Worksheet 2

Q1.

```
package Worksheet2;

import java.util.Scanner;

public class CountDigits {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a number: ");
        long number = scanner.nextLong();

        int digitCount = countDigits(number);

        System.out.println("Number of digits in " + number + " is: " +
digitCount);

        scanner.close();
    }

    public static int countDigits(long number) {
        number = Math.abs(number);

        if (number == 0) {
            return 1;
        }

        int count = 0;
        while (number > 0) {
            number = number / 10;
            count++;
        }

        return count;
    }
}
```

Q2.

```
package Worksheet2;

import java.util.Scanner;

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

```
        System.out.print("Enter a string: ");
        String input = scanner.nextLine().toLowerCase();

        int vowelsCount = 0;
        int consonantsCount = 0;

        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            if (Character.isLetter(ch)) {
                if (isVowel(ch)) {
                    vowelsCount++;
                } else {
                    consonantsCount++;
                }
            }
        }

        System.out.println("Number of vowels: " + vowelsCount);
        System.out.println("Number of consonants: " + consonantsCount);

        scanner.close();
    }

    public static boolean isVowel(char ch) {
        ch = Character.toLowerCase(ch);

        return ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u';
    }
}
```

Q3.

```
package Worksheet2;

// Parent class (superclass)
class Shape {
    protected String color;

    public Shape(String color) {
        this.color = color;
    }

    public void setColor(String color) {
        this.color = color;
    }
```

```
    public String getColor() {
        return color;
    }

    public double area() {
        return 0.0;
    }

    public void display() {
        System.out.println("This is a " + color + " shape.");
    }
}

// Child class (subclass)
class Rectangle extends Shape {
    private double width;
    private double height;

    public Rectangle(String color, double width, double height) {
        super(color);
        this.width = width;
        this.height = height;
    }

    @Override
    public double area() {
        return width * height;
    }

    @Override
    public void display() {
        System.out.println("This is a " + color + " rectangle with width " +
width + " and height " + height);
    }
}

// Child class (subclass)
class Circle extends Shape {
    private double radius;

    public Circle(String color, double radius) {
        super(color);
        this.radius = radius;
    }

    @Override
    public double area() {
        return Math.PI * radius * radius;
```

```
    }

    @Override
    public void display() {
        System.out.println("This is a " + color + " circle with radius " +
radius);
    }
}

public class Main {
    public static void main(String[] args) {
        Rectangle rect = new Rectangle("blue", 5, 10);
        Circle circle = new Circle("red", 7.5);

        rect.display();
        System.out.println("Area of rectangle: " + rect.area());
        System.out.println();

        circle.display();
        System.out.println("Area of circle: " + circle.area());
    }
}
```

Q4.

```
package Worksheet2;

import java.util.Scanner;

public class CheckVowel {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a string: ");
        String input = scanner.nextLine();

        boolean vowelPresent = false;

        input = input.toLowerCase();

        for (int i = 0; i < input.length(); i++) {
            char ch = input.charAt(i);

            if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')
{
                vowelPresent = true;
                break;
```

```
            }
        }
        System.out.print("Is Vowel present = " + vowelPresent);

        scanner.close();
    }
}
```

Q5.

```
package Worksheet2;

import java.util.Arrays;
import java.util.HashSet;
import java.util.Set;

public class RemoveDuplicatesFromArray {
    public static void main(String[] args) {
        int[] arr = { 1, 2, 3, 4, 2, 5, 6, 1, 3 };

        System.out.println("Original Array: " + Arrays.toString(arr));

        int[] uniqueArray = removeDuplicates(arr);

        System.out.println("Array with Duplicates Removed: " +
Arrays.toString(uniqueArray));
    }

    public static int[] removeDuplicates(int[] arr) {
        Set<Integer> set = new HashSet<>();

        for (int num : arr) {
            set.add(num);
        }

        int[] uniqueArray = new int[set.size()];

        int index = 0;
        for (int num : set) {
            uniqueArray[index++] = num;
        }

        return uniqueArray;
    }
}
```