Name: Virak Rith

Student ID: P20230033

Course: OOP in java

Instructor: HOK Tin

Assignment: Lab02

Due Date: May 12, 20s25 (11:59 AM)

Exercise 1

Source Codes

```java
import java.util.Scanner;

public class Ex1 {

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Input your name: ");
        String name = scanner.nextLine();
        System.out.println("Hello, " + name + "!");
        scanner.close();
    }
}
```

Output

```
Input your name: Rith
Hello, Rith!
```

Exercise 2

Source Code

```java
import java.util.Scanner;

public class Ex2 {

    public static void main(String[] args) {
```

```java
        Scanner scanner = new Scanner(System.in);
        double dollar;
        System.out.println("Program for converting money in Riels to Dollars.");
        System.out.print("Please input conversion rate of 1 dollar in Riels: ");
        double exchange_rate = scanner.nextDouble();
        System.out.print("Please input money to exchange in Riels: ");
        double riel = scanner.nextDouble();
        dollar = riel / exchange_rate;
        System.out.println(riel + " RIELS = " + dollar + " USD");
        scanner.close();
    }
}
```

Output:

```
Program for converting money in Riels to Dollars.
Please input conversion rate of 1 dollar in Riels: 4080
Please input money to exchange in Riels: 42000
42000.0 RIELS = 10.294117647058824 USD
```

Exercise 3

Source Code:

```java
import java.util.Scanner;

public class Ex3 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        String[] answer = new String[8];

        System.out.println("==== Covid-19 Screen Health ===");
        System.out.println("Q1. Feeling feverish and/or having chills?");
        System.out.print("Answer: ");
        answer[0] = scanner.nextLine();
        System.out.println(
                "Q2. Has there been any use of fever reducing medication within
 the last 24 hours not due to another health\r\n"
                        + "condition?");
        System.out.print("Answer: ");
        answer[1] = scanner.nextLine();
        System.out.println("Q3. A new cough that is not due to another health
condition?");
        System.out.print("Answer: ");
```

```java
        answer[2] = scanner.nextLine();
        System.out.println("Q4. New chills that are not due to another health
 condition?");
        System.out.print("Answer: ");
        answer[3] = scanner.nextLine();
        System.out.println("Q5. A new sore throat that is not due to another
 health condition?");
        System.out.print("Answer: ");
        answer[4] = scanner.nextLine();
        System.out.println("Q6. A new loss of taste or smell?");
        System.out.print("Answer: ");
        answer[5] = scanner.nextLine();
        System.out.println("Q7. Have you had a positive test for the virus that
causes COVID-19\r\n"
                + "disease within the past 10 days?");
        System.out.print("Answer: ");
        answer[6] = scanner.nextLine();
        System.out.println(
                "Q8. In the past 14 days, have you had close contact (within about
 6 feet for 15 minutes or more) with someone with\r\n"
                        + "suspected or confirmed COVID-19?");
        System.out.print("Answer: ");
        answer[7] = scanner.nextLine();

        System.out.println("===============================================");
        System.out.println("| Questions            | Answers               |");
        System.out.println("===============================================");

        for (int i = 0; i < 8; i++) {
            if (answer[i].equalsIgnoreCase("yes")) {
                System.out.printf("| Q %-17d | %-23s |\n", i + 1, answer[i]);
                System.out.println("-------------------------------------------
---");
            } else if (answer[i].equalsIgnoreCase("no")) {
                System.out.printf("| Q %-17d | %-23s |\n", i + 1, answer[i]);
                System.out.println("-------------------------------------------
---");
            } else {
                System.out.printf("| Q %-17d | %-23s |\n", i + 1, "Invalid");
                System.out.println("-------------------------------------------
---");
            }
        }

        scanner.close();
    }

}
```

Output:

```
==== Covid-19 Screen Health ===
Q1. Feeling feverish and/or having chills?
Answer: chills
Q2. Has there been any use of fever reducing medication within the last 24 hours
not due to another health
condition?
Answer: yes
Q3. A new cough that is not due to another health condition?
Answer: no
Q4. New chills that are not due to another health condition?
Answer: yes
Q5. A new sore throat that is not due to another health condition?
Answer: yes
Q6. A new loss of taste or smell?
Answer: yes
Q7. Have you had a positive test for the virus that causes COVID-19
disease within the past 10 days?
Answer: no
Q8. In the past 14 days, have you had close contact (within about 6 feet for 15
minutes or more) with someone with
suspected or confirmed COVID-19?
Answer: no
=================================================
| Questions          | Answers                   |
=================================================
| Q 1                | Invalid                   |
-------------------------------------------------
| Q 2                | yes                       |
-------------------------------------------------
| Q 3                | no                        |
-------------------------------------------------
| Q 4                | yes                       |
-------------------------------------------------
| Q 5                | yes                       |
-------------------------------------------------
| Q 6                | yes                       |
-------------------------------------------------
| Q 7                | no                        |
-------------------------------------------------
| Q 8                | no                        |
-------------------------------------------------
```

