COSC1076 | Advanced Programming Techniques

Revision Questions | Week 01

These are self-revision questions, to help you track if you are understanding the weekly course content.

You should FIRST answer these questions using "pen-and-paper". Only after this should you test your answers by writing and compiling programs.

1. Write the minimum (smallest) C++ program that will compile and execute.
2. What value should the `main` function return?
3. What is the standard compilation command that will be used for this course?
4. What will be the final value of each variable in the following code snippet?

```
int x = 2;
double y = 10.5;
double z = 0;

x = x^2 + x * y - x;
z = x / 4;
y = z / 2;
```

5. Do you prefer C-style output (`printf`) or C++ style output (`cout`) and why? Under what circumstances would you use one output style over the other?
6. C-Style input (`scanf`) and C++ style input (`cin`) use different methods for handling EOF, read failures and errors.
   (a) Describe the difference between the methods
   (b) Suggest a reason for why the C++ STL designers changed the method for handling EOF, read failures and errors.
7. Using the following program:

```
#include <iostream>
#define X            5
#define Z            2+4
#define MESSAGE     "The value of x is ";

int main (void) {
    int x = X;
    int y = 10;
    x = x + y * Z;
    std::cout << MESSAGE << x << std::endl;
    return 0;
}
```

   (a) Re-write the program, as if the C++ pre-processor has been run and all `#define` directives have been processed.
   (b) The program contains a syntax error. Identify and fix the error.
   (c) The program contains a potential error. Identify this problem and suggest a fix.
   (d) What will be the output of the program, after you have fixed the error(s)?
8. Is the `std::string` a built-in C++ type. or a STL class?
9. What are the significant differences between how 1D arrays are used in C++ when compared to Java?
10. In C++, how can you find the dimensions of a multi-dimensional array?
11. Describe the process for parameter passing in C++ functions.

12. What will be the output of the following program?

```
#include <iostream>

int foo(int x);

int main (void) {
    int x = 2;
    int y = foo(x);
    std::cout << "x = " << x << ", y = " << y << std::endl;
    return 0;
}

int foo(int x) {
    ++x;
    return x*2;
}
```

13. Which header file(s) need to be included to access the following entities?
    (a) `std::cout`
    (b) `printf`
    (c) `std::string`
    (d) `std::endl`
14. Why is bad-style to use the following namespace include?

```
using namespace std;
```