UNIVERSITY OF JAFFNA

FACULTY OF ENGINEERING

Assignment: GUI Design Task – December 2020

EC2010: COMPUTER PROGRAMMING

This document contains four tasks and choose one task based on criteria specified in the assignment description in Teams. You have the freedom to modify the GUI design, covering what is required in question and basic components. Refer sample screenshots for each task.

General hints:

1. Use ComboBox to provide already defined multiple options to user.
2. You could get the index of a selected item in ComboBox using

   ```
   comboBox1->SelectedIndex
   ```

   Explore more options based on need.
3. You may need to use 2D arrays for some tasks and you could declare managed array using the syntax

   ```
   array<int, 2>^ twoDimensionalArray;
   ```

   and initialize it in constructor

   ```
   MyForm(void)
   ```

   using the syntax similar to

   ```
   this -> twoDimensionalArray = (gcnew cli::array<int, 2> { {0, 10}, { 1, 20 }, { 2, 30}});
   ```

Task 1:

Create a GUI to calculate the Electricity bill for a month. The program should take an integer (which is the number of units) as the input and print the calculated cost (as in the example). You could use the following information for the calculation.

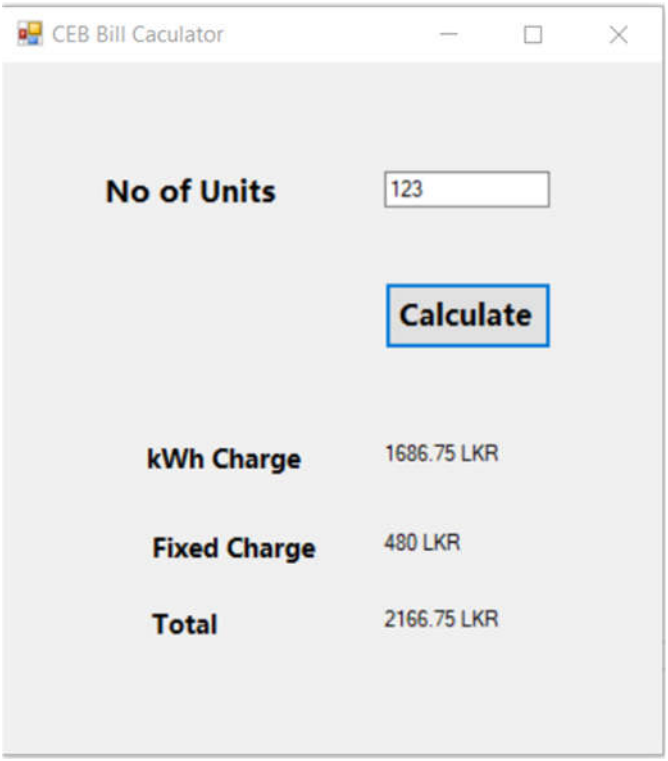
If the consumption is between 0-60 kWh per month the following tariffs will be applicable

Monthly Consumption (kWh)	Unit Charge (Rs. /kWh)	Fixed charge (Rs. /month)
0-30	2.50	30.00
31-60	4.85	60.00

If the consumption is above 60 kWh per month the following tariffs will be applicable

Monthly Consumption (kWh)	Unit charge (Rs/kWh)	Fixed charge (Rs/month)
0-60	7.85	N/A
61-90	10.00	90.00
91-120	27.75	480.00
121-180	32.00	480.00
>180	45.00	540.00

Sample screenshot of GUI:



Task 2:

Create a GUI to calculate the bus fare for Jaffna - Colombo rout. The program should take the name of the cities as input and find the distance of the travel and print the bus fare.

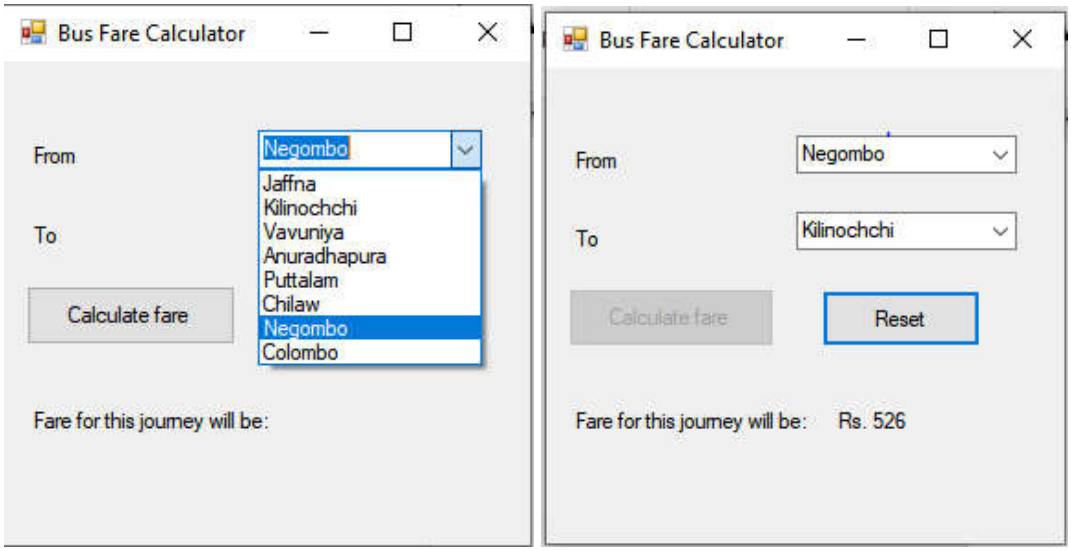
You can use the following information for your calculations.

