**Assignment**

You are going to develop an algorithm **(pseudocode)** that allows the user to create an estimate of the cost to build a table. This will be a menu driven algorithm that will continue until the user specifically states that they do not want any additional estimates.

**Requirements:**

This algorithm will need to do the following:

* The algorithm should display a welcome message. Include your name as the table builder.
* The algorithm should display a menu of the shapes of the table. The menu should display Rectangular, Square, Circular and End
* The algorithm must assure that the menu item entered is valid. If an invalid entry is made, the algorithm should display an error message, redisplay the menu and allow for reentry
* Once the user enters a valid entry for a table
* If the user selects Rectangular:
  + The algorithm must allow entry of the length and the width. The algorithm must validate the entry (both sides must be > 0).
  + The algorithm will calculate the total area (area = length \* width)
* If the user selects Square:
  + The algorithm must allow entry of only the length. The algorithm must validate the entry (must be > 0).
  + The algorithm will calculate the total area (area = length \* length)
* If the user selects Circular:
  + The algorithm must allow entry of the diameter. The algorithm must validate the entry (must be > 0). NOTE: The algorithm must allow entry of the diameter. It is NOT correct to enter in the radius. In the real world, the radius cannot be accurately measured.
  + The algorithm will calculate the total area (area = 3.14 \* radius \* radius).
* Once the area is calculated, the code should ask the user what type of material they want to use:
* The algorithm displays a menu with two options
* Option 1 is laminate – the laminate costs $0.125 per square inch
* Option 2 is oak – oak costs $0.25 per square inch
* The algorithm must validate the entry of the choice.
  + If the menu entry is invalid, the algorithm must display an error message, redisplay the menu and allow reentry of the option
* Once a valid option is selected, the algorithm will calculate the cost of the table. The cost is defined as the number of square inches \* cost per square inch based on the type of material selected
* The algorithm then displays the estimate. The display includes:
  + A title
  + The calculated area of the table
  + The type of the material for the table
  + The cost of the table
* The algorithm needs to keep track of the total number of estimates that have been requested and it must keep track of the total cost of all of the estimates
* Once the output is displayed, the menu redisplays and allows a new estimate to be requested.
* Once the user selects End, the algorithm will display the final estimation report.
  + If the user only asked for one table, the output will display the final total estimate with table as singular
  + If the user asked for multiple tables, the output will display the number of tables (with tables plural) and the total cost
  + If the user did not request any estimates at all, the algorithm should display a message stating that.
* Display a final goodbye message and end the algorithm

**Sample output**

Welcome to Tables – Yours One Stop Table Shop

Dawit Lemma – Master Table Builder

What shape of table do you want to build?

1. Rectangular
2. Square
3. Circular
4. End

Enter menu entry: 5

Error – Invalid Entry. Please reenter a valid value

What shape of table do you want to build?

1. Rectangular
2. Square
3. Circular
4. End

Enter menu entry: 1

Enter the length of the table (in inches): -2

Error – Length must be greater than zero. Please reenter a valid value

Enter the length of the table (in inches): 72

Enter the width of the table (in inches): 72

What type of material do you want to use?

1. Laminate ($0.125 per square inch)
2. Oak ($0.25 per square inch)

Enter menu entry: 2

Output report

The area of the table is 4032.00 square inches

The table will be made of oak

The cost of this table is $1008.00

What shape of table do you want to build?

1. Rectangular
2. Square
3. Circular
4. End

Enter menu entry: 3

Enter the diameter of the table (in inches): 72

What type of material do you want to use?

1. Laminate ($0.125 per square inch)
2. Oak ($0.25 per square inch)

Enter menu entry: 1

Output report

The area of the table is 4071.50 square inches

The table will be made of Laminate

The cost of this table is $508.94

What shape of table do you want to build?

1. Rectangular
2. Square
3. Circular
4. End

Enter menu entry: 4

The total cost of the 2 tables you estimated is $1516.94

Thank you for using the table cost estimation program!

Goodbye!!!