PROJECT: THE EXPERT SYSTEM

OVERVIEW

The focus of this project is to develop an application that queries the user for input that will be used to perform a useful calculation. Emphasis will be placed on the UI/UX of the application including proper formatting of strings.

NOTES AND RESOURCES

- Students may use all resources available.
- Specifications and functionality requirements are separated into two categories, required and extended and will be assessed in the Skills module of Moodle
- **A solution will not be accepted without all required skills included.**

INSTRUCTIONS

1. Run the example application and view the example code to get a feel for the extent of the application.
2. Conceive of an application that interests you. The application should serve a purpose by performing a calculation for the user. The application must display a dollar amount or date based on the calculation.
3. Choose one of the following or suggest an application of your choosing to the instructor for approval.
    a. Cost of Flooring Two Rooms
        i. User input: width, length, and cost of flooring per square foot for each room
        ii. App output: the total cost of the flooring both rooms
    b. Cost of Buying Two Items
        i. User input: number of units for each item and the unit cost of each item
        ii. App output: the total cost of the purchase
    c. Future Balance of a Savings Account Given an Annually Compounded Interest Rate
        i. User input: initial balance, annual interest rate, and years deposited
        ii. App output: total interest, final balance, and date of final balance
    d. Time a Person has Been Alive
        i. User input: birthdate
        ii. App output: seconds, minutes, hours, days, weeks, and months alive
    e. Time Until Retirement
        i. User input: birthdate
        ii. App output: seconds, minutes, hours, days, weeks, and months alive
    f. Developer's Choice (Get instructor's approval by providing the following information.)
        i. Application Description
        ii. User Input
        iii. Application Output
4. Create a new Visual Studio application and name it appropriately.

5. **Required Skills (refer to the example code)**
    a. Add and complete the application comment block in the ***Program*** class
    ****
    Title: (title)
    Application Type: Console
    Description: (describe the purpose and function)
    Author: (your name)
    Date Created: (current date)
    Last Modified:
    ****
    b. Develop the application with the following requirements
        i. Opening Screen – include a description of the application
        ii. Instructions Screen
        iii. User Input Screen – echo the user input
        iv. Results Screen
        v. Closing Screen
    c. Develop a consistent theme and structure for the UI using whitespace, intention, and font color.
    a. Include a double and a Boolean variable.
    b. Embed an integer or double variable value in a string and display it to the console properly formatted.
    c. Use a decision statement block (**if / else if / else**) dependent on the user response to a prompt. (research C# conditionals)
    d. Display a message to the user integrating more than one of the string variable values.
    e. Display different messages based on the user's input of
        i. a string value
        ii. an integer, double, or Boolean value
    f. Perform a calculation based on user input and display the results.
    g. Validate a yes/no response from the user implementing a **while** or **do/while** code block.
6. **Extended Skills (refer to the example code)**
    a. Display a table of values, formatted with columns, column headers, and column totals.
    b. Validate user input of an integer or double and store the value in a local variable.
    c. Use a nested decision statement block dependent on two user responses to prompts.
7. Test and debug the application thoroughly.
8. Clean up the ***Program.cs*** file.
    a. Delete all unnecessary code.
    b. Use tabbing consistently to denote all nesting. (Hint: use **Ctrl k + d**)
    c. Delete all unnecessary blank lines consistently only leaving blank lines to that assist in making the code more legible.
9. Create a video walkthrough of the application demonstrating all of the functionality. Discuss and demonstrate the required and extended skills implemented in the application. Refer to the Skills Checklist. Students may use screen recording and streaming websites of their choice. Some websites that both record the screen and stream the video include YouTube.com and ScreenCast.com.

SUBMIT THE ASSIGNMENT

1. Download and complete the Skills Checklist.
2. Submit to Moodle.
    a. Zip the solution folder into a single file.
    b. Click the ***M2 Project: The Expert System*** assignment link.
    c. Upload the zipped file.
    d. Submit the completed *Skills Checklist*.
    e. Submit the link to the streaming video walkthrough.
    f. Click **Save Changes**.

PROJECT: THE EXPERT SYSTEM - SKILLS CHECKLIST

Author _____ **Reviewer(s)** _____

Check all demonstrated skills and submit.

Required Skills	
Demonstrate adding an information comment block.	V
Demonstrate creating a screen-based UI in the console.	V
Demonstrate maintaining a consistent theme and structure for the UI using whitespace, intention, and font color.	V
Demonstrate embedding an integer or double variable in a string and displaying to the console.	V
Demonstrate implementing an output decision based on an integer or double variable.	V
Demonstrate implementing an output decision based on a string variable.	V
Demonstrate implementing an **if/else if/.../else** code block.	V
Demonstrate implementing a nested decision code block.	V
Perform a math operation on a minimum of two variables and save the result in another variable.	V
Demonstrate formatting strings representing numeric values as currency, and limiting decimals.	V
Demonstrate validating a yes/no response from the user implementing a **while** or **do/while** code block.	V
Create a video walkthrough of an application and share it on a streaming website.	V
Extended Skills	
Demonstrate implementing an output decision based on a Boolean variable.	
Demonstrate displaying a table of values, formatted with columns, column headers, and column totals.	
Demonstrate validating user input of an integer or double and storing the value in a local variable.	
Demonstrate using a complex expression (&& or ||) in a conditional statement (**if** or **else if**).	