CS 150 Lab 07

while Loops

The purpose of today's lab is to for you to get some hands-on experience with the different things you can do with loops.
- Be sure your output looks exactly like the specified output.
- Be sure to submit each project to **CS150-02 Lab** when you are done.
- Show the instructor to TA your solution to each problem before submitting it.

Lab 7.1

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "07a-LoopsXXXXXXXX", replacing the XXXXXXXX with your PUNetID.

Write a program that will display all of the following. Your program should have one loop only!

Sample Input and Output:

```
************************************
*              Loopy               *
************************************

How many iterations would you like to loop? 5

   Iteration     Multiples of 2     Powers of 2
   -------------------------------------------------
           1                 2                 2
           2                 4                 4
           3                 6                 8
           4                 8                16
           5                10                32
```

What loop will you have in your program? What is your counter? Write an outline here.

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Lab 7.2

For this lab, you will need to create a new Visual Studio project that will contain your source code. Name this project "07b-MoneyXXXXXXXX", replacing the XXXXXXXX with your PUNetID.

Determine whether you'd prefer to be paid $1,000.00 a day for 25 days or a penny the first day, two pennies the second, four pennies the third day and so on, doubling the amount you made the previous day.

Sample input and output follow:

```
***********************************
*           Loads O' Money        *
***********************************

  Day    Thousands    Doubling
------------------------------
   1      1000.00        0.01
   2      1000.00        0.02
```

And so on until you reach the 25th day

```
   25     1000.00    25th doubling amount
------------------------------
Total    25000.00   Whatever the total is
```

What loop will you have in your program? What is your counter? Write an outline here?

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What running totals will you need to keep track of?

_____

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_____

Challange

You have just purchased a stereo system that cost $1,000 on the following credit plan: no down payment, an interest rate of 18% per year (how much per month?), and monthly payments of $50. The monthly payment is used to pay the monthly interest and whatever is left over is used to pay part of the remaining debt.

Write a program that will tell you how many months it will take you to pay off the loan, as well as the total amount of interest paid over the life of the loan.

You may wish to display the monthly payments, interest, and debt to see if you are on the right track, but this is not required.

If you input any values from the user, make sure that you error-check (validate) them.

```
************************************
*             Stereo              *
************************************


 month   principal    interest    payment    new principal
    1      1000.00       15.00      35.00          965.00
    2       965.00       14.47      35.52          929.48
    3       929.48       13.94      36.06          893.42
    4       893.42       13.40      36.60          856.82
    5       856.82       12.85      37.15          819.67
    6       819.67       12.30      37.70          781.97
    7       781.97       11.73      38.27          743.70
    8       743.70       11.16      38.84          704.85
    9       704.85       10.57      39.43          665.42
   10       665.42        9.98      40.02          625.40
   11       625.40        9.38      40.62          584.79
   12       584.79        8.77      41.23          543.56
   13       543.56        8.15      41.85          501.71
   14       501.71        7.53      42.47          459.24
   15       459.24        6.89      43.11          416.13
   16       416.13        6.24      43.76          372.37
   17       372.37        5.59      44.41          327.95
   18       327.95        4.92      45.08          282.87
   19       282.87        4.24      45.76          237.11
   20       237.11        3.56      46.44          190.67
   21       190.67        2.86      47.14          143.53
   22       143.53        2.15      47.85           95.68
   23        95.68        1.44      48.56           47.12
   24        47.12        0.71      49.29           -2.17
```