Java Basics

Variables

Summary

- Previously
  - Simple programs with simple printouts
  - “Hello World”
- What we will learn today ...
  - Introduction to variables
  - What does a variable do
  - Different types and when to use them
  - Difference between a primitive variable and an object

What are variables?

- Storage points for values relating to different aspects of the program
- Can call up that value using variable
  - New value will reflect any changes made
  - e.g. An accounting program may have a variable holding Current Amount Owed will be updated with any amounts still owed from customers

Different types of variables

- Different variable types. Why?
- To store information of different types
  - Numeric
  - Alphabetic
  - Alphanumeric
  - Boolean
- To store different capacities, specifically with numeric values
  - Whole numbers
  - Decimal values

Characters and Strings

- Characters
  - The **char** variable holds single characters
  - Can be unicode
  - Usually denoted by ' '
- Strings
  - While technically not a primitive variable, the **String** variable holds strings of text e.g. Names, addresses etc., (It is an Object!)
  - Usually denoted by “ “

Boolean Variables

- boolean can store true or false value
- Used to represent various states
  - Yes/No
  - On/Off

How to declare in Java

- While there is the important notion of "**SCOPE**", generally variables are declared at the start of the particular section
  - This is only convention and Java supports "Inline declaration" i.e. Declare a variable as you need it!
- Supposing we needed variables to cater for
  - An employee's ID
  - An employee's name
  - An employee's tax paid to date

Declaring Variables in Java

- Three things in declaring a variable
  - The scope (covered in more detail in next lecture)
    - Public, Private, Default
  - The variable type
  - The variable name

    public int id = 0;

    private String name = " ";

    public double taxToDate = 0.00;
  - INITIALISING Variables: Setting them to starting values

Primitive Variables vs Objects

- Primitive Variables
  - Primarily to store values
  - Denoted by lower case e.