Top 25 Java Programs for SDET / Automation Testing Interviews

1. Reverse a String

Question: How do you reverse a given string in Java?

Solution:

Java
```java
public class ReverseString {
    public static void main(String[] args) {
        String str = "Automation";
        String reversedStr = "";
        for (int i = str.length() - 1; i >= 0; i--) {
            reversedStr += str.charAt(i);
        }
        System.out.println("Reversed string is: " + reversedStr);
    }
}
```

2. Palindrome Check

Question: How do you check if a string is a palindrome?

Solution:

Java
```java
public class PalindromeCheck {
    public static void main(String[] args) {
        String str = "madam";
        String reversedStr = "";
        for (int i = str.length() - 1; i >= 0; i--) {
            reversedStr += str.charAt(i);
        }
        if (str.equals(reversedStr)) {
            System.out.println(str + " is a palindrome.");
        } else {
            System.out.println(str + " is not a palindrome.");
        }
    }
}
```

3. Count Vowels and Consonants

Question: How do you count the number of vowels and consonants in a string?

Solution:

Java
```java
public class CountVowels {
    public static void main(String[] args) {
        String str = "Java Programming";
        int vowels = 0, consonants = 0;
        str = str.toLowerCase();
        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);
            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
                vowels++;
            } else if (ch >= 'a' && ch <= 'z') {
                consonants++;
            }
        }
        System.out.println("Number of vowels: " + vowels);
        System.out.println("Number of consonants: " + consonants);
    }
}
```

4. Reverse an Integer

Question: How do you reverse an integer in Java?

Solution:

Java
```java
public class ReverseInteger {
    public static void main(String[] args) {
        int num = 12345;
        int reversedNum = 0;
        while (num != 0) {
            int digit = num % 10;
            reversedNum = reversedNum * 10 + digit;
            num /= 10;
        }
        System.out.println("Reversed number is: " + reversedNum);
    }
}
```

5. Find the Largest of Three Numbers
Question: How do you find the largest of three numbers?

Solution:

Java
```java
public class LargestOfThree {
    public static void main(String[] args) {
        int a = 10, b = 25, c = 15;
        int largest = (a > b) ? (a > c ? a : c) : (b > c ? b : c);
        System.out.println("The largest number is: " + largest);
    }
}
```

6. Swapping Two Numbers
Question: How do you swap two numbers without using a third variable?

Solution:

Java
```java
public class SwapNumbers {
    public static void main(String[] args) {
        int a = 10, b = 20;
        System.out.println("Before swapping: a = " + a + ", b = " + b);
        a = a + b;
        b = a - b;
        a = a - b;
        System.out.println("After swapping: a = " + a + ", b = " + b);
    }
}
```

7. Find Duplicates in an Array
Question: How do you find duplicate elements in an array?

Solution:

Java
```java
public class FindDuplicates {
    public static void main(String[] args) {
        int[] arr = {1, 2, 3, 4, 2, 7, 8, 8};
        System.out.println("Duplicate elements in the array are:");
        for (int i = 0; i < arr.length - 1; i++) {
            for (int j = i + 1; j < arr.length; j++) {
                if (arr[i] == arr[j]) {
                    System.out.println(arr[j]);
                }
            }
        }
    }
}
```

8. Check for Anagrams

Question: How do you check if two strings are anagrams?

Solution:

Java

```java
import java.util.Arrays;
public class AnagramCheck {
    public static void main(String[] args) {
        String str1 = "listen";
        String str2 = "silent";
        char[] arr1 = str1.toCharArray();
        char[] arr2 = str2.toCharArray();
        Arrays.sort(arr1);
        Arrays.sort(arr2);
        if (Arrays.equals(arr1, arr2)) {
            System.out.println("The strings are anagrams.");
        } else {
            System.out.println("The strings are not anagrams.");
        }
    }
}
```

9. Find the Second Largest Number in an Array

Question: How do you find the second largest number in an array?

