

CS1073
FR03B
Lab #4

Daniyal Khan
3765942

Question I:

```
/**
The class is used to track the sleep of user
@author Daniyal Khan 3765942
*/

import java.util.Scanner;

public class SleepTracker {

    public static void main(String[] args) {

        Scanner scan = new Scanner(System.in);
        System.out.print("Enter your optimal sleep time in hours:
");
        double optimalTime = scan.nextDouble();

        int nightCount = 0;
        int belowOptimalSleep = 0;
        double totalSleepTime = 0;
        double lowestSleepTime = 0;

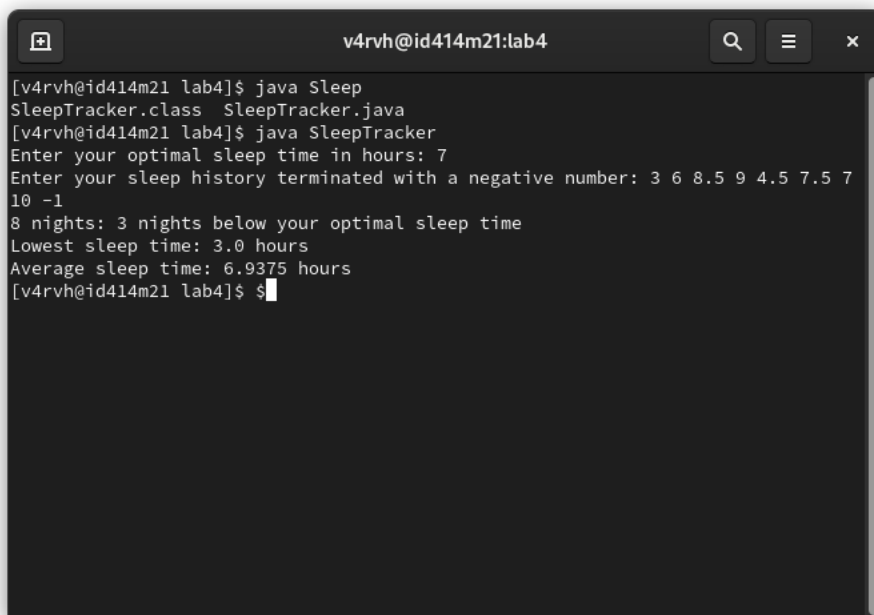
        System.out.print("Enter your sleep history terminated with
a negative number: ");
        double sleepHistory = scan.nextDouble();
        lowestSleepTime = sleepHistory;

        while (sleepHistory != -1) {
            if (optimalTime > sleepHistory) {
                belowOptimalSleep++;
            }
            if (sleepHistory <= lowestSleepTime) {
                lowestSleepTime = sleepHistory;
            }
            totalSleepTime += sleepHistory;
            nightCount++;
            sleepHistory = scan.nextDouble();
        }

        double averageSleepTime =
(double)totalSleepTime/nightCount;
```

```
        System.out.println(nightCount + " nights: " +
belowOptimalSleep + " nights below your optimal sleep time");
        System.out.println("Lowest sleep time: " + lowestSleepTime
+ " hours");
        System.out.println("Average sleep time: " +
averageSleepTime + " hours");
    }
}
```

Output:

A terminal window titled 'v4rvh@id414m21:lab4' with search, menu, and close icons. It shows the execution of a Java program. The user runs 'java SleepTracker.class' and 'java SleepTracker'. The program prompts for an optimal sleep time (7) and a sleep history (3 6 8.5 9 4.5 7.5 7 10 -1). It then outputs: '8 nights: 3 nights below your optimal sleep time', 'Lowest sleep time: 3.0 hours', and 'Average sleep time: 6.9375 hours'.

```
v4rvh@id414m21:lab4
[v4rvh@id414m21 lab4]$ java SleepTracker.class
SleepTracker.class  SleepTracker.java
[v4rvh@id414m21 lab4]$ java SleepTracker
Enter your optimal sleep time in hours: 7
Enter your sleep history terminated with a negative number: 3 6 8.5 9 4.5 7.5 7
10 -1
8 nights: 3 nights below your optimal sleep time
Lowest sleep time: 3.0 hours
Average sleep time: 6.9375 hours
[v4rvh@id414m21 lab4]$
```

```
v4rvh@id414m21:lab4
[v4rvh@id414m21 lab4]$ java SleepTracker
Enter your optimal sleep time in hours: 8
Enter your sleep history terminated with a negative number: 5 6.5 7 8.5 5 6 7 8
9 -1
9 nights: 6 nights below your optimal sleep time
Lowest sleep time: 5.0 hours
Average sleep time: 6.888888888888889 hours
[v4rvh@id414m21 lab4]$
```