Exercise 4

Source Code:

```java
import java.util.Scanner;

public class Ex4 {
```

```java
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);
        int inputSecond;

        System.out.print("Input number of seconds: ");
        inputSecond = scanner.nextInt();

        int hours = inputSecond / 3600;
        int minutes = (inputSecond % 3600) / 60;
        int second = inputSecond % 60;

        System.out.printf("Time corresponding to %d seconds is: %02d:%02d:%02d",
inputSecond, hours, minutes, second);

        scanner.close();

    }

}
```

Output:

```
Input number of seconds: 2840
Time corresponding to 2840 seconds is: 00:47:20
```

Exercise 5

Source Code:

```java
import java.util.Scanner;

public class Ex5 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        double x, y, z;

        System.out.println("Program for calculating equation 1/x = 1/y + 1/z to
find value of x");
        System.out.print("Please input y: ");
        y = scanner.nextDouble();
        System.out.print("Please input z: ");
        z = scanner.nextDouble();
```

```java
        x = 1 / ((1 / y) + (1 / z));

        System.out.println("Result x = " + x);

        scanner.close();

    }

}
```

Output:

```
Program for calculating equation 1/x = 1/y + 1/z to find value of x
Please input y: 2
Please input z: 4
Result x = 1.3333333333333333
```

Exercise 6

Source Code:

```java
import java.util.Scanner;

public class Ex6 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int number;

        System.out.print("Input a number to check whether it is a prime number: ");
        number = scanner.nextInt();

        if (isPrime(number)) {
            System.out.println(number + " is a prime number.");
        } else {
            int divisor = findDivisor(number);
            System.out.println(number + " is not a prime number, because it is divisible by " + divisor + ".");
        }

        scanner.close();

    }
```

```java
    public static boolean isPrime(int n) {
        if (n <= 1) {
            return false;
        }
        for (int i = 2; i <= Math.sqrt(n); i++) {
            if (n % i == 0) {
                return false;
            }
        }
        return true;
    }

    public static int findDivisor(int n) {
        for (int i = 2; i <= Math.sqrt(n); i++) {
            if (n % i == 0) {
                return i;
            }
        }
        return -1; // Should never happen if n is not prime
    }

}
```

Output:

```
Input a number to check whether it is a prime number: 57
57 is not a prime number, because it is divisible by 3.

Input a number to check whether it is a prime number: 13
13 is a prime number.
```

Exercise 7

Source Code:

```java
import java.util.Scanner;

public class Ex7 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int vowel = 0;
        int consonant = 0;
        int space = 0;
```

```java
            System.out.print("Input a sentence: ");
            String txt = scanner.nextLine();

            txt = txt.toLowerCase();

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

                if (ch == ' ') {
                    space++;
                } else if (ch >= 'a' && ch <= 'z') {
                    if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u')
{
                        vowel++;
                    } else {
                        consonant++;
                    }
                }
            }

            System.out.println("Count of vowel is: " + vowel);
            System.out.println("Count of consonant is: " + consonant);
            System.out.println("Count of space is: " + space);

            scanner.close();

        }

    }
```

Output:

```
Input a sentence: I love you
Count of vowel is: 5
Count of consonant is: 3
Count of space is: 2
```

Exercise 8

Source Code:

```java
import java.util.Scanner;

public class Ex8 {
    public static void main(String[] args) {
```

```java
        Scanner scanner = new Scanner(System.in);

        int[] value = new int[5];

        System.out.print("Input value of A: ");
        value[0] = scanner.nextInt();
        System.out.print("Input value of B: ");
        value[1] = scanner.nextInt();
        System.out.print("Input value of C: ");
        value[2] = scanner.nextInt();
        System.out.print("Input value of D: ");
        value[3] = scanner.nextInt();
        System.out.print("Input value of E: ");
        value[4] = scanner.nextInt();

        int min = value[0];

        for(int i = 0; i < 5; i++) {
            if(value[i] <= min) {
                min = value[i];
            }
        }

        System.out.println("The smallest number among A, B, C, D, and E is: " +
min);

        scanner.close();

    }
}
```