Solution:

Java

```java
import java.util.Arrays;
public class SecondLargest {
    public static void main(String[] args) {
        int[] arr = {1, 5, 2, 9, 3, 7};
        Arrays.sort(arr);
        System.out.println("The second largest number is: " + arr[arr.length - 2]);
    }
}
```

10. Fibonacci Series
Question: How do you generate the Fibonacci series up to a given number?

Solution:

Java
```java
public class FibonacciSeries {
    public static void main(String[] args) {
        int n = 10;
        int a = 0, b = 1;
        System.out.print("Fibonacci series: " + a + ", " + b);
        for (int i = 2; i < n; i++) {
            int c = a + b;
            System.out.print(", " + c);
            a = b;
            b = c;
        }
    }
}
```

11. Prime Number Check
Question: How do you check if a number is prime?

Solution:

Java
```java
public class PrimeCheck {
    public static void main(String[] args) {
        int num = 29;
        boolean isPrime = true;
        if (num <= 1) {
            isPrime = false;
        } else {
            for (int i = 2; i <= Math.sqrt(num); i++) {
                if (num % i == 0) {
                    isPrime = false;
                    break;
                }
            }
        }
        if (isPrime) {
            System.out.println(num + " is a prime number.");
        } else {
            System.out.println(num + " is not a prime number.");
        }
    }
}
```

12. Factorial of a Number

Question: How do you find the factorial of a number?

Solution:

Java
```java
public class Factorial {
    public static void main(String[] args) {
        int num = 5;
        long factorial = 1;
        for (int i = 1; i <= num; ++i) {
            factorial *= i;
        }
        System.out.println("Factorial of " + num + " is: " + factorial);
    }
}
```

13. Count Occurrences of a Character

Question: How do you count the occurrences of a given character in a string?

Solution:

Java
```java
public class CountChar {
    public static void main(String[] args) {
        String str = "programming";
        char ch = 'g';
        int count = 0;
        for (int i = 0; i < str.length(); i++) {
            if (str.charAt(i) == ch) {
                count++;
            }
        }
        System.out.println("The character '" + ch + "' appears " + count + " times.");
    }
}
```

14. Remove Duplicates from an Array

Question: How do you remove duplicate elements from an array?

Solution:

Java
```java
import java.util.LinkedHashSet;
import java.util.Arrays;
public class RemoveDuplicates {
    public static void main(String[] args) {
        Integer[] arr = {1, 2, 3, 4, 2, 7, 8, 8};
        LinkedHashSet<Integer> set = new LinkedHashSet<Integer>(Arrays.asList(arr));
        System.out.println("Array with duplicates removed: " + set);
    }
}
```

15. Find Sum of Digits
Question: How do you find the sum of digits of a number?

Solution:

Java
```java
public class SumOfDigits {
    public static void main(String[] args) {
        int num = 12345;
        int sum = 0;
        while (num != 0) {
            sum += num % 10;
            num /= 10;
        }
        System.out.println("The sum of digits is: " + sum);
    }
}
```

16. Check Armstrong Number
Question: How do you check if a number is an Armstrong number?

Solution:

Java
```java
public class ArmstrongNumber {
    public static void main(String[] args) {
        int num = 153;
        int originalNum = num;
        int sum = 0;
        while (num > 0) {
            int digit = num % 10;
            sum += Math.pow(digit, 3);
            num /= 10;
        }
        if (originalNum == sum) {
            System.out.println(originalNum + " is an Armstrong number.");
        } else {
            System.out.println(originalNum + " is not an Armstrong number.");
        }
    }
}
```

17. Find the Smallest and Largest Number in an Array
Question: How do you find the smallest and largest numbers in an array?

