Fall 2015.
HW #1. Chapters 1-6.

Step # 1 – Review chapters 1-6.

Step # 2 – Group Programming challenge – you will be broken up into groups of 3 people.

Your assignment will be composed of several task functions and 1 main function. The breakdown of distribution is listed below at the end make sure that everything works together. You will create one complete piece of code. You will decide amongst yourselves who will work on which part. You have to make sure each part is well documented (and the naming conventions follow throughout all parts). Basically it has to look coherent and clear.

You will submit three sets of files.
Each individual will submit:
1. The segment of code/function you worked on a .cpp or .h file ***hw6_lastName_FunctionName.cpp or .h***
2. Word File with your reviews ***hw6_lastName_Review.doc***

Your group will then submit the whole working project. .Zip file ***that should be made up of individual .cpp & .h files properly labeled).***

I will run the whole project to make sure everything works well together.

This is similar to a real world problem where you work with a team and you don't get to pick your team mates. Each of you will also write a short review about your team member's performance (no more than 2-3 sentences). Imagine this as a yearend review or "project end-review."

You will receive the average of three grades. The 60% for individual performance – for your segment of code, 30% of the grade will depend on the overall function of the program, and 10% will be based on how useful "your" comments from your peers are. If you find your team mate needs help – help them, but you will have enough to do on your own – so make sure everyone pulls their own weight.

You don't need to meet in person if it's not convenient – but you do have to communicate. The group segment of blackboard allows for discussions/file exchange etc. You have to decide what names you are giving to all your variables. How you will name your functions, and what the parameters will be. Your group grade can only improve if you communicate, which you will do in your respective groups. Use blackboard and email (this too will also only help you).

The exam will follow the due date for this assignment. Completing this will be very beneficial to studying for the exam.

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Assignments:

You are an advisor in one of the investment firms. You client wants to invest a large amount of money in Company X. Your client is asking you for an advice and he wants to know the future value of his investment. He also needs to know the ROI (return on investment).

However, before you can advise your client, you need to ensure of the credit worthiness of that Company X. One of the ways to do so is to use an acid test ratio (aka quick ratio) which is used to measure how easily the company X can convert its assets to cover their liabilities.

Student 1 (Project Leader):

Main Function: You are to create a main Function that interacts with the others. Make sure all necessary preprocessor directives are included.

You will ask the user – what formula they would like to calculate. Provide the user the 4 (or 5) options below.

Depending on what the user selects, prompt them to enter necessary variables and pass those to the function your partner is working on.

Document everything thoroughly.

Student 2:

~ Function 1 – Future Value of a lump sum(of investment)

$$FV=PV(1+r)^n$$

FV – future value
PV – present value
r – interest rate per period
n – number of periods
Function calculates and returns the FV.

~ Function 2 – Future Value (with compounding – work with student 2).

$$FV=PV(1+(r/m))^{(n*m)}$$

FV – future value
PV – present value
r – interest rate per period
n – number of periods
m – times compounded (compounding frequency)
Function calculates and returns the FV.

~ Function 3 – ROI (return on investment)
ROI % = (Net Profit – Cost of Investment) / Cost of Investment
Where net profit = total revenue – total expenses

Student 3:

~ Function 4 – Acid Test Ratio (Quick Ratio)

$$\text{Acid Test Ratio} = \frac{(\text{Current Assets} - \text{Inventory})}{\text{Current Liabilities}}$$

Where Current Assets = (Cash & Cash Equivalents + Accounts Receivable + Short Term investments)

Current liabilities = debts that must be paid within one year. Examples are: Accounts Payable, Short Term Loans, Dividends, etc.

~ Function 5 – Present Value (of a lump sum)
PV= FV/(1+r)^n

PV = present value
FV= future value
r = interest rate per period
n = number of periods

~ Also your project will need a **PrintOutput** Function(s). This will potentially be a series of overloaded functions that print the answers. These functions will receive the returned value from the calculations done by the other functions – and print it to the screen.

A simple cout statement. (You may require multiple **PrintOutput** functions if the values you return vary in type – or if all your output is of the same type you can get away with one **PrintOutput** function). *You should have ONLY what is needed – do NOT create a* ***PrintOutput*** *function for each of your math functions, only if your return type varies.*

All:

Everything has to be well documented and look coherent. Comments need to be written in each function with the name of the person who wrote it. All code must have the same naming conventions and be clear. ***Each of you should test your respective functions on your own – do not assume that it's the job of project leader.***