Output:

```
Input value of A: 13
Input value of B: 22
Input value of C: 11
Input value of D: 66
Input value of E: 99
The smallest number among A, B, C, D, and E is: 11
```

Exercise 9

Source Code:

```java
import java.util.Scanner;

public class Ex9 {
```

```java
    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int[] arr = new int[5];
        String answer;
        int max;
        int count = 0;

        do {

            System.out.print("Input value in Array at index " + count + ": ");
            arr[count] = scanner.nextInt();
            count++;

            if (count >= arr.length) {
                System.out.println("\nArray is full. Cannot add more values.");
                break;
            }

            scanner.nextLine();
            System.out.print("Do you want to add more(y/n)?: ");
            answer = scanner.nextLine();

        } while (answer.equalsIgnoreCase("y"));

        max = arr[0];

        for (int i : arr) {
            if (i >= max) {
                max = i;
            }
        }

        System.out.println("\nThe biggest number among in Array is: " + max);

        scanner.close();

    }

}
```

Output:

```
Input value in Array at index 0: 12
Do you want to add more(y/n)?: y
Input value in Array at index 1: 32
Do you want to add more(y/n)?: y
Input value in Array at index 2: 42
Do you want to add more(y/n)?: y
```

```
Input value in Array at index 3: 23
Do you want to add more(y/n)?: n

The biggest number among in Array is: 42
```

Exercise 10

Source Code:

```java
import java.util.Scanner;

public class Ex10 {

    public static void main(String[] args) {

        Scanner scanner = new Scanner(System.in);

        int opt;
        double a, b;
        String answer;

        do {

            Menu();

            opt = scanner.nextInt();

            switch (opt) {

            case 1:
                do {
                    System.out.println("=== Addition(+) ===");
                    System.out.print("Please input value A: ");
                    a = scanner.nextDouble();
                    System.out.print("Please input value B: ");
                    b = scanner.nextDouble();
                    System.out.println("Answer of " + a + " + " + b + " = " +
Addition(a, b));

                    System.out.println("Do you want to continue? If no go to
Menu.");
                    System.out.print("Input your answer (y/n): ");
                    scanner.nextLine();
                    answer = scanner.nextLine();
                } while (answer.equalsIgnoreCase("y"));
                break;
            case 2:
                do {
                    System.out.println("=== Substruction(-) ===");
                    System.out.print("Please input value A: ");
```

```java
                    a = scanner.nextDouble();
                    System.out.print("Please input value B: ");
                    b = scanner.nextDouble();
                    System.out.println("Answer of " + a + " - " + b + " = " +
Substruction(a, b));

                    System.out.println("Do you want to continue? If no go to
Menu.");
                    System.out.print("Input your answer (y/n): ");
                    scanner.nextLine();
                    answer = scanner.nextLine();
                } while (answer.equalsIgnoreCase("y"));
                break;
            case 3:
                do {
                    System.out.println("=== Multiplication(x) ===");
                    System.out.print("Please input value A: ");
                    a = scanner.nextDouble();
                    System.out.print("Please input value B: ");
                    b = scanner.nextDouble();
                    System.out.println("Answer of " + a + " x " + b + " = " +
Multiplication(a, b));

                    System.out.println("Do you want to continue? If no go to
Menu.");
                    System.out.print("Input your answer (y/n): ");
                    scanner.nextLine();
                    answer = scanner.nextLine();
                } while (answer.equalsIgnoreCase("y"));
                break;
            case 4:
                do {
                    System.out.println("=== Division(/) ===");
                    System.out.print("Please input value A: ");
                    a = scanner.nextDouble();
                    System.out.print("Please input value B: ");
                    b = scanner.nextDouble();
                    System.out.println("Answer of " + a + " / " + b + " = " +
Division(a, b));

                    System.out.println("Do you want to continue? If no go to
Menu.");
                    System.out.print("Input your answer (y/n): ");
                    scanner.nextLine();
                    answer = scanner.nextLine();
                } while (answer.equalsIgnoreCase("y"));
                break;
            case 5:
                System.out.println("Exiting Program...");
                break;
            default:
                System.out.println("\nPlease choose an option again.");
                break;
        }
```

```java
        } while (opt != 5);

        scanner.close();

    }

    public static void Menu() {
        System.out.println("=== Math Menu ===");
        System.out.println("1. Addition (+)");
        System.out.println("2. Substruction (-)");
        System.out.println("3. Multiplication (x)");
        System.out.println("4. Division (/)");
        System.out.println("5. Quit");
        System.out.print("\nPlease choose an option: ");
    }

    public static double Addition(double a, double b) {
        return a + b;
    }

    public static double Substruction(double a, double b) {
        return a - b;
    }

    public static double Multiplication(double a, double b) {
        return a * b;
    }

    public static double Division(double a, double b) {
        return a / b;
    }

}
```

