INFO10229 Mobile Computing
Assignment - 3
SwiftUI Basics

Due Date: (See Slate\ Assignments)

Type: Individual Assignment

Weight: 10% of Total

Objective:
The purpose of this assignment is to help you understand and use SwiftUI components to create a basic GUI. You will create an iOS app Electricity Billing System that allows users to calculate their electricity bills for two pricing plans offered by Oakville Hydro.

Submission Checklist:
- Write the comments containing your student ID, full name at top of each file.
- **Add inline comments to cite any resources, other than the class examples, used to complete the project**
- **Add inline comments, as appropriate, to describe complex parts of your code your code and/or beyond class learnings**
- Compressed project folder.
- A link to the GitHub repository, in comment section of your submission. You must add the professor (shalinisingh.jaspal@sheridancollege.ca) as collaborator.

Task Summary:
Create an iOS app using Xcode project (iOS -> App) named as **A3FirstNameLastName** with **SwiftUI** interface that will the allow user to generate the bill amount of electricity consumption for Tiered and Time-of-Use (TOU) pricing, as described below. Refer to the screenshots for expected UI design.

Task Details:

The UI allows generating bill for two pricing plans Time-of-Use and Tiered. The details of calculation under the two plans are described below:

INFO10229 Mobile Computing
Assignment - 3
SwiftUI Basics

Time-of-Use:
(Refer figures 1 and 2 for UI design)

The prices depend upon the electricity used in different times of the day. There are three TOU periods: On-peak, Off-peak and Mid-peak. Considering the electricity demands in these three periods, the pricing is highest during on-peak and lowest during off-peak hours. The user is expected to enter the total usage during these three periods of the day (for the entire billing period).

- On-peak usage in kWh (Double)
- Off-peak usage in kWh (Double)
- Mid-peak usage in kWh (Double)

Charges for the three periods of the day are given below:

- The charges for on-peak usage at $0.158 / kWh.
- The charges for off-peak usage at $0.076 / kWh.
- The charges for mid-peak usage at $0.122 / kWh.

Tiered Use:
(Refer figures 3 and 4 for UI design)

With Tiered prices, consumers can use a certain amount of electricity each month at a lower price. Once that limit (called a threshold) is exceeded, a higher price applies. The time of the day has no impact on the pricing. User needs to input the total electricity usage during the billing period

- Total usage in kWh (Double)

Tier thresholds and rates are given below (pricing difference between winter and summer periods has been ignored for the sake of simplicity)

- Threshold: 600 kWh.
- Tier1 Charges (for usage within threshold): $0.093 / kWh
- Tier2 Charges (for usage above threshold): $0.11 / kWh

INFO10229 Mobile Computing
Assignment - 3
SwiftUI Basics

Data Input and Calculations:

- User should be able to switch between the two pricing plans using the Toggle at the top of the form.
- Different form parts should be separated using sections.
- Show appropriate **keyboard type** for the inputs and appropriate **placeholders** in TextFields.
- While user is entering required inputs, using computed properties, calculate the following information and display it to the user. You **must** use **computed properties** for performing calculations.
    - The total consumption charges are combined total of all three charges (TOU) or two charges (Tiered).
    - The provincial rebate(discount) is 13.1% of the total consumption charges.
    - The HST is 13% of the total consumption charges - provincial rebate.
    - Total regulatory charges are HST – provincial rebate.
    - The actual bill amount is total consumption charges + total regulatory charges.

Rubrics:

Topic	Points
Usage of appropriate SwiftUI concepts. E.g., appropriate UI components and configuration, state wrappers, etc.	30
Usage of appropriate Swift concepts such as data types, computed properties, control constructs, etc.	30
Correct calculations and application logic	20
Overall app look, feel and functionality	15
Version Control	05
Total	**100**

INFO10229 Mobile Computing
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Notes:

1. This assignment shall be **completed individually**. Students are not allowed to use advanced automated tools (artificial intelligence or machine learning tools such as ChatGPT) on assignments in this course. Each student is expected to complete assignments without substantive assistance from others, including automated tools. Remember that completing the assignment by yourself will ensure your success on the midterm and final exam. See the details on https://www.sheridancollege.ca/student-life/student-services/library-services/academic-integrity.

