CSE 1321L: Programming and Problem Solving I Lab

Lab 4

Selection Structures

What students will learn:
- Logic using selection structures (if/else and switch statements)
- Review of I/O (input and output)
- Review of reading input from the user and storing it into variables
- Review of doing basic calculations with variables to generate a solution

Overview: In this lab, you're going to focus on *if*, *if-else*, and *else* statements, as well as *switch* statements. This lab is all about logic so you'll need to think through the problem. Lab 4A is designed to be a "warm up" to get you started. Labs 4B and 4C are a little harder, and Lab 4D is the challenge question (for an extra 10 points).

As with previous weeks, all labs should have the appropriate class names and file names, Lab4A, Lab4B, Lab4C and Lab4D (.java, .cs, .cpp). You are not required to use repl.it for this set of labs unless you want more practice with it.

Lab4A: I hate Mondays

To start off, you're going to write a program that prompts the user for a day of the week. For Monday, Wednesday and Friday the program responds with a special message. For all other input, the program should print a standard message of "It's another day of the week". The program should behave like the sample runs below. The class name should be Lab4A…

```
Sample run #1:
Enter the day: Monday
Sounds like someone has a case of the Mondays!

Sample run #2:
Enter the day: Wednesday
It's hump day! El ombligo!

Sample run #3:
Enter the day: Friday
Finally.  It's Friday!

Sample run #4:
Enter the day: Tuesday
It's another day of the week.
```

Lab4B: Takin' Care of Business

The weekly pay for an employee is determined based on the following parameters:

Standard work hours by week is 40 hours.
Hourly pay rate is $15.00 per hour.
Overtime hours are paid an additional $10.00 per hour (that is $25.00 per hour).

For this part of the lab, you should write a program that takes in the number of hours worked per week (as an integer value) and then prints out the gross earning based on the chart above. Your program should behave like the sample runs below.

Sample run #1:
```
Number of hours this week: 35
Earnings: $525
```

Sample run #2:
```
Number of hours this week: 45
Earnings: $725
```

Sample run #3:
```
Number of hours this week: 60
Earnings: $1100
```

Lab4C: Just a moment!

Switch statements are often used to as a mechanism to route messages in systems.
For example, you may present the user with a menu of options (e.g. "Press 1 for movie times, Press 2 for features"). Once the user presses a button, the system then "switches" on that input and runs a set of code to handle their choice.

For this part of the lab, you're going to build a system that presents the user with three (3) choices. Depending on the user input, the program will display output that should look like the sample output below. The program should gracefully handle input values less than 1 and greater than 3 (see Sample run #4).

Sample run #1:
```
Select from the following:
To see a list of movies, press 1.
To see show times, press 2.
To pay your bill, press 3.
Choice: 1
The Neverending Story 6
Princess Diaries: the untold story
Monty Python and the Programmer
```

Sample run #2:
```
Select from the following:
To see a list of movies, press 1.
To see show times, press 2.
To pay your bill, press 3.
Choice: 2
All movies play at 3PM.
```

Sample run #3:
```
Select from the following:
To see a list of movies, press 1.
To see show times, press 2.
To pay your bill, press 3.
Choice: 3
Corporate accounts payable, Nina speaking.
Just a moment!
```

Sample run #4:
```
Select from the following:
To see a list of movies, press 1.
To see show times, press 2.
To pay your bill, press 3.
Choice: 7
I'm sorry, Dave.  I can't do that.
```

Lab4D: Water company (Extra Credit +10pts)

Imagine a water company that bases their rates on how much water a household uses. The more water that the household uses, the higher your rate per gallon will be. For households that use less than 1,000 gallons per month, they are charged $0.15 per gallon. If a household uses more than 1,000 gallons, the water beyond the 1,000 gallons is charged at $0.25 per gallon up to 2,000 gallons. The water usage that exceeds 2,000 gallons is charged at $0.35. Write a program that asks the user to input how many gallons they used for the month and then calculates their water bill.

As an example, if a person uses 1,200 gallons, 200 of those gallons will be at the rate of $0.25 and the remaining 1,000 will be at the rate of $0.15.

Note: the logic flow of this program is unusual, but interesting. Can you solve it?

```
Sample run #1:
Gallons of water: 1000
Water bill is: $150.0

Sample run #2:
Gallons of water: 1500
Water bill is: $275.0

Sample run #3:
Gallons of water: 2750
Water bill is: $662.5
```

Instructions:

- Programs must be working correctly.
- Programs must be saved in files with the correct file name.
- If working in Java or C#, class names must be correct.
- Programs must be working and checked by the end of the designated lab session.
- Programs (only .java, .cs or .cpp files) must be uploaded to Gradescope by due date.