Name: UID:

CS1410-40 Programming Assignment 1

1. Visit compiler explorer: https://godbolt.org/ and compile the following hello-world c++ program:

```
#include <iostream>

int main() {
  std::cout << "Hello World!" << std::endl;
  return 0;
}
```

Report the number of lines of machine code (assembly) using the compiler “x86-64 gcc 10.2”. Knowing the complexity of machine code is typically a good indicator for measuring the performance of your program.

Lines of Assembly: _____

Compiler explore is frequently used by developers to inspect the assembly of your C++ code under different compilers (e.g., clang, gcc, icc).

2. Following Question #1, replace “std::endl” with “\n”. Do you see any difference in terms of assembly complexity? What is the difference between using “std::endl” and “\n”?

3. What happens when you perform arithmetic operations on different data types? Specifically:

```
int integer1=5, integer2=19;
double numeric1=3.0, numeric2=11.0;
```

What is the addition result of “integer1 + numeric1” and its type?
What is the division result of “integer2 / integer1” and its type?
What is the division result of “numeric2 / integer1” and its type?
What is the result of “numeric1 * integer2 / integer2” and its type?
What is the result of “integer2 / integer1 * numeric1” and its type?

Due 9/2/20 by Class - email your solution to your section TA (Dian-Lun.Lin@utah.edu or yasin.zamani@gmail.com)

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4. What is the plain-old-data (POD) type?

5. Watch the video "*Naming is Hard: Let's do better*" presented by Kate Gregory at https://www.youtube.com/watch?v=MBRoCdtZOYg and write down your comments in 2-3 sentences:

6. Watch the video "*C++20: C++ at 40*" presented by Bjarne Stroustrup (creator of C++) at https://www.youtube.com/watch?v=u_ij0YNkFUs and write down your comments in 2-3 sentences:

7. Watch the video "*Understanding Compiler Optimization*" presented by Chandler Carruth at https://www.youtube.com/watch?v=FnGCDLhaxKU and write down your comments in 2-3 sentences:

8. Wath the video "*Faster Compile Times and Better Performance: Bringing Just-in-Time Compilation to C++*" at https://www.youtube.com/watch?v=6dv9vdGIaWs and write down your comments in 2-3 sentences:

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