Question II:

```
/**
This class is used to calculate the insurance quote of a
vechicle
@author Daniyal Khan 3765942
*/

import java.util.Scanner;

public class InsuranceQuote {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        final int baseRate = 900;
        double insuranceQuote = baseRate;

        System.out.print("Enter the model year of the vehicle:
");
        int modelYear = scan.nextInt();
        if (modelYear < 2016) {
            insuranceQuote += 50; // surcharge of 50 dollars
if model is older than 2016
        }

        System.out.print("Enter your age: ");
        int driverAge = scan.nextInt();
        scan.nextLine(); // Consume the newline character

        if (driverAge < 25) {
            String eduDriveCourse = "";
            System.out.print("Did you complete a driver
education course (enter yes or no): ");
            while (true) {
                eduDriveCourse = scan.nextLine();
                if (eduDriveCourse.equals("yes")) {
                    insuranceQuote += 75; // additional
charge of 75 if driver course complete
                    break;
                }
                else if (eduDriveCourse.equals("no")) {
                    insuranceQuote += 175; // additional
charge of 175 otherwise
                    break;
                }
            }
        }
    }
}
```

```

        System.out.print("Enter yes or no: ");
    }
}

    System.out.print("Do you drive the vehicle to work
(enter yes or no): ");
    while (true) {
        String driveToWork = scan.nextLine();
        if (driveToWork.equals("yes")) {
            System.out.print("What is the distance of
your commute in km: ");
            double distanceToCommute =
scan.nextDouble();
            scan.nextLine();

            if (distanceToCommute < 20) {
                insuranceQuote += 100; // distance to
commute less than 20 than 100 fees
                break;
            }
            else {
                insuranceQuote += 150; // additional
fee of 150 otherwise
                break;
            }
        }
        else if (driveToWork.equals("no")) {
            break;
        }
        System.out.print("Enter yes or no: ");
    }

    System.out.println("");
    System.out.println("Insurance Rate: $" +
insuranceQuote);
}
}

```

Output:



A terminal window titled `..073/Labs/Lab4 (-zsh)` with a status bar showing `1`. The terminal displays the execution of a Java program named `InsuranceQuote`. The user enters the following inputs: `2016` for the model year, `34` for age, and `no` for driving to work. The program outputs `Insurance Rate: $900.0`. The terminal session is captured in two screenshots. The first screenshot shows the command `java InsuranceQuote` and the first two prompts. The second screenshot shows the third prompt and the final output. Both screenshots include a progress bar at the top indicating a duration of 9 seconds and a time of 08:06:32 pm and 08:06:46 pm respectively.

```
~/0/CS1073/Labs/Lab4  
java InsuranceQuote  
Enter the model year of the vehicle: 2016  
Enter your age: 34  
Do you drive the vehicle to work (enter yes or no): no  
Insurance Rate: $900.0
```