2. Students **MUST** be able to demonstrate thorough understanding of the submission and when requested, **MUST** be capable of applying their knowledge to implement similar solutions and/or make simple modifications to the submitted solution. Failure to meet these requirements will be deemed as a breach of Academic Integrity.

3. The **professionalism of your submission**, clarity of written **communication** is extremely important. The ability to communicate your knowledge is as important as the knowledge itself. Up to 30% of the mark for a program can be deducted due to poor presentation / communication: quality of names according to our *naming and coding conventions (15%)* and *comments (15%)*.

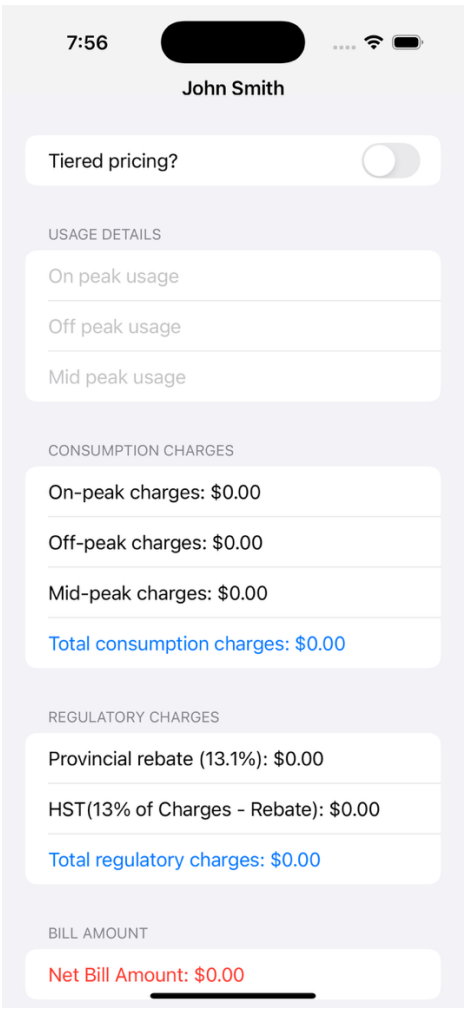
4. **All assignment shall be submitted by the deadline.** Late submissions will be penalized with 10% per day for up to 3 calendar days after which the assignment cannot be submitted anymore. **An email must be sent** should you choose to submit a late assignment. **Assignments are not accepted 3 days after the due date.**

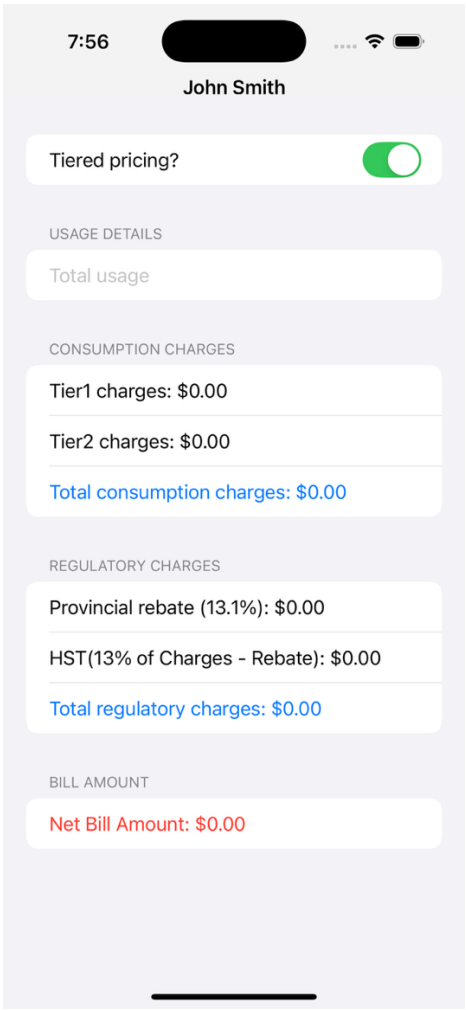
5. Submission is done in electronic format **using SLATE Assignments interface. DO NOT email your submission.**

INFO10229 Mobile Computing
Assignment - 3
SwiftUI Basics

UI Design:

- Blank UI for the two pricing plans





INFO10229 Mobile Computing
Assignment - 3
SwiftUI Basics

- Filled in UI for the two pricing plans