



Programming Methodology I

COEN-243 Section N NA

THE SECOND TUTORIAL 😊

September 21, 2022

COEN-243 WhatsApp Group

Invitation link: <https://chat.whatsapp.com/hc1diaer6g1djhscxz13ef>



Resources And GitHub Repo

- My COEN-243 GitHub Repository:
https://github.com/TheBarzani/COEN243_Fall2022
- Recommend Web Tutorial Website: <https://www.w3schools.com/cpp>
- Recommend Udemy Course: <https://concordia.udemy.com/course/cpp-deep-dive/>

LAST WEEK'S TUTORIAL TASKS

- Overviewing Programming languages and C++ characteristics. **(COMPLETED)**
- Downloading and Installing C++ toolkit. **(COMPLETED)**
- Setting up the environment for C++ programming. **(IN PROGRESS)**
- Getting familiar with the idea of an IDE (Integrated Development Environment) **(IN PROGRESS)**
- Extra: Getting familiar with basic C++ programming syntax. **(INCOMPLETE)**

TODAY'S TUTORIAL

- C++ Syntax based on a “Hello World” program
- Variable Types and C++ Type Language Nature
- Operators and Expressions plus some activities
- Control Flow:
 - Conditional Statement
 - Loopz

“Hello World” Example (Old but Gold)

#include <iostream> // Imports the header file of a pre-defined library (Functionality is added to the program)

using namespace std; // Enables the privilege to use Standard Library objects and variables

int main() { // A function (This one is special as it is the driver for executing any code)

cout << "Hello World!"; // Object from Ostream sub-library for outputting text (<<) is an operator

return 0; // Returns the function aka terminates the running code here

} // Curly brackets are used to enclose the scope of a function

// Note: any white/empty line is ignored by the compiler

What is a type language and Variable Types

- Type languages expect the types of variables to be declared by the programmer
- C++, Java, C, Fortran, C# are some examples of type languages
- Variable types are the genres of data that can be used for digital communication
- int, float, double, char, bool are barebone types known by the compiler
- However, the user/programmer can also define its own types
- Variables can be modified and customized based on their size, memory mode...etc.
- Confused...Basically variables are labels to memory location (Dr. Thiel)

Operators and Expressions

- Just like maths, we need operators for the program's logic to run
- Arithmetic (Mathematic) Operators: +, -, *, /, %, ++, --
- Assignment Operators: =, +=, -=, *=, /=, %=, &=, <<=...etc.
- Comparison Operators: ==, !=, >, <, >=, <=
- Logical Operators: &&, ||, !
- Bitwise Operators: >>, <<, &, ^...etc.
- https://www.w3schools.com/cpp/cpp_operators.asp

IF Statement and Switch Cases

- IF Statement: If a condition is satisfied, then run my code.
- Keywords: *if* ('condition'), *else if* ('condition'), *else*
- Alternative: https://www.w3schools.com/cpp/cpp_conditions_shorthand.asp
- Switch Case Block: Given a condition, pick the correct case and run its code
- Keywords: *switch* ('selection'), *case* 'option', *break*, *default*

FOR Loops and While Loops

- For Loop: Run the code in the loop block this many times
- No direct conditions are specified, it can be run infinite times
- While Loop: Run the code in the loop block forever *while* the condition is true
- Condition is satisfied and usually the condition is altered inside the loop
- **Remember:** Loops can be really powerful

THANK YOU 😊