Lab Assignment – 25

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1)Write a Java program that uses lambda expressions to manipulate strings. Create lambda expressions to perform the following operations on a given string:

- Convert the string to uppercase
- Convert the string to lowercase
- Reverse the string

```
package com.wrapperclass.examples;
import java.util.function.Function;
public class StringManipulation {
	public static void main(String[] args) {
		String inputString = "Hello world!";

		// Convert the string to uppercase
		String resultUppercase = manipulateString(inputString, s -> s.toUpperCase());
		System.out.println("Uppercase: " + resultUppercase);

		// Convert the string to lowercase
		String resultLowercase = manipulateString(inputString, s -> s.toLowerCase());
		System.out.println("Lowercase: " + resultLowercase);

		// Reverse the string
		String resultReverse = manipulateString(inputString, s -> new StringBuilder(s).reverse().toString());
		System.out.println("Reverse: " + resultReverse);
	}
```

```
        private static String manipulateString(String
input, Function<String, String> operation) {
            return operation.apply(input);
        }

}
```

Output:

```
1 package com.wrapperclass.examples;
2 import java.util.function.Function;
3 public class StringManipulation {
4     public static void main(String[] args) {
5             String inputString = "Hello world!";
6
7             // Convert the string to uppercase
8             String resultUppercase = manipulateString(inputString, s -> s.toUpperCase());
9             System.out.println("Uppercase: " + resultUppercase);
10
11            // Convert the string to lowercase
12            String resultLowercase = manipulateString(inputString, s -> s.toLowerCase());
13            System.out.println("Lowercase: " + resultLowercase);
14
15            // Reverse the string
16            String resultReverse = manipulateString(inputString, s -> new StringBuilder(s).reve
17            System.out.println("Reverse: " + resultReverse);
18        }
19
20        private static String manipulateString(String input, Function<String, String> operation
21            return operation.apply(input);
22        }
23
```

```
Problems  Javadoc  Declaration  Console  Coverage
<terminated> StringManipulation [Java Application] C:\Users\USER\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_19.0.2.v20230129-1123\jre\bin\javaw.exe  (Dec 21, 2023, 6:03:59 PM –
Uppercase: HELLO WORLD!
Lowercase: hello world!
Reverse: !dlrow olleH
```

2) Write a Java program that demonstrates the use of method references for static methods. Create a functional interface and use a method reference to call a static method that calculates the square of a number.

```
package com.wrapperclass.examples;
interface SquareCalculator {
    int calculateSquare(int num);
}

// Utility class with a static method for calculating
the square
class MathUtils {
```

```
    static int square(int num) {
        return num * num;
    }
}
public class MethodReferenceExample {
    public static void main(String[] args) {
        // Using method reference to call the static
method
        SquareCalculator squareCalculator =
MathUtils::square;

        // Using the functional interface to calculate
the square
        int result =
squareCalculator.calculateSquare(5);

        System.out.println("Square of 5 is: " +
result);
    }

}
```

Output:

```
 1 package com.wrapperclass.examples;
 2 interface SquareCalculator {
 3     int calculateSquare(int num);
 4 }
 5
 6 // Utility class with a static method for calculating the square
 7 class MathUtils {
 8     static int square(int num) {
 9         return num * num;
10     }
11 }
12 public class MethodReferenceExample {
13     public static void main(String[] args) {
14         // Using method reference to call the static method
15         SquareCalculator squareCalculator = MathUtils::square;
16
17         // Using the functional interface to calculate the square
18         int result = squareCalculator.calculateSquare(5);
19
20         System.out.println("Square of 5 is: " + result);
21     }
22
23 }
```

```
Problems  Javadoc  Declaration  Console ×  Coverage
<terminated> MethodReferenceExample [Java Application] C:\Users\USER\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_19.0.2.v20
Square of 5 is: 25
```