

Task 1:

Debugging Exercise 1: Array Manipulation

1. Error: No errors in this code

2. **Code:**

```
public class ArrayManipulation {  
    public static void main(String[] args) {  
        int[] numbers = {1, 2, 3, 4, 5};  
        for (int i = 0; i <= numbers.length; i++) {  
            System.out.println(numbers[i]);  
        }  
    }  
}
```

3. **Error Explanation:** No Explanation

Debugging Exercise 2: Object-Oriented Programming

1. Error: No declaration of method stop

2. Code :

```
class Car {
private String make;
private String model;

public Car(String make, String model) {
this.make = make;
this.model = model;
System.out.println("This car is made by "+this.make+" and mode is "+this.model);
}

public void start() {
System.out.println("Starting the car.");
}
//Declaring the method stop
public void stop(){
System.out.println("Stoping the car"); //Error sloved
}
}

public class Main {
public static void main(String[] args) {
Car car = new Car("Toyota", "Camry");
car.start();
car.stop(); //We have error in this line, We have to declare the method
```

3. Error Explanation: In the main method you call a method but it was not declared. So we are facing error. To slove that I decalred a method call stop in the car class.

Debugging Exercise 3: Exception Handling

1.Error: Arithmetic Exception in method divide.

2. Code:

```
package Valuteofcodes;
```

```
public class ExceptionHandling {  
    public static void main(String[] args) {  
        int[] numbers = {1, 2, 3, 4, 5};  
        try {  
            System.out.println(numbers[10]);  
        } catch (ArrayIndexOutOfBoundsException e) {  
            System.out.println("Array index out of bounds.");  
        }  
        int result = divide(10, 0);  
        System.out.println("Result: " + result);  
    }  
}
```

```
public static int divide(int a, int b) {  
    try {return a / b; } //Exception occurs here  
    catch(ArithmeticException e){  
        System.out.println("Enter the correct value of b ");  
        return -1;  
    }  
}
```

3.Error Explanation: When it divide a by b. It is dividing by 0 so, we will get run time exception that is Arithmetic Exception. I solved it by using try-catch exception method.

Exercise 4:

1. Error: No Error

2. Code :

```
public class Fibonacci {  
    public static int fibonacci(int n) {  
        if (n <= 1)  
            return n;  
        else  
            return fibonacci(n-1) + fibonacci(n-2);  
    }  
}
```

```
public static void main(String[] args) {  
    int n = 6;  
    int result = fibonacci(n);  
    System.out.println("The Fibonacci number at position " + n + " is: " + result);  
}  
}
```

3. Error Explanation: No Explanation.

Exercise 5:

1. Error: No Error

2. Code :

```
import java.util.*;

public class PrimeNumbers {
    public static List<Integer> findPrimes(int n) {
        List<Integer> primes = new ArrayList<>();
        for (int i = 2; i <= n; i++) {
            boolean isPrime = true;
            for (int j = 2; j < i; j++) {
                if (i % j == 0) {
                    isPrime = false;
                    break;
                }
            }
            if (isPrime) {
                primes.add(i);
            }
        }
        return primes;
    }

    public static void main(String[] args) {
        int n = 20;
        List<Integer> primeNumbers = findPrimes(n);
        System.out.println("Prime numbers up to " + n + ": " + primeNumbers);
    }
}
```

3. Error Explanation: No Explanation.