Tute 3: Classes

Review: Classes

What is the difference between a class, a struct, and an object?

What is method overloading?

What is a default argument?

How are arguments passed to methods?

What is auto?

What is nullptr? Int * i = nullptr; if(i == nullptr) can also compare with unique_ptr - currently holding 0x0

std::unique_ptr<int> pi = std::make_unique<int>(3);

Programming Concepts: Structs vs Classes

Look at structs.c and constructors.h/cpp from the Week2 examples folder as a reference.

What is a struct in C?

What is a function?

What is a function pointer?

Why is it necessary to set function pointers when new objects are created?

Why is it necessary to pass an object pointer to each function?

How is this functionality replicated in C++?

What is the meaning of private and public?

How is the constructor implemented and then used? How are multiple constructors used?

Compilation: Preprocessor

What does the compiler do before checking the syntax of a program? #pragma once

How can we compile to check the output of the preprocessor? -E

Makefile: write a makefile to compile the solution the linked list exercise from last week.
CMake: write a cmakefile to compile the solution from last week.

What are the major differences and advantages with these two file formats?

Errors: None this week

Debugging: GDB

What is gdb?

How can we compile programs to use gdb?

How can we run a program using gdb?

Exercises:

What is a binary search tree? What characteristics does it have?

What is a standard way to implement these?

```
Class tree
{
        Node * root;
}

Class node
```

```
{
        Node * left;
        Node * right;
        Int data;
};

traverse(node * current)
{
        if(current.left)
                traverse(current.left);
        Print (current.data);
        if(current.right)
                traverse(current.right);
}
```

What is a binary heap data structure?
Children of (X) = 2 * X, 2*X+1

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19

Why would a binary heap be faster as a tree structure in comparison with a binary search tree?