Name_____ E-mail_____

EM 600 Engineering Economics and Cost Analysis, **Homework #2**
School of Systems & Enterprises, Stevens Institute of Technology

"I PLEDGE MY HONOR THAT I HAVE ABIDED BY THE STEVENS HONOR SYSTEM"

By: _____

QUESTION 1:

Consider the following financial data for 2 mutually exclusive pharmaceutical projects:

N	Project X	Project Y
0	($10,000)	($14,000)
1	$7,000	$10,000
2	$8,000	$11,000
3	$9,000	$12,000

With a MARR of 12% calculate the following:

a. Calculate the NPV for each project. **[2 + 2 points]**
DO NOT CALCULATE USING THE FINANCIAL FUNCTIONS IN EXCEL.

b. Calculate the IRR for each project.
i. Use linear interpolation **[3 + 3 points]**
ii. Use the Excel IRR function to determine the IRR for both the projects and submit your spreadsheet electronically **[2 + 2 points]**

c. Using incremental IRR analysis, which project should be selected? Why? **[5 + 1 points]**

QUESTION 2:

You are being commissioned by your company to implement a new data management system for this insurance company. You are given the following cost data for two potential program options:

Program 1:
A plan calculates that the program will cost $1.1 million and that it will cost $250,000 per year to maintain. The analysis of operating revenue determines that the program will provide the company with a savings of$600,000 per year starting in the second year.

Program 2:
An engineering plan calculates that the program will cost $2.2 million and that it will cost $320,000 per year to maintain. The analysis of operating revenue determines that the

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program will provide the company with savings of$700,000 per year starting in the second year.

At a MARR of 14% and program life of 20 years, calculate the following:

a. Calculate the BCR for each program option. **[3 + 3 points]**
   USE PRESENT WORTH ANALYSIS

b. Using incremental benefit cost analysis, which program should be selected and why? **[3 + 1 points]**