Output:

```
=== Math Menu ===
1. Addition (+)
2. Substruction (-)
3. Multiplication (x)
4. Division (/)
5. Quit

Please choose an option: 1
=== Addition(+) ===
Please input value A: 10
Please input value B: 20
Answer of 10.0 + 20.0 = 30.0
Do you want to continue? If no go to Menu.
Input your answer (y/n): n
```

```
=== Math Menu ===
1. Addition (+)
2. Substruction (-)
3. Multiplication (x)
4. Division (/)
5. Quit

Please choose an option: 2
=== Substruction(-) ===
Please input value A: 10
Please input value B: 5
Answer of 10.0 - 5.0 = 5.0
Do you want to continue? If no go to Menu.
Input your answer (y/n): n
=== Math Menu ===
1. Addition (+)
2. Substruction (-)
3. Multiplication (x)
4. Division (/)
5. Quit

Please choose an option: 3
=== Multiplication(x) ===
Please input value A: 4
Please input value B: 3
Answer of 4.0 x 3.0 = 12.0
Do you want to continue? If no go to Menu.
Input your answer (y/n): n
=== Math Menu ===
1. Addition (+)
2. Substruction (-)
3. Multiplication (x)
4. Division (/)
5. Quit

Please choose an option: 4
=== Division(/) ===
Please input value A: 10
Please input value B: 2
Answer of 10.0 / 2.0 = 5.0
Do you want to continue? If no go to Menu.
Input your answer (y/n): n
=== Math Menu ===
1. Addition (+)
2. Substruction (-)
3. Multiplication (x)
4. Division (/)
5. Quit

Please choose an option: 5
Exiting Program...
```