1. Distance table

City Name	Distance in kilometer - from Jaffna
Jaffna	0
Kilinochchi	66
Vavuniya	138
Anuradhapura	196
Puttalam	230
Chilaw	285
Negombo	329
Colombo	393

2. Calculation: Fare = Distance x 2 (Rs. 2 per kilometer)

Sample screenshots of GUI:



Task 3:

Create a GUI to calculate a supermarket bill. The Program should take the product name and the quantity of multiple products (at least 1 product and up to maximum 5 products) as input and calculate the total amount of bill.

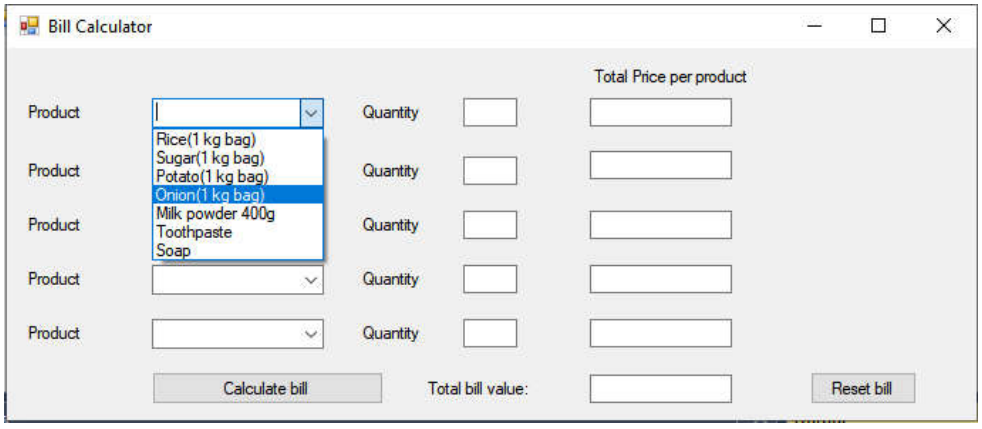
You can use the following information for your calculations

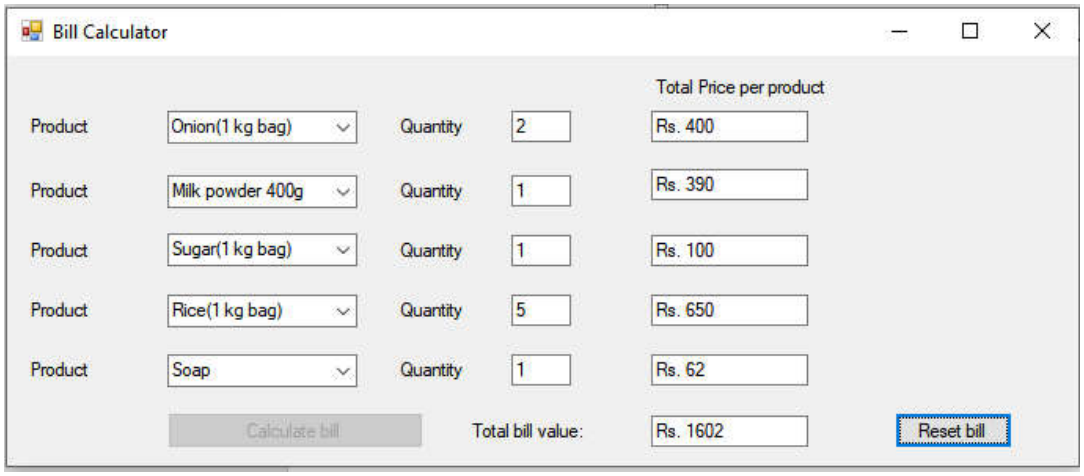
1. Product name and price table

Product Name	Price
Rice - 1 kg bag	130.00
Sugar - 1 kg bag	100.00
Potato - 1 kg bag	180.00
Onion - 1 kg bag	200.00
Milk Powder – 400g	390.00
Toothpaste	95.00
Soap	62.00

2. Calculation
    a. Total Price per product = Quantity x Price
    b. Total Bill = Total Price of product 1 + Total Price of product 2 + …

Sample screenshots of GUI:





Task 4:

Create a GUI to calculate interest earned for fixed deposits. There are two type of fixed deposits available

1. Interest at maturity - the capital amount and compound interest will be returned at maturity
2. Interest paid monthly – the interest will be equally divided and paid monthly until the maturity and capital will be returned at maturity

The following table shows the interest rates.

Period (years)	**Rate (%)** Interest paid monthly	**Rate (%)** Interest at maturity
1	6	7
2	6	7
3	6	7.5
5	6.5	8.5
10	7.5	10

The program should take details of deposit amount, period and type as the inputs and print the following details (as in the example)

1. Interest rate
2. Interest earned – Compound interest for Interest at maturity and monthly payment for Interest paid monthly
3. Total at maturity

You could use the following equation for compound interest

$$CI = P\left(\left(1 + \frac{i}{100}\right)^{n} - 1\right)$$

Where,

CI – Compound interest

P – Deposit amount

n – Period

i – Interest rate

Sample screenshots of GUI: