# CIS 1111 CBE

# Unit 5 PostTest Project – Financial Formulas

**Description**:

Write a C++ program to calculate 5 financial formulas*. The customer will enter 10 financial numbers and then select one of the formulas. Display the answer to each formula selected.

Requirements

1. Input the following items (10): income, expenses, total debt, total equity, investment return, inflation rate, market price, purchase price, annual interest rate.
2. Display a menu with the financial formula options. Include an exit option.
3. Create 6 functions
    a. Menu
    b. Cash flow
    c. Leverage ratio
    d. Real return
    e. Percentage increase
    f. Years to double investment
4. Send the appropriate data to the selected function.
5. Do not let the customer enter 0 for total equity, purchase price, and annual interest rate.
6. Design the program so the user can continuously enter a menu item and terminate the program when done.
7. Do not use global variables. All variables used in the functions must be passed as parameters or declared locally
8. Display the results

**Formulas**

Cash Flow = income – expenses
Leverage ratio = total debt / total equity
Real return = ((1+ investment return)/(1 + inflation rate)-1)*100
Percentage increase = (market price - purchase price)/purchase price
Years to double investment = 72/(the annual interest rate of the investment)/100

User the following test data in your program

| | | | |
|---|---|---|---|
| Income | 100 | 300 | 250 |
| Expenses | 50 | 400 | 195 |
| Total debt | 100 | 200 | 305 |
| Total equity | 200 | 100 | 602 |
| Return on investment | 0.08 | 0.05 | 0.058 |
| Inflation rate | 0.03 | 0.03 | 0.0156 |
| Market price | 100 | 200 | 250 |
| Purchase price | 200 | 50 | 36.78 |
| Annual interest rate | 0.03 | 0.05 | 0.0159 |

Results from the formulas

| | | | |
|---|---|---|---|
| Cash flow | 50.00 | -100.00 | 55.00 |
| Leverage ratio | 0.50 | 2.00 | 0.51 |
| Real return | 4.85 | 1.94 | 4.17 |
| Pct increase | -0.50 | 3.00 | 5.80 |
| Years to double | 24.00 | 14.40 | 45.28 |

**Submit:**
Zipped folder named LastNameFirstNameCIS1111NameOfAssignment which contains:

1. Your .cpp file
2. Screen shots of your code and output

Grading guidelines

| | **Range – Low End (Did not do or did very little effort)** | **Range – High End (Used correctly and spent time/effort on programming)** |
|---|---|---|
| Names of variables are meaningful and the program comments self-document the program | 0 | 2 |
| Met all stated requirements | 0 | 10 |
| Output is correct given the input, and the output is correctly formatted | 0 | 4 |
| Program compiles and executes without any runtime, syntax, or logic errors | 0 | 3 |
| The zipped project folder that includes the C++ .cpp source files and screens shots of the code and console is uploaded to drop box. Use the test data above. | 0 | 1 |
| **Total Points Possible** | 0 | 20 |

"6 financial formulas to help you succeed", Bankrate website http://www.bankrate.com/finance/investing/financial-formulas-2.aspx

```
Please enter the following information
Income 300

Expenses 400

Total Debt 200

Total Equity 0
You cannot enter 0 for total equity
Total Equity 100

Return on Investment .05

Inflation rate  .03

Market price of asset  200

Purchase price of asset 0
You cannot enter 0 for purchase price
Purchase price of asset 50

Annual interest rate 0
You cannot enter 0 for annual interest rate
Annual interest rate .05


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
1

Your cash flow is -100.00


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
```

```
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
2

Your Leverage ratio is 2.00


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
3

Your Real return is 1.94


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
4

Your Percentage increase of the value of your asset is 3.00


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
5

Years to double your investment is 14.40


Enter which formula to solve
1 Cash Flow
2 Leverage Ratio
3 Real Return
4 Percentage Increase
5 Years to Double Investment
Enter anything else to exit
```