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# COMP500 – Programming Concepts and Techniques

## WORK IN PROGRESS

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Unofficial course manual

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# **1. Introduction**

This document is a collection of my knowledge related to the class "Programming concepts and techniques" written for someone taking this class. While largely intended as a way of writing down everything I know for my own benefit, my hope is that it will be of use for you as well.

## 2. Week One – Overview

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### 2.1. Introduction to the C programming language

C is a compiled, statically typed, non-object-oriented, low-level programming language. As it was written in the 1970's (Back when computers were much less powerful), C is much less abstracted than other languages to preserve system resources. This means more direct access to the computers resources.

In some ways this is a good thing, C is still one of the fastest programming languages in terms of execution time, however this also makes it much harder to use than a more abstracted language like python.

These features also makes it an excellent teaching tool.

### 2.2. Basic features of a C program

All C programs must contain a `main()` function. When the program is compiled and run, that function will run first. All other functions must be either directly or indirectly executed by the main function. Additionally, the main function must be of type `int` (integer), with its return value indicating the success or failure of the program.

Here is a simple “hello world” C program demonstrating this:

```
#include <stdio>

int main()
{
    printf("Hello World!");

    return 0;
}
```

Lets walk though this line by line. The first line is importing the standard input/output library `stdio`