C++ Programming Basics

C++ Lecture 1

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Course Goals

- Introduction to integrated development environments (IDEs)
- Crash course in C++ programming
- Workable understanding of variables, functions, and objects
Class Structure

- Class time from 9-11am and 2-4pm on Monday, Wednesday, and Friday
- Class time is used for lectures and worktime
- Daily activities reinforcing concepts
- Concepts will build on each other so ask questions early
Motivation

- C++ is a challenging but powerful language
- Basis of many major software packages
- Concepts in this class extend to many other languages
- Today is devoted to the basic building blocks
  - Setting up the IDE
  - C++ Syntax
  - Using Includes
  - Commenting Code
  - Output to the Command Line
What is an IDE?

Definition: An **integrated development environment (IDE)** is a software application that provides comprehensive facilities to computer programmers for software development. An IDE normally consists of a source code editor, build automation tools and a debugger.
What is an IDE

๏ Source Code – The letters, numbers, and symbols that make up a program

๏ Build Automation – Translates source code into computer speak

๏ Debugging – Looking though code while running to gain understanding
Visual Studio

Debugging

Breakpoint

Build Output

Source Code
Checkpoint

- Open Visual Studio and create a new visual C++ Win32 Console Application
Properties of C++

- Program statements are executed line-by-line
- Lines are terminated with the `;`
- Everything starts in the main function
- Source code is translated into machine code prior to execution
- Syntax similar to other "curly brace languages" (C, Java, C#)
Checkpoint

- Obligatory “Hello World!” application. Enter code into IDE and run.
- Delete a ;
- What happens?
- Remove “return 0;”
- What happens?
Comments

- Good programmers comment their code
- Comments explain in plain language what a portion of code does
- Comments are helpful to yourself and others when reading code
Checkpoint

- Add your own comments to your Hello World program
- What happens when you run the program without the // or /**/ with the text?
Include Statements

- Remember C++ complies syntax line-by-line
- If we want to do something we need the syntax or machine code
- There are common operations that users want to perform
- Don’t want to reinvent the wheel every time we want a printout
- Soooooo we use the standard library and include statements
Include Statements

○ To specify what standard features we want we use `#include`.

○ Lets us call and use all the functionality in our own program without having to write the code ourselves.

○ For example in our Hello World program we used `#include <iostream>` to print to the command line.
Checkpoint

- Uncomment the `#include <iostream>` and try to run the program.
Questions?
Assignment

๏ Play with different wording in your Hello World application

๏ Challenge: Can you split the words onto different lines?