Project 8 (50 points)
Due Friday, Dec 9 by midnight

Assignment Description:
To demonstrate the similarities between *Java* and *C#*, simply convert the three *java* files created for Project 7 (*Mortgage*, *IO* and *Proj7*) into *.cs* files. To avoid losing points from mistakes made in project 7, **please convert the Project 7 Solution posted on KSOL** rather than the solution you developed. The posted solution will also give you a better idea of how the IO class *should* have been designed.

Implementation Requirements:

Your project will contain **three** classes: ***Mortgage.cs (Model), IO.cs (View)*** and ***Proj8.cs (Controller)***. The program will run exactly like project 7, except the code will be written in C# and you ***will NOT include exception handling – only simple data validation.*** Otherwise, all aspects of Project 7 must be implemented in Project 8, including the following error checking:

1) **Valid menu choices are between 1-3 (inclusive)**
2) **Valid interest rates are between 1%-9% (inclusive)**
3) **Valid terms are 5-50 years (inclusive)**
4) **Valid amounts are $50,000 to 1 million (inclusive)**

A ***possible*** execution of your program might look like the following…

```
Please choose from the following choices below:
        1) Promotional Loan ($100,000 @ 5.5% for 15 years)
        2) Unique Loan (enter in loan values)
        3) Quit (Exit the program)

        Please enter your selection (1-3): 11
                Invalid Choice. Please select 1, 2, or 3: 1

PROMOTIONAL LOAN...:
The monthly payment is $817.08
The total payment is $147,075.02


Please choose from the following choices below:
        1) Promotional Loan ($100,000 @ 5.5% for 15 years)
        2) Unique Loan (enter in loan values)
        3) Quit (Exit the program)

        Please enter your selection (1-3): 2

Please enter in the following information...
  Enter yearly interest rate (Ex: 8.25): .0725
        Valid Interest Rates are 1% - 9%
        Please re-enter valid yearly interest rate (Ex: 8.25): 7.25

  Enter number of years for the loan (5-50): 255
        Valid Loan Terms are 5-50
        Please re-enter valid number of years: 25

  Enter loan amount without $ or commas (Ex:120000): 20000
        Valid Loan Amounts are $50,000-$1,000,000
        Please re-enter loan amount without $ or commas (Ex:120000): 200000


UNIQUE LOAN...:
The monthly payment is $1,445.61
The total payment is $433,684.12


Please choose from the following choices below:
        1) Promotional Loan ($100,000 @ 5.5% for 15 years)
        2) Unique Loan (enter in loan values)
        3) Quit (Exit the program)

        Please enter your selection (1-3): 3

PROGRAM COMPLETE...
```

- The formula for calculating the monthly payment is given below (reminder … notice that interest and term or length of the loan is monthly)

$$M = P \frac{[\, I(1+I)^N \,]}{[\, (1+I)^N - 1 \,]}$$

M = Monthly Payment
P = Mortgage Principal
I = Monthly Interest
N = Number of Months

Documentation:
You should put a description of the project at the top of the file **and at the top of each method**. Please use this template for the top of the file:

```
/**
 * (description of the project)
 *
 * @author (your name)
 * @version (which number project this is)
 */
```

Please use this template for the top of each method:

```
/**
 * (description of the method)
 *
 * @param (describe first parameter)
 * @param (describe second parameter)
 * (list all parameters, one per line)
 * @return (describe what is being returned)
 */
```

Submission:
To submit your project, first create a folder called proj8, and move your completed *Mortgage.cs, IO.cs, Proj8.cs* **and** *Proj8.exe* files into that folder. Then, right-click on that folder and select "Send To → Compressed (zipped) folder". This will create the file proj8.zip.

Go to "Files and Content->Modules->Submit Projects Here" on K-State Online. Select your lab time and upload the proj8.zip file. **Put your name and Project 8 in the description box.**

Grading:

Programs that do not compile will receive a grade of 0.

Requirement	Points
Proj8 class properly converted to C#. Contains NO write, data validation or input statements *(Note: 3 println to display a blank line are allowed)*	**15**
• Properly creates objects of the *Mortgage* and *IO* classes.	
• Properly calls method to correctly *calculate monthly payment* method for promo loans	
• Properly calls method to correctly *calculate monthly payment* method for unique loans	
• Properly calls the other methods defined in the *Mortgage* class.	
• Properly calls the other methods defined in the *IO* class.	
Mortgage class properly converted to C#	**15**
• Properly defines constructors	
• Properly defines get/set methods	
• Properly defines display method	
IO class properly converted to C#. Contains **only** the *Input-Output* portion of the program. All data validation is done inside this class.	**15**
• Properly validates the range of values for the menu choice	
• Properly validates the range of values for loan amount, interest rate, and loan length	
Display format matches example (‘$’-sign, Comma, two decimal places on all values)	**3**
Documentation/naming/submission	**2**
Total	**50**