Solution:

Java
```java
public class MinMaxArray {
    public static void main(String[] args) {
        int[] arr = {10, 5, 25, 2, 30};
        int min = arr[0];
        int max = arr[0];
        for (int i = 1; i < arr.length; i++) {
            if (arr[i] < min) {
                min = arr[i];
            }
            if (arr[i] > max) {
                max = arr[i];
            }
        }
        System.out.println("Smallest number: " + min);
        System.out.println("Largest number: " + max);
    }
}
```

18. Sort an Array
Question: How do you sort an array in ascending order?

Solution:

Java
```java
import java.util.Arrays;
public class SortArray {
    public static void main(String[] args) {
        int[] arr = {5, 2, 8, 1, 9};
        Arrays.sort(arr);
        System.out.println("Sorted array: " + Arrays.toString(arr));
    }
}
```

19. Find Missing Number in an Array

Question: How do you find the missing number in an integer array from 1 to 10?

Solution:

Java
```java
public class FindMissingNumber {
    public static void main(String[] args) {
        int[] arr = {1, 2, 3, 4, 6, 7, 8, 9, 10};
        int n = 10;
        int totalSum = n * (n + 1) / 2;
        int arraySum = 0;
        for (int num : arr) {
            arraySum += num;
        }
        int missingNumber = totalSum - arraySum;
        System.out.println("The missing number is: " + missingNumber);
    }
}
```

20. Count Words in a String

Question: How do you count the number of words in a string?

Solution:

Java
```java
public class CountWords {
    public static void main(String[] args) {
        String str = "Java is a programming language.";
        String[] words = str.split("\\s+");
        System.out.println("Number of words: " + words.length);
    }
}
```

21. Check for a Leap Year
Question: How do you check if a year is a leap year?

Solution:

Java
```java
public class LeapYear {
   public static void main(String[] args) {
      int year = 2024;
      boolean isLeap = false;
      if (year % 4 == 0) {
         if (year % 100 == 0) {
            if (year % 400 == 0)
               isLeap = true;
            else
               isLeap = false;
         } else
            isLeap = true;
      } else {
         isLeap = false;
      }
      if (isLeap)
         System.out.println(year + " is a leap year.");
      else
         System.out.println(year + " is not a leap year.");
   }
}
```

22. Find the First Non-Repeated Character
Question: How do you find the first non-repeated character in a string?

Solution:

Java
```java
public class FirstNonRepeatedChar {
   public static void main(String[] args) {
      String str = "automation";
      for (char ch : str.toCharArray()) {
         if (str.indexOf(ch) == str.lastIndexOf(ch)) {
            System.out.println("First non-repeated character is: " + ch);
            break;
         }
      }
   }
}
```

23. Reverse an Array

Question: How do you reverse an array?

Solution:

Java
```java
public class ReverseArray {
    public static void main(String[] args) {
        int[] arr = {1, 2, 3, 4, 5};
        System.out.print("Original array: ");
        for (int i : arr) {
            System.out.print(i + " ");
        }
        System.out.print("\nReversed array: ");
        for (int i = arr.length - 1; i >= 0; i--) {
            System.out.print(arr[i] + " ");
        }
    }
}
```

24. Merge Two Arrays

Question: How do you merge two arrays?

Solution:

Java
```java
import java.util.Arrays;
import java.util.stream.IntStream;
public class MergeArrays {
    public static void main(String[] args) {
        int[] arr1 = {1, 2, 3};
        int[] arr2 = {4, 5, 6};
        int[] mergedArray = IntStream.concat(Arrays.stream(arr1), Arrays.stream(arr2))
                        .toArray();
        System.out.println("Merged array: " + Arrays.toString(mergedArray));
    }
}
```

25. Check for Substring

Question: How do you check if a string contains another substring?

Solution:

```java
Java
public class SubstringCheck {
    public static void main(String[] args) {
        String mainStr = "Hello, world!";
        String subStr = "world";
        if (mainStr.contains(subStr)) {
            System.out.println("The string '" + mainStr + "' contains the substring '" + subStr + "'.");
        } else {
            System.out.println("The string '" + mainStr + "' does not contain the substring '" + subStr + "'.");
        }
    }
}
```