Core Java

Task Sheet

General Instructions

You will have the afternoon to complete these tasks.

Create a new project for all of the following tasks. As a suggestion, you can call your main project “tasks” but you can call it whatever suits you.

Each task will go into its own separate package and will be run individually. Each task will require its own `main` method. This would mean the following structure with each `App.java` file having its own `main`.

```
|- com.sparta
        |
        |- day1
        |     |- debug
        |     |     |- DebugApp.java
        |     |
        |     |- calculator
        |           |- CalculatorApp.java
        |
        |- day2
```

For all tasks you should be able to explain and justify the solution that you arrive at.

Core Java

Tasks

Telephone Bill

Package: com.sparta.day3.telephonebill

Class: TelephoneBillApp

Write a program that prompts the user for a positive integer that represents the number of whole minutes to be billed for use of a telephone.

Your program should then calculate the cost of the calls using a call charge per minute, the amount of VAT and the total bill payable.

Your program must prompt the user for the number of minutes and then output the number of minutes, the basic call charge (without VAT), the VAT that is due, and the total for the bill. The following is an example of the expected input/output:

```
Enter number of minutes: 125
Basic call charge: £18.75
VAT due £3.75
Total bill: £22.50
```

Data to be used:

- Call rate = 15 pence per minute
- VAT rate = 20%

Simple Calculator

Package: com.sparta.day3.calculator

Class: CalculatorApp

(Revisited)

Write a program in `CalculatorApp.main` that takes two integers as input.

Your program should divide the first integer by the second integer and then output the result to the console.

For example, if you pass in the arguments 15 and 10 the result should be 1.5.

Core Java

Not Quite Average

Package: com.sparta.day3.average

Class: AverageApp

Write a program that accepts four int values, calculates their mean average, and then outputs that average as a float.

Make a note (use comments below the main method) of how you went about testing that your program was successful.

Bandwidth Headache

Package: com.sparta.day3.bandwidth

Class: BandwidthApp

A Network Administrator needs to ascertain whether a new application will have a negative impact on the current performance of their network. To do so they will need to calculate the theoretical maximum bandwidth, the current usage and the new applications usage.

The calculation should take make use of the following data:

- Maximum network bandwidth = 1000 Mbps
- Number of concurrent users = 200
- Current application bandwidth requirements
    - Application A = 200000 bps
    - Application B = 100000 bps
- The new application will require 350000 bps

Write a program that will calculate the following outputs:

- The network capacity in bps
- The current usage in bps
- The current availability in bps
- The new usage requirements in bps
- The bandwidth available if the new application is installed (in Mbps)

Write a program to determine the impact of the new application with the outputs correctly generated.