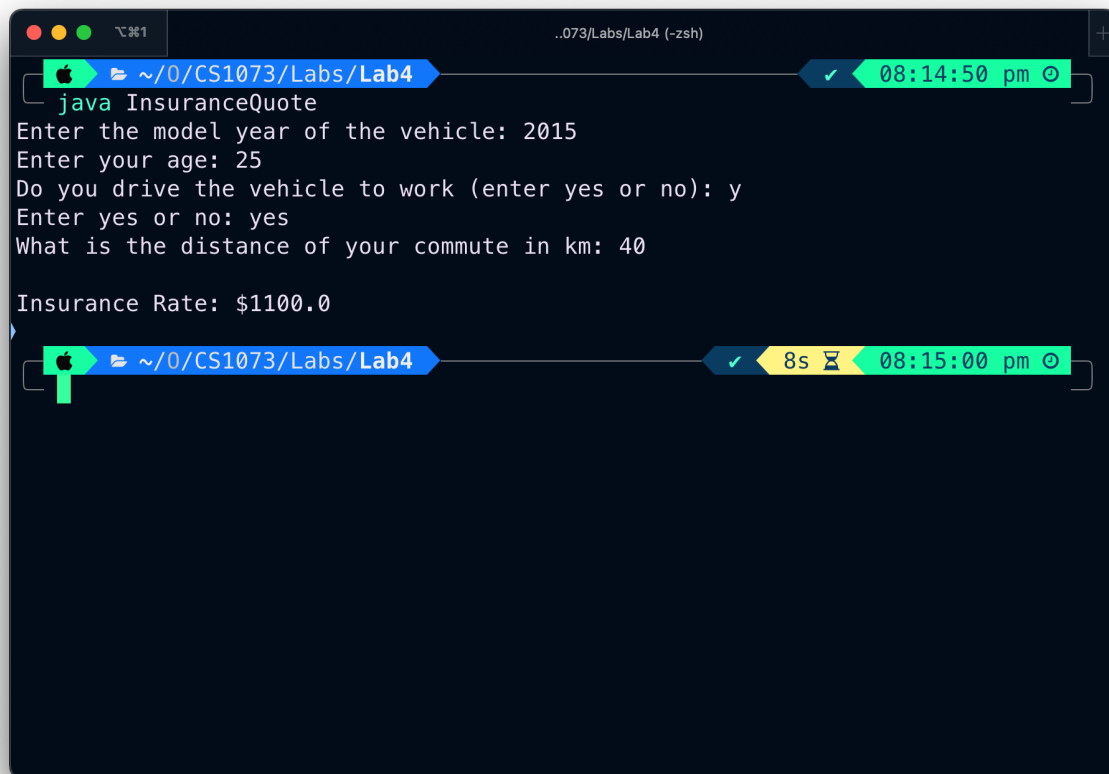
```
..073/Labs/Lab4 (-zsh)
[✓ 08:14:04 pm]
[✓] ~/0/CS1073/Labs/Lab4
java InsuranceQuote
Enter the model year of the vehicle: 2000
Enter your age: 24
Did you complete a driver education course (enter yes or no): n
Enter yes or no: no
Do you drive the vehicle to work (enter yes or no): true
Enter yes or no: y
Enter yes or no: yes
What is the distance of your commute in km: 24

Insurance Rate: $1275.0
[✓ 17s 08:14:23 pm]
```



```
..073/Labs/Lab4 (-zsh)
[ Apple ~/0/CS1073/Labs/Lab4 08:14:32 pm ]
java InsuranceQuote
Enter the model year of the vehicle: 2021
Enter your age: 19
Did you complete a driver education course (enter yes or no): yes
Do you drive the vehicle to work (enter yes or no): yes
What is the distance of your commute in km: 13

Insurance Rate: $1075.0
[ Apple ~/0/CS1073/Labs/Lab4 9s 08:14:45 pm ]
```



A terminal window with a dark blue background. The title bar at the top shows standard macOS window controls (red, yellow, green buttons) and the text "Terminal". The terminal content shows a Java program being executed. The user has entered several inputs: "2015" for the model year, "25" for age, "y" for driving to work, and "40" for commute distance. The program outputs an insurance rate of "\$1100.0". The window has two tabs; the first is active and shows the file path "~/0/CS1073/Labs/Lab4". The second tab is partially visible and shows a duration of "8s".

```
..073/Labs/Lab4 (-zsh)

~/0/CS1073/Labs/Lab4 08:14:50 pm
$ java InsuranceQuote
Enter the model year of the vehicle: 2015
Enter your age: 25
Do you drive the vehicle to work (enter yes or no): y
Enter yes or no: yes
What is the distance of your commute in km: 40

Insurance Rate: $1100.0
~/0/CS1073/Labs/Lab4 8s 08:15:00 pm
```