Hello Again!

Due Tuesday, April 4 at 8 a.m.

Revision 1

CSE 1325 - Spring 2023 - Homework #8 - 1

Assignment Overview

Way back in homework P01, you wrote the classic "Hello, World!" program in Java. Now that we're learning a bit about C++, let's retread that hallowed ground!

Full Credit

For this full credit assignment, we will repeat both the P01 full credit and bonus assignments - in C++!

If you haven't already, set up your C++ development environment using guidance from Lecture 00 (slides 14-15). Then in **cse1325/P08/full_credit**, create and run the C++ "Hello, World!" program **in file hello.cpp** using std::cout, **replacing "World" with your name**. Take a screenshot of your program running, and **name it hello_me.png**.

```
ricegf@antares:~/dev/202201/P08/full_credit$ ls
hello1.png  hello_all.cpp  hello_getline.cpp  hello_me.cpp  hello.png  Makefile
ricegf@antares:~/dev/202201/P08/full_credit$ g++ --std=c++17 hello_me.cpp
ricegf@antares:~/dev/202201/P08/full_credit$ ./a.out
Hello, Professor Rice!
ricegf@antares:~/dev/202201/P08/full_credit$ 
```

Then create and run a C++ program from file hello_all.cpp that *asks the user for their name*, then prints "Hello, [name]", where [name] is the name they enter. Test this at least 3 times - with a single-word name, with a mult-word name separated by spaces, and by a name with different (potentially weird) characters. Take a screenshot of your program running all of these tests, and **name it hello_all.png**. As long as your program prints something after "Hello, ", you get full credit regardless of the outcome of these 3 or more tests.

```
ricegf@antares:~/dev/202201/P08/full_credit$ g++ --std=c++17 hello_all.cpp
ricegf@antares:~/dev/202201/P08/full_credit$ ./a.out
What's your name? George
Hello, George!
ricegf@antares:~/dev/202201/P08/full_credit$ ./a.out
What's your name? Professor Rice
Hello, Professor!
ricegf@antares:~/dev/202201/P08/full_credit$ ./a.out
What's your name? 我相信你
Hello, 我相信你！
ricegf@antares:~/dev/202201/P08/full_credit$ 
```

Add hello_me.cpp, hello_me.png, hello_all.cpp, and hello_all.png to git, commit, and push to GitHub.

Bonus

In **cse1325/P08/bonus**, write a C++ program in file uniq.cpp that converts each program argument to a std::string and prints it followed by a space, *unless* it is the same as the previous argument. That is,

```
./a.out this this is is is is a duplicate duplicate
```

would print

```
this is a duplicate.
```

No screenshots are required.

Hint: `std::string` has a constructor that will accept a `char*`.

Hint: In Java, variables *reference* an object such as a String, so assigning `a = b;` just creates another reference to the *same* object.

In C++, stack variables *contain* an object such as std::string, and so `a = b;` makes a *copy* of the object. This is what you usually want in C++.

Hint: In C++, `==` compares the value of primitives and objects alike - even std::strings! C++ has no `.equals` method. (You would compare the *address* of objects exactly as in C, of course: `&m1 == &m2`.)

```
ricegf@antares:~/dev/202301/P08/bonus$ g++ --std=c++17 uniq.cpp
ricegf@antares:~/dev/202301/P08/bonus$ ./a.out this this is is is is a duplicate duplicate
this is a duplicate
ricegf@antares:~/dev/202301/P08/bonus$ ./a.out rah rah bish bam bah flibbit flibbit floo
rah bish bam bah flibbit floo
ricegf@antares:~/dev/202301/P08/bonus$ 
```

Add, commit, and push all files.

Extreme Bonus

In **cse1325/P08/extreme_bonus**, write a C++ program in file odds_evens.cpp that reads integers **from std::cin** and appends them to a std::vector. On end of file (Control-d on Linux and Mac, Control-z on Windows), print

- The number of elements stored.

- The elements that are stored, on a single line separated by spaces.

- The elements that are stored with an even index, such as v[0] and v[2], on a single line separated by spaces.

- The elements that are stored with an odd index, such as v[1] and v[3], on a single line separated by spaces.

```
ricegf@antares:~/dev/202301/P08/extreme_bonus$
ricegf@antares:~/dev/202301/P08/extreme_bonus$ g++ --std=c++17 odds_evens.cpp
ricegf@antares:~/dev/202301/P08/extreme_bonus$ ./a.out
13 20 42 19 318 26
Number of elements: 6
Elements: 13 20 42 19 318 26
Even indices: 13 42 318
Odd  indices: 20 19 26
ricegf@antares:~/dev/202301/P08/extreme_bonus$ ./a.out
13 20 42 19 318 26 11
Number of elements: 7
Elements: 13 20 42 19 318 26 11
Even indices: 13 42 318 11
Odd  indices: 20 19 26
ricegf@antares:~/dev/202301/P08/extreme_bonus$
```

Add, commit, and push all files.