Exercise 11

Source Code:

```java
class ID_Card {

    String id;
    String full_name;
    String gender;
    String group;
    String major;

    ID_Card(String id, String full_name, String gender, String group, String
major) {
        this.id = id;
        this.full_name = full_name;
        this.gender = gender;
        this.group = group;
        this.major = major;
    }

    // It will print unreadable format!!!
//  void display() {
//      System.out.println("ID: " + id);
//      System.out.println("Full Name: " + full_name);
//      System.out.println("Gender: " + gender);
//      System.out.println("Group: " + group);
//      System.out.println("Nationality: " + major);
//  }
    // To solve this problem I use toString
    @Override
    public String toString() {
        return "ID: " + id + "\nName: " + full_name + "\nGender: " + gender +
"\nGroup: " + group + "\nMajor: " + major;
    }

}

class Facebook_Post {

    String username;
    String caption;
    int numberOfLike;
    int numberOfComment;
    int numberOfShare;

    Facebook_Post(String username, String caption, int numberOfLike, int
numberOfComment, int numberOfShare) {
        this.username = username;
        this.caption = caption;
```

```java
        this.numberOfLike = numberOfLike;
        this.numberOfComment = numberOfComment;
        this.numberOfShare = numberOfShare;
    }

    @Override
    public String toString() {
        return "Username: " + username + "\nCaption: " + caption + "\nLike: " +
numberOfLike + "\nComment: "
                + numberOfComment + "\nShare: " + numberOfShare;
    }
}

class Phone {

    String brand;
    String model;
    String operating_system;
    String chip;
    double price;

    Phone(String brand, String model, String operating_system, String chip, double
price) {
        this.brand = brand;
        this.model = model;
        this.operating_system = operating_system;
        this.chip = chip;
        this.price = price;
    }

    @Override
    public String toString() {
        return String.format("Brand: %s\nModel: %s\nOperating System: %s\nChip:
%s\nPrice: $%.2f", brand, model,
                operating_system, chip, price);
    }
}

class Book {

    int id;
    String title;
    String author;
    String isbn;
    double price;

    Book(int id, String isbn, String title, String author, double price) {
        this.id = id;
        this.isbn = isbn;
        this.title = title;
        this.author = author;
        this.price = price;
    }
```

```java
    @Override
    public String toString() {
        return String.format("ID: %s\nISBN: %s\nTitle: %s\nAuthor: %s\nPrice:
$%.2f", id, isbn, title, author, price);
    }
}

public class Ex11 {

    public static void main(String[] args) {

        ID_Card idCard1 = new ID_Card("p20230018", "Do Davin", "Male", "A",
"Software Engineering");
        ID_Card idCard2 = new ID_Card("p20230033", "Virak Rith", "Male", "A",
"Software Engineering");
        ID_Card idCard3 = new ID_Card("p20230038", "Chin Hongnyheng", "Male", "A",
"Software Engineering");

        Facebook_Post facebookPost1 = new Facebook_Post("Naraka", "Hello, World!",
10000, 2945, 3021);
        Facebook_Post facebookPost2 = new Facebook_Post("Godzilla", "Today Sad:(",
1034, 567, 345);
        Facebook_Post facebookPost3 = new Facebook_Post("Scar", "I'm so lonely:(",
341, 57, 21);

        Phone phone1 = new Phone("Apple", "iPhone 16 Pro Max", "iOS", "A18 Pro",
1295);
        Phone phone2 = new Phone("Samsung", "Galaxy S24 Ultra", "Android ",
"Qualcomm Snapdragon 8 Gen 3 (4 nm)", 869);
        Phone phone3 = new Phone("Huawei", "Huawei P60 Pro", "Android ",
"Snapdragon 8 Gen 2", 800);

        Book book1 = new Book(1, "9780132350884", "Clean Code", "Robert C.
Martin", 39.99);
        Book book2 = new Book(2, "9780134685991", "Effective Java", "Joshua
Bloch", 45.50);
        Book book3 = new Book(3, "9780201616224", "The Pragmatic Programmer",
"Andrew Hunt", 42.75);

        ID_Card[] idCardArr = new ID_Card[3];
        idCardArr[0] = idCard1;
        idCardArr[1] = idCard2;
        idCardArr[2] = idCard3;

        Facebook_Post[] facebookPostArr = new Facebook_Post[3];
        facebookPostArr[0] = facebookPost1;
        facebookPostArr[1] = facebookPost2;
        facebookPostArr[2] = facebookPost3;

        Phone[] phoneArr = new Phone[3];
        phoneArr[0] = phone1;
        phoneArr[1] = phone2;
        phoneArr[2] = phone3;
```

```java
        Book[] bookArr = new Book[3];
        bookArr[0] = book1;
        bookArr[1] = book2;
        bookArr[2] = book3;

        System.out.println("=== ID Card ===\n");
        for (ID_Card i : idCardArr) {
            System.out.println(i + "\n");
        }

        System.out.println("=== Facebook Post ===\n");
        for (Facebook_Post i : facebookPostArr) {
            System.out.println(i + "\n");
        }

        System.out.println("=== Phone ===\n");
        for (Phone i : phoneArr) {
            System.out.println(i + "\n");
        }

        System.out.println("=== Book ===\n");
        for (Book i : bookArr) {
            System.out.println(i + "\n");
        }

    }

}
```

Output:

```
=== ID Card ===

ID: p20230018
Name: Sok
Gender: Male
Group: A
Major: SE

ID: p20230033
Name: Sao
Gender: Male
Group: A
Major: SE

ID: p20230038
Name: Chan
Gender: Male
Group: A
Major: SE
```

```
=== Facebook Post ===

Username: Tola
Caption: bye world!
Like: 10000
Comment: 2945
Share: 3021

Username: Sokha
Caption: i miss you:(
Like: 1034
Comment: 567
Share: 345

Username: Thy
Caption: Im so tired of my life
Like: 341
Comment: 57
Share: 21

=== Phone ===

Brand: Apple
Model: iPhone 12pro
Operating System: iOS
Chip: A18 Pro
Price: $1295.00

Brand: Samsung
Model: Galaxy S22
Operating System: Android
Chip: Qualcomm Snapdragon 8 Gen 3 (4 nm)
Price: $869.00

Brand: Oppo
Model: Oppo reno 5
Operating System: Android
Chip: Snapdragon 8 Gen 2
Price: $800.00

=== Book ===

ID: 1
ISBN: 9780132350884
Title: C++ basic
Author: John son
Price: $39.99

ID: 2
ISBN: 9780134685991
Title: Java programming
Author: Rith
Price: $45.50
```

```
ID: 3
ISBN: 9780201616224
Title: life is a game
Author: pu chhok
Price: $42.7
```

Link to GitHub Account : Click Here ❤️

Note: Viewing in VsCode IDE for better formatting!!!

```
ID: 3
ISBN: 9780201616224
Title: life is a game
Author: pu chhok
Price: $42.7
```