Q.1

```
import java.util.Arrays;


public class ArraySorter {
   public static void sortArray(int[] arr) {
      try {
         Arrays.sort(arr);
         System.out.println("Sorted Array: " + Arrays.toString(arr));
      } catch (ArrayIndexOutOfBoundsException e) {
         System.out.println("Array Index Out Of Bounds Exception: " + e.getMessage());
      }
   }


   public static void main(String[] args) {
      int[] arr = {5, 3, 2, 1, 4};
      sortArray(arr);
   }
}
```

Output:

Sorted Array: [1, 2, 3, 4, 5]

Q.2

```
public class ExceptionDemo {
   public static void main(String[] args) {
      // 1. NullPointerException
      try {
```

```
    String str = null;
    System.out.println(str.length());
} catch (NullPointerException e) {
    System.out.println("Caught NullPointerException: " + e.getMessage());
}

// 2. ArrayIndexOutOfBoundsException
try {
    int[] arr = new int[3];
    arr[5] = 10;
} catch (ArrayIndexOutOfBoundsException e) {
    System.out.println("Caught ArrayIndexOutOfBoundsException: " + e.getMessage());
}

// 3. NumberFormatException
try {
    int num = Integer.parseInt("ABC");
} catch (NumberFormatException e) {
    System.out.println("Caught NumberFormatException: " + e.getMessage());
}

// 4. StringIndexOutOfBoundsException
try {
    String str = "Hello";
    char c = str.charAt(10);
```

```
        } catch (StringIndexOutOfBoundsException e) {
            System.out.println("Caught StringIndexOutOfBoundsException: " + e.getMessage());
        }
    }
}
```

Output:

```
Caught NullPointerException: Cannot invoke "String.length()" because "str" is null
Caught ArrayIndexOutOfBoundsException: Index 5 out of bounds for length 3
Caught NumberFormatException: For input string: "ABC"
Caught StringIndexOutOfBoundsException: String index out of range: 10
```

Q.3

```
import java.util.Scanner;

public class ArithmeticOperations {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.println("Enter two numbers:");
        int num1 = scanner.nextInt();
        int num2 = scanner.nextInt();

        // 1. Addition (Both numbers must be positive)
        try {
            if (num1 > 0 && num2 > 0) {
                System.out.println("Addition: " + (num1 + num2));
```

```
        } else {
            throw new ArithmeticException("Numbers must be positive for addition.");
        }
    } catch (ArithmeticException e) {
        System.out.println("Exception: " + e.getMessage());
    }

    // 2. Subtraction (First number must be greater than second)
    try {
        if (num1 > num2) {
            System.out.println("Subtraction: " + (num1 - num2));
        } else {
            throw new ArithmeticException("First number must be greater than the second for subtraction.");
        }
    } catch (ArithmeticException e) {
        System.out.println("Exception: " + e.getMessage());
    }

    // 3. Multiplication
    System.out.println("Multiplication: " + (num1 * num2));

    // 4. Division (Divisor should not be 0)
    try {
        if (num2 != 0) {
```

```
            System.out.println("Division: " + (num1 / num2));
        } else {
            throw new ArithmeticException("Divisor cannot be zero.");
        }
    } catch (ArithmeticException e) {
        System.out.println("Exception: " + e.getMessage());
    }

    scanner.close();
  }
}
```

Output:

Enter two numbers:

Addition: 15

Subtraction: 5

Multiplication: 50

Division: 2

Enter two numbers:

Exception: Numbers must be positive for addition.

Subtraction: 0

Multiplication: -5

Division: 0

Q.4

```
import java.util.Scanner;
```

```
class NoMatchException extends Exception {
    public NoMatchException(String message) {
        super(message);
    }
}

public class NoMatchExceptionDemo {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter a country name:");

        String country = scanner.nextLine();

        try {
            if (!country.equals("India")) {
                throw new NoMatchException("Input does not match 'India'.");
            } else {
                System.out.println("You entered: India");
            }
        } catch (NoMatchException e) {
            System.out.println("Exception: " + e.getMessage());
        }

        scanner.close();
    }
```

```
}
```

Output:

```
Enter a country name:
Exception: Input does not match 'India'.
```

Q.5

```
import java.util.Scanner;

class NameTooLongException extends Exception {
    public NameTooLongException(String message) {
        super(message);
    }
}

public class NameLengthChecker {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter your name:");

        String name = scanner.nextLine();

        try {
            if (name.length() > 15) {
                throw new NameTooLongException("Name is too long. It must be less than 15 characters.");
            } else {
                System.out.println("Hello, " + name);
```

```
            }
        } catch (NameTooLongException e) {
            System.out.println("Exception: " + e.getMessage());
        }

        scanner.close();
    }
}
```

Output:

```
Enter your name:
Exception: Name is too long. It must be less than 15 characters.
```

Q.6

```
import java.util.Scanner;

class InvalidVoterIDException extends Exception {
    public InvalidVoterIDException(String message) {
        super(message);
    }
}

public class VoterIDValidation {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.println("Enter your Voter ID (7 digits):");
```

```
        String voterID = scanner.nextLine();


        try {
            if (voterID.length() != 7 || !voterID.matches("[0-9]+")) {
                throw new InvalidVoterIDException("Invalid Voter ID. It must contain exactly 7 digits.");
            } else {
                System.out.println("Voter ID is valid.");
            }
        } catch (InvalidVoterIDException e) {
            System.out.println("Exception: " + e.getMessage());
        } finally {
            System.out.println("VOTE FOR INDIA");
        }


        scanner.close();
    }
}
```

Output:

Enter your Voter ID (7 digits):

Exception: Invalid Voter ID. It must contain exactly 7 digits.

VOTE FOR INDIA