in the selenium script and behave accordingly. It allows customizing TestNG reports or logs. There are two main listeners i.e. WebDriver Listeners and TestNG Listeners.

**95) Mention what are the types of**[**Listeners in TestNG**](https://www.guru99.com/listeners-selenium-webdriver.html)**?**

The types of Listeners in TestNG are,

* IAnnotationTransformer
* IAnnotationTransformer2
* IConfigurable
* IConfigurationListener
* IExecutionListener
* IHookable
* IInvokedMethodListener
* IInvokedMethodListener2
* IMethodInterceptor
* IReporter
* ISuiteListener
* ITestListener

**96) Mention what is desired capability? How is it useful in terms of Selenium?**

The desired capability is a series of key/value pairs that stores the browser properties like browser name, browser version, the path of the browser driver in the system, etc. to determine the behavior of the browser at run time.

For Selenium,

* It can be used to configure the driver instance of Selenium WebDriver.
* When you want to run the test cases on a different browser with different operating systems and versions.

**97) For Database Testing in Selenium Webdriver what API is required?**

For [Database Testing](https://www.guru99.com/data-testing.html) in Selenium Webdriver, you need JDBC (Java Database Connectivity) API. It allows you to execute[SQL](https://www.guru99.com/sql.html)statements.

**98) Mention when to use AutoIT?**

Selenium is designed to automate web-based applications on different browsers. But to handle window GUI and non-HTML popups in the application you need AutoIT. know more about [How to use AutoIT with Selenium](https://www.guru99.com/use-autoit-selenium.html)

**99) Mention why do you need Session Handling while working with Selenium?**

While working with Selenium, you need Session Handling. This is because, during test execution, the Selenium WebDriver has to interact with the browser all the time to execute given commands. At the time of execution, it is also possible that, before current execution completes, someone else starts execution of another script, in the same machine and in the same type of browser. So to avoid such situation you need Session Handling.

**100) Mention what are the advantages of Using Git Hub For Selenium?**

The advantages of Using Git Hub for Selenium are

* Multiple people when they work on the same project they can update project details and inform other team members simultaneously.
* Jenkins can help you to build the project from the remote repository regularly. This helps you to keep track of failed builds.