

COMP-116

Software Development Lab I

Fall 2023

Homework 2

1. What is a comment and what syntax is used for a comment in C++? A comment is a description made for the human to understand the context inside the code
2. Are comments ignored by the C++ compiler? Yes, comments are ignored during compilation process, along with whitespaces.
3. The following program is correct. However, the programmer did not adopt any coding style which makes the program difficult to understand and maintain. Can you find examples of bad code styling principles?

```

1 //
2 // myprogram.cpp
3 // If you feed this program numbers it works    Unclear description
4 //
5 // Created by trihinas on 24/09/2019.
6 // Copyright © 2019 trihinas. All rights reserved.
7 //
8 #include <iostream>
9 using namespace std;
10
11 int main() {
12     int a = 0;
13     int b = 0; lines should be aligned with the same amount of white spaces
14     int c = 0;
15     int d = 0; double e = 0.0;    It is a good practice to keep all the same type
16                                   variable declarations together
17     while(b>0) {
18         cin>>b;    White spaces should separate the variable operations to make it more human-readable
19         a = a+b;
20         c = a*b;
21         d = d+1; //d counts how many    Unneeded, unclear comment
22     }
23     if (d>0){e = a/d;}    Non-block style, messes up both IDEs and readability
24     cout << "e = " << e << endl;
25
26     return 0;
27 }

```

Dr. Demetris Trihinas
trihinas.d@unic.ac.cy

4. Suppose the input to the following program is **21** and **33**. Perform a program trace and afterwards show what the output will be:

```
#include <iostream>
using namespace std;

int main() {
    int n, m, t;
    cin >> n;  n = 21
    cin >> m;  m = 33
    t = n;    t = 21
    n = m;    n = 33
    m = t;    m = 21
    double d = m + 1.5;      d = 22.5
    int o = d;               o = 22
    cout << o;
    return 0;
}
```

Output: "22"

Errors during translation to machine code

Unrealistic representation of logical operations

5. What are syntax errors (compile errors), runtime errors, and logic errors?

Violation of language rules

Errors during the execution of the program

6. If your program needs to read data from a file, but the file cannot be found in the specified location, an error will occur. What kind of error is this? This would probably be a runtime error

7. Suppose you must develop a program for computing the perimeter of a rectangle, but instead your program mistakenly computes the area of a rectangle. What kind of error is this? Logic error?

8. A. Write a program that asks the user to type the width and the height of a rectangle and then outputs to the screen the area and the perimeter of that rectangle. Note, name your source file **rectangle.cpp** and create three copies of this file. Rename the first copy as **rectangleError1.cpp**, the second as **rectangleError2.cpp** and the third file as **rectangleError12.cpp**.

Example

```
Rectangle width: 6.0
Rectangle height: 8.5
The perimeter of the rectangle is: 29.0
The area of the rectangle is: 51
```

- B. Open **rectangleError1.cpp** and, in purposely, create a syntax error. Try to compile your code. Copy to your answer sheet the error the compiler outputs and explain in your words what the compiler is trying to say.
- C. Open **rectangleError2.cpp** and, in purposely, create a different syntax error. Again, try to compile your code. Copy to your answer sheet the error the compiler outputs and explain in your words what the compiler is trying to say.
- D. Open **rectangleError12.cpp** and create the two aforementioned syntax errors you had in the two previous files. Try to compile your code. Copy to your answer sheet the error the compiler outputs and explain in your words what the compiler is trying to say. Did the compiler find both errors?