Homework set #2

Object Oriented Programming

October/23/2015

(Upload your homework to E-learning before October/29/2015. Please consult your TA for any questions).

Problem 1: Work on the following practice for interface and implementation

Step 0: Make sure you have installed "Microsoft Visual C++ 2010 Express Edition".

Step 1: Generate a directory as the vendor side containing GradeBook.h (Fig. 16.11 in your textbook) and GradeBook.cpp (Fig. 16.12 in your textbook), where one assumes that the vendor has "GradeBook.h" as the interface file and "GradeBook.cpp" as the implementation file.

Step 2: Generate a directory as the client side containing GradeBook.h (Fig. 16.11 in your textbook) and fig16_13.cpp (Fig. 16.13), where "GradeBook.h" is the interface file offered by the vendor and fig16_13.cpp represents the code written by the client. (Note: Step 1 and 2 thus simulate the situation where the client doesn't know what the implementation are in GradeBook.cpp.)

Step 3: In Window's Start menu, go to "Microsoft Visual C++ 2010 Express Edition".
Then go to "Visual Studio Command Prompt (2010)".
By this you can open a Visual Studio command prompt. (Note: this is somewhat different from the regular Dos Command prompt. As you shall see, some C++ commands can only be used in the Visual Studio command prompt.)

Step 4: In the Visual Studio command prompt, change your directory to the vendor's directory, then type

cl /c /EHsc GradeBook.cpp

Then this generates GradeBook.obj

Step 5: Copy this GradeBook.obj to the client directory that contains "fig16_13.cpp" and "GradeBook.h".

And in the "Visual Studio Command Prompt (2010)", change to this directory. Then in this prompt,

   i.   type

        cl /c /EHsc fig16_13.cpp

        This generates fig16_13.obj.

   ii.   Then to generate the executable, type

        link GradeBook.obj fig16_13.obj /out:fig16_13.exe

   iii.   You can then run fig16_13.exe

(**Note**: Step 5 above simulates the situation where the software vendor sold to the client the interface file and the object code, in order to hide the implementation details in GradeBook.cpp. So essentially the client won't have any knowledge about the internal implementation of the functions of the GradeBook class.)

For this problem, follow the steps above to generate two folders, named "vendor" and "client", where the vendor folder should contain the files (.h, .cpp, .obj), and the client folder should contain the files (.h, .cpp, .obj, .exe) designated as above. Zip these files; then name the zipped file as, e.g., **Hw2_Fall2015_Prob1_A1035501.rar**, and then upload the compressed file to e-learning. Also, you need to generate a .doc document to print out the output on the screen after executing the .exe.

Problem 2: Work on Exercise 16.11, p.649 of the textbook.
Problem 3: Work on Exercise 16.15, p.649-650 of the textbook.

For these two problems, zip these files (.h, .cpp, .obj, .exe) and name the zipped file as, e.g., **Hw2_Fall2015_Prob2_A1035501.rar**, and **Hw2_Fall2015_Prob3_A1035501.rar**, respectively. Also, you shall print out the output on the screen for these problems after executing the .exe. Collect these results with those of Problem 1 to generate a single .doc document. Finally name this homework document as, e.g., **Hw2_Fall2015_A1035501.doc**.

In summary, every student is expected to upload 4 files onto e-learning:

Hw2_Fall2015_Prob1_*.rar**
Hw2_Fall2015_Prob2_*.rar**
Hw2_Fall2015_Prob3_*.rar**
Hw2_Fall2015_*.doc**