Assignment 3: If and only If

Assigned: Thursday, February 7, 2013
Due: 12:30 MST, Thursday, February, 14 2013

*The coded solution to the following problem is to be done by you and only you. You may use your text, notes, online tutorials, etc., but the code must be your own. Bear in mind that any help you seek should be for MATLAB issues, not for help writing your program! If you have trouble compiling or debugging your code, see the professor as soon as possible. Be sure to submit a .zip folder called "*Last_Name, First_Name*" with (1) a .txt file documenting the command window followed by text of all your code, and (2) all M-files you wrote for the assignment.*

Problem Statement

Complete at least two of the following three tasks:

1. Calculate and display a student's non-weighted, letter grade (no +/-) based on the standard 10 point grading scale from an input array of assignment percentages. You may find the MATLAB function 'sum' to be of great aid in completing this task.
2. For an input integer $n \geq 2$, generate the first n terms of the Fibonacci Sequence beginning with $F_0 = F_1 = 1$.
3. Given an input r with $|r| < 1$, approximate the sum of the geometric series $\sum_{n=0}^{\infty} r^n$ to within an input error. Display approximation to ten decimal digits.

Examples:

1.
Input student grades as row vector: [80 90 100]
Average Student Percentage: 90
Student Letter Grade: A

2.
Input desired number of terms: 5
Terms of Fibonacci Sequence: 1, 1, 2, 3, 5

3.
Input ratio for geometric series ($|r| < 1$): 0.5
Input desired error: 0.1
Summation Approximation: 1.9375000000

Note: Approximation in example 3 obtained by sum $1 + 0.5 + 0.25 + 0.125 + 0.0625$ which is within 0.1 of infinite sum $\sum_{n=1}^{\infty} (0.5)^{n-1} = 2$.

Additional Requirements:

- Your main script file (named 'main.m') should allow the user to select which task to execute. The tasks should be in separate (multiple) script files.
- You may only use constructs we have covered in class. Namely, you may only use the 'if' branching statement; you may not use 'for' or 'while' loops.