5TH JUNE ASSIGNMENT STRING IN JAVA

1. **What is A String in Java?**

Ans: In Java, a String is a sequence of characters. It is a built-in class in Java and is used to represent and manipulate text. Strings in Java are immutable, meaning they cannot be changed once created.

2. **Types 0f String in Java Are?**

Ans: There is only one type of String in Java, which is the java.lang.String class. However, there are different ways to create String objects and manipulate them.

3. in how many ways can you create string 0bjects in Java?

Ans: There are several ways to create String objects in Java:

Using string literals: String str = "Hello";

Using the new keyword and a constructor: String str = new String("Hello");

Using the valueOf() method: String str = String.valueOf(123);

4. What is A string constant pool?

Ans: The String Constant Pool is a special memory area in Java that stores String literals. It is a part of the Java heap memory and is used to optimize memory usage by reusing common String values. When multiple String objects with the same value are created, they are stored in the String constant pool and referenced to the same memory location.

5. What do you mean by mutable And immutable 0bjects?

Ans: In Java, a mutable object is an object whose state (i.e., its data) can be modified after it is created. An immutable object, on the other hand, is an object whose state cannot be changed once it is created. In the case of Strings, they are immutable, meaning that their values cannot be modified once they are assigned.

6. Where exactly is the string constant pool located in the memory?

Ans: The String constant pool is located in the Java heap memory. It is a part of the runtime data area allocated for the Java Virtual Machine (JVM) to execute Java programs.

7. What is mutable string in Java Explain with an example?

Ans: In Java, a mutable string can be represented using the StringBuilder or StringBuffer class. These classes provide methods to modify the contents of a string. Here's an example:

```
StringBuilder mutableString = new StringBuilder("Hello");
mutableString.append(" World");
System.out.println(mutableString); // Output: Hello World
```

8. WAP to reverse a string

Input: “PWSKILLS”

Output: “SLLIKSPW”

Ans: Here's a Java program to reverse a string:

```
public class StringReversal {
    public static void main(String[] args) {
        String input = "PWSKILLS";
        String reversed = reverseString(input);
        System.out.println(reversed);
    }

    public static String reverseString(String str) {
        StringBuilder sb = new StringBuilder(str);
        sb.reverse();
        return sb.toString();
    }
}
```

9. WAP to reverse a sentence while preserving the position

Input: Think Twice

Output: “kniht eciwt”

Ans: Here's a Java program to reverse a sentence while preserving the word positions:

```
public class SentenceReversal {
    public static void main(String[] args) {
        String input = "Think Twice";
        String reversed = reverseSentence(input);
        System.out.println(reversed);
    }
```

```
    public static String reverseSentence(String sentence) {
        String[] words = sentence.split(" ");
        StringBuilder sb = new StringBuilder();
        for (int i = words.length - 1; i >= 0; i--) {
            sb.append(reverseString(words[i])).append(" ");
        }
        return sb.toString().trim();
    }

    public static String reverseString(String str) {
        StringBuilder sb = new StringBuilder(str);
        sb.reverse();
        return sb.toString();
    }
}
```

10. WAP to sort a String Alphabetically?

Ans: Here's a Java program to sort a string alphabetically:

```
import java.util.Arrays;

public class StringSorting {
    public static void main(String[] args) {
        String input = "OpenAI";
        String sorted = sortString(input);
        System.out.println(sorted);
    }

    public static String sortString(String str) {
        char[] charArray = str.toCharArray();
        Arrays.sort(charArray);
        return new String(charArray);
```

```
    }
}
```

Output:

```
AIOeNnP
```

11. Write a simple string program to take in input from user?

Ans: Here's a simple Java program to take input from the user:

```
import java.util.Scanner;

public class UserInputExample {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String userInput = scanner.nextLine();
        System.out.println("You entered: " + userInput);
        scanner.close();
    }
}
```

12. How do you concatenate a strings in java? Give an example?

Ans: In Java, you can concatenate strings using the concatenation operator (+) or the concat() method. Here's an example:

```
String str1 = "Hello";
String str2 = " World";
String result = str1 + str2; // Using the concatenation operator
String result2 = str1.concat(str2); // Using the concat() method
System.out.println(result); // Output: Hello World
System.out.println(result2); // Output: Hello World
```

13. How do you find the length of a string in java Explain with an Examples?

Ans: To find the length of a string in Java, you can use the length() method. Here's an example:

```
String str = "Hello";
int length = str.length();
```

```
System.out.println(length); // Output: 5
```

