Computer Programming Lab 13

2018.06.01

For Windows Users

- More than one ways to follow the session:
  - Install Microsoft Visual Studio 2017 Community edition. (Easier)
  - Install WSL. (Windows 10 1703 or above.)
  - Install Cygwin.
  - Install MinGW.
- Install CMake.
- Set your tool in [File]->[Settings]->[Build, Execution, Development]->[Toolchains].

For MacOS Users

- Install CMake.
- Set your tool in [File]->[Settings]->[Build, Execution, Development]->[Toolchains].

Role of Header

Let’s test with those two files:

headertest.hpp

```
#include <iostream>

int hello = 2;

void shout();

void hide() {
    std::cout << " What, hidden?" << std::endl;
}
```

What will be the result?

headertest.cpp

```
#include "headertest.hpp"

void shout() {
    std::cout << "Treasure " << hello << "!";
}

int main(int argc, char *argv[]) {
    shout();
    hide();

    return 0;
}
```

Attendance Mission

Write a C++ program `seq.cpp` that reads a text file (given as `argv[1]`) in two lines:

<Number of elements in the sequence below>
<Sequence of numbers, space-separated>

and outputs whether the given sequence is *increasing*, *decreasing*, *constant* or *ambiguous* (none of three states) to the console.

You can assume that only valid text file will be considered.

Attendance Mission (Continued)

Let's run the program by: `./seq test.txt`.

When test.txt contains the following, result should be *increasing*.

```
7
2 4 5 8 10 13 15
```

When test.txt contains the following, result should be *ambiguous* (constant + increasing).

```
5
3 5 5 5 5
```

Attendance Mission - Optional

Write a C++ class `Triangle` with the following information:

Three (`unsigned int`, `unsigned int`) vertices as attributes.

A constructor.

A member function `type()` that determines whether the `Triangle` instance is *acute*, *right*, *obtuse* or *invalid*. (Hint: Pythagorean theorem.)

A member function `area()` that calculates area of the `Triangle` instance. (Hint: Heron’s formula.)