24-783 Problem Set 2

Due: One-week assignment. Please see Canvas for the exact deadline.

(*) In the instruction (and in all of the course materials), substitute your Andrew ID for when you see a keyword *yourAndrewId*.

In this problem set, you will practice:

- compiling your CMake projects using the libraries included in the public repository, and
- converting a polling-based program (FsSimpleWindow) into an event-driven program (FsLazyWindow).

Before starting, update the public repository and course_files by typing:

```
svn update ~/24783/src/course_files
cd ~/24783/src/public
git pull
```

I am assuming that you have the same directory structure as we used in the first assignment.

START EARLY!

CMake and SubVersion both must be relatively new concepts for you. Try the problems early, and consult with a TA or the instructor if you have difficulties in following the instructions.

PS2-1 Set up projects for the Cannon-ball game and Bouncing Ball

You first create projects for the two projects for the event-driven style version of Cannon-ball game and Bouncing Ball.

1. In the command line window change directory to:
   ~/24783/src/*yourAndrewId*
2. Create a sub-directory called:
   ps2
3. Then, create the following two sub-directories:
   ps2/cannonball
   ps2/bounce

   File/Directory names are case sensitive. These two directories are for the two projects you are going to create. Use mkdir command to do this.
4. Copy the application template file:
   ~/24783/src/public/src/fslazywindow/template/main.cpp

   to the two directories you created. (Make two copies, one in ps2/cannonball, and the other in ps2/bounce)
5. In ps2/cannonball, write a CMakeLists.txt, which has an executable target called "cannonball" from main.cpp, and the target link fslazywindow library.
6. In ps2/bounce, write a CMakeLists.txt, which has an executable target called "bounce" from main.cpp, and the target link fslazywindow library.
7. In the top-level CMakeLists.txt (~/24783/src/CMakeLists.txt), add sub-directories:
   yourAndrewId/ps2/cannonball
   yourAndrewId/ps2/bounce

   If your top-level CMakeLists.txt contains a project called bounce (and cannonball as well maybe) from the previous lectures, remove that sub-directory first, and then add the two new sub-directories. You write your own top-level CMakeLists.txt for compiling and testing the programs, but for grading the script will create a top-level CMakeLists.txt, which assumes this directory structure. Make sure to comply with this directory structure. If you haven't created your top-level CMakeLists.txt yet, make sure you have the following lines upfront:

   ```
   set(CMAKE_CXX_STANDARD 11)
   set(CMAKE_CXX_STANDARD_REQUIRED ON)
   add_subdirectory(public/src)
   ```
8. Run cmake and then build "**cannonball**" and "**bounce**" projects. Project names are case sensitive, do not add hyphen or any other characters. Run the programs and make sure you see a blank window from each project.
9. Add files under:
   ~/24783/src/*yourAndrewId*/ps2

   to the SubVersion repository. If you have used "svn mkdir" command in Step 2, you need to add two main.cpp and CMakeLists.txt files (four files in total) in this step. If you have used "mkdir" command in Step 2, you need to add ps2 directory.
10. Commit your files to the SubVersion server.
11. Verify that your files are correctly committed.

PS2-2 Convert Cannon-ball game and Bouncing ball to an Event-Driven style.

The base codes for the Cannon-ball game and Bouncing-ball programs are in:

~/24783/src/ps2/cannonball/basecode.cpp
~/24783/src/ps2/bounce/basecode.cpp

Convert them to the event-driven style and write them in:

~/24783/src/*yourAndrewId*/ps2/cannonball/main.cpp
~/24783/src/*yourAndrewId*/ps2/bounce/main.cpp

Run CMake and make sure your program works as expected. It is recommended to commit your files after each step of conversion so that you can go back to the previous version if something does not go well.

Commit your files to the server.

Also, check out your submitted files in a different location and make sure all files are submitted, and the file contents are the ones you wanted to be graded.

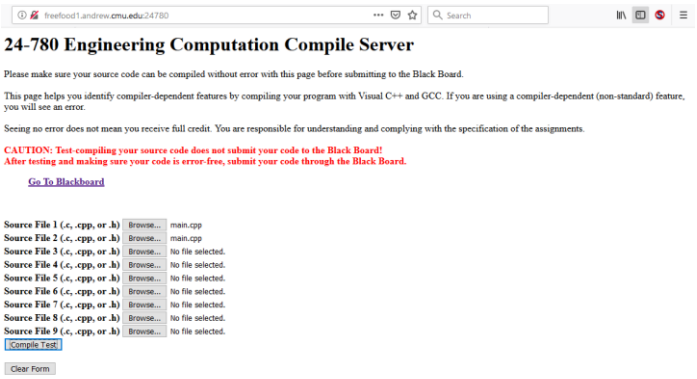
Since you are able to re-checkout and verify your submission, we do not accept an excuse that you submitted a wrong file(s).