14. How do you compare two strings in Java? Give an example?

Ans: In Java, you can compare two strings using the equals() method for content comparison or the compareTo() method for lexicographic comparison. Here's an example:

```
String str1 = "Hello";

String str2 = "World";

boolean isEqual = str1.equals(str2);

int comparisonResult = str1.compareTo(str2);

System.out.println(isEqual); // Output: false

System.out.println(comparisonResult); // Output: -15 (negative value indicates str1 < str2 lexicographically)
```

15. Write a program to find the length of the string “refrigerator”.

Ans: Here's a Java program to find the length of the string "refrigerator":

```
public class StringLengthExample {
    public static void main(String[] args) {
        String str = "refrigerator";
        int length = str.length();
        System.out.println(length); // Output: 12
    }
}
```

16. Write a program to check if the letter ‘e’ is present in the word “Umbrella”?

Ans: Here's a Java program to check if the letter 'e' is present in the word "Umbrella":

```
public class StringContainsExample {
    public static void main(String[] args) {
        String word = "Umbrella";
        boolean containsE = word.contains("e");
        System.out.println(containsE); // Output: true
    }
}
```

17. Write a program to delete all consonants from the string “Hello, have a good day”?

Ans: Here's a Java program to delete all consonants from the string "Hello, have a good day":

```
public class ConsonantRemoval {
```

```
    public static void main(String[] args) {
        String sentence = "Hello, have a good day";
        String result = removeConsonants(sentence);
        System.out.println(result); // Output: eo, ae a oo ay
    }

    public static String removeConsonants(String str) {
        return str.replaceAll("[^aeiouAEIOU\\s]", "");
    }
}
```

18. Write a java program to Reverse a string without using the inbuilt method.

Ans: Here's a Java program to reverse a string without using the built-in method:

```
public class StringReversal {
    public static void main(String[] args) {
        String input = "PWSKILLS";
        String reversed = reverseString(input);
        System.out.println(reversed);
    }

    public static String reverseString(String str) {
        char[] charArray = str.toCharArray();
        int start = 0;
        int end = charArray.length - 1;
        while (start < end) {
            char temp = charArray[start];
            charArray[start] = charArray[end];
            charArray[end] = temp;
            start++;
            end--;
        }
        return new String(charArray);
```

```
    }
}
```

Output:

```
SLLIKSWP
```

19. Write a java program to know whether the given string is palindrome.

Ans: Here's a Java program to check whether a given string is a palindrome:

```
public class PalindromeCheck {
    public static void main(String[] args) {
        String input = "level";
        boolean isPalindrome = checkPalindrome(input);
        System.out.println(isPalindrome); // Output: true
    }

    public static boolean checkPalindrome(String str) {
        String reversed = reverseString(str);
        return str.equalsIgnoreCase(reversed);
    }

    public static String reverseString(String str) {
        char[] charArray = str.toCharArray();
        int start = 0;
        int end = charArray.length - 1;
        while (start < end) {
            char temp = charArray[start];
            charArray[start] = charArray[end];
            charArray[end] = temp;
            start++;
            end--;
        }
        return new String(charArray);
    }
```

```
}
```

20. Write a java program to convert upper case to lower case and vice versa.

Ans: Here's a Java program to convert uppercase letters to lowercase and vice versa:

```
public class StringCaseConversion {
    public static void main(String[] args) {
        String input = "Hello World";
        String converted = convertCase(input);
        System.out.println(converted); // Output: hELLO wORLD
    }

    public static String convertCase(String str) {
        char[] charArray = str.toCharArray();
        for (int i = 0; i < charArray.length; i++) {
            if (Character.isLowerCase(charArray[i])) {
                charArray[i] = Character.toUpperCase(charArray[i]);
            } else if (Character.isUpperCase(charArray[i])) {
                charArray[i] = Character.toLowerCase(charArray[i]);
            }
        }
        return new String(charArray);
    }
}
```

21. Write a java program to remove a particular character from a String.

Ans: Here's a Java program to remove a particular character from a string:

```
public class CharacterRemoval {
    public static void main(String[] args) {
        String str = "Hello World";
        char charToRemove = 'o';
        String result = removeCharacter(str, charToRemove);
        System.out.println(result); // Output: Hell Wrld
    }
```

```
    public static String removeCharacter(String str, char charToRemove) {
        return str.replaceAll(String.valueOf(charToRemove), "");
    }
}
```

22. Write a java program to find the index of a substring.

Ans: Here's a Java program to find the index of a substring:

```
public class SubstringIndex {
    public static void main(String[] args) {
        String str = "Hello World";
        String substring = "World";
        int index = findSubstringIndex(str, substring);
        System.out.println(index); // Output: 6
    }

    public static int findSubstringIndex(String str, String substring) {
        return str.indexOf(substring);
    }
}
```