A SHORT COURSE ON C++

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OUTLINE

1 INTRODUCTION TO C++
- Object-Orientated Programming
- Syntax
- Handling Data and Variables
- Input/Output

2 FLOW CONTROL AND FUNCTIONS
- If Else
- Looping
- Functions
- Cmath Library
- Prototyping

Introduction to C++
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- A structured language can *hide* information from the rest of the program.
- Structuring code and data allows
  - easy upgrades
  - many programmers to work on a large project
- Object-oriented programming imposes a high level of structure
- Problems are broken down into subproblems, and then into self-contained units called objects
- Common traits of object-oriented languages are:
  - encapsulation
  - polymorphism
  - inheritance

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USING OBJECTS

1. **Encapsulation**:
   functions and data inside an object have restricted access.

2. **Polymorphism**:
   represents the concept of "one interface, multiple method".
   The same interface can be used to do different things for
   different objects: i.e. define $+$ to add numbers, but perform
   string concatenation on characters and strings, 'a' $+$ 'b' $=$
   'ab'.

3. **Inheritance**:
   allows one object to acquire the properties of another. An
   example would be to define a generic object "car" that has a
   steering wheel, four wheels and an engine. The new object
   "sports car" inherits all these properties and adds a sun roof,
   go-faster stripes and a huge stereo.

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WRITING C++

The key elements of C/C++ syntax are:

- Semicolon used to mark end of statements
- Case is important
- Totally free form, lines and names can be as long as you like!
- Comments take the form /* C style comment */ or // C++ style comment
- Code blocks are surrounded by braces {}

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