Did you add **MACOSX_BUNDLE** keyword in your add_executable (for graphical programs)?

Also test the C++ files (.cpp and .h files) with the compiler server and make sure you do not see any red lines in the test-results page. Read the instructions in the following page.

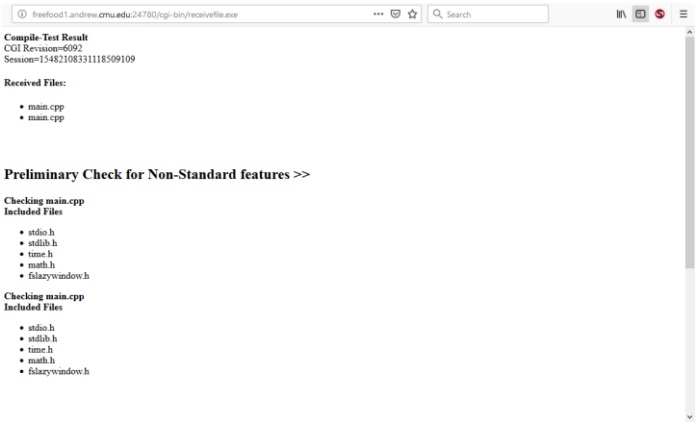
(1) Open one of freefood1 to freefood4.andrew.cmu.edu:24780

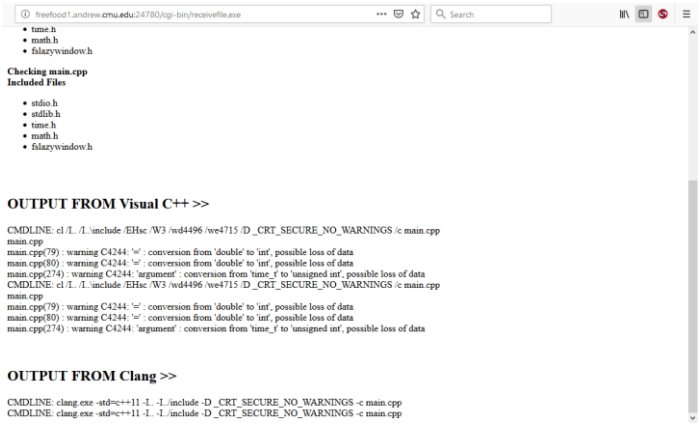
(2) Browse and select <u>your</u> .cpp and .h files.



(3) Click on Compile Test.

(4) Scroll down and make sure you don't see any red lines.





- time.h
- math.h
- fslazywindow.h

Checking main.cpp
Included Files

- stdio.h
- stdlib.h
- time.h
- math.h
- fslazywindow.h

OUTPUT FROM Visual C++ >>

CMDLINE: cl /L. /I..\include /EHsc /W3 /wd4496 /we4715 /D _CRT_SECURE_NO_WARNINGS /c main.cpp
main.cpp
main.cpp(79) : warning C4244: '=' : conversion from 'double' to 'int', possible loss of data
main.cpp(80) : warning C4244: '=' : conversion from 'double' to 'int', possible loss of data
main.cpp(274) : warning C4244: 'argument' : conversion from 'time_t' to 'unsigned int', possible loss of data
CMDLINE: cl /L. /I..\include /EHsc /W3 /wd4496 /we4715 /D _CRT_SECURE_NO_WARNINGS /c main.cpp
main.cpp
main.cpp(79) : warning C4244: '=' : conversion from 'double' to 'int', possible loss of data
main.cpp(80) : warning C4244: '=' : conversion from 'double' to 'int', possible loss of data
main.cpp(274) : warning C4244: 'argument' : conversion from 'time_t' to 'unsigned int', possible loss of data

OUTPUT FROM Clang >>

CMDLINE: clang.exe -std=c++11 -I. -I./include -D _CRT_SECURE_NO_WARNINGS -c main.cpp
CMDLINE: clang.exe -std=c++11 -I. -I./include -D _CRT_SECURE_NO_WARNINGS -c main.cpp