CS410 C++ Bonus!

This is a special bonus assignment to get **extra credit** for the course. Each part counts as 5% towards your final grade (15% total).

Friday, roughly two weeks ago, we started with the following C++ code on `cpp.sh`.

```
#include <iostream>

int main()
{
  std::string name;
  std::cout << "What is your name? ";
  std::cin >> name;
  std::cout << "Hello, " << name << "!\n";
}
```

We then added some loops to print numbers and played around with different types of variables.

Part 1

Please modify the C++ code from above to ask a user for a temperature in Fahrenheit. Then convert the entered temperature to Celsius (google the simple formula!) and display it.

Here is an example:

```
Please enter a temperature. 42
Converted to Celsius, this temperature is 24.2222!
```

You will need to cast the input from string to float.
You can do that in C++ using `float somefloat = std::stof(somestring)`.

Part 2

Take a look at classes in C++: `https://www.w3schools.com/cpp/cpp_classes.asp`

Please re-factor your code to define a class `Converter` with a method `fromFtoC(float)` that takes a float and converts it using the formula from Part 1, and then returns it. The class needs to be defined above the main method since the compiler works top-down. Make sure to change the main method to instantiate this class (e.g., `Converter c;`).

Part 3

Please apply the singleton pattern to the `Converter` class.

Then, you call the conversion like this `Converter::getInstance()->fromFtoC(std::stof(temp))`.

Here is an example C++ singleton implementation:

```
class Singleton
{
   public:
       static Singleton* getInstance( ) {

            return instance;

       };
       ~Singleton( );
   private:
       Singleton( );
       static Singleton* instance;
};
```

Submission

For submission, please create a GIST (see `https://gist.github.com/`) containing your code, and email the link to `staff@cs410.net`.

If you collaborate with other students (that's encouraged!), please make sure to credit anybody who contributed in source code comments.

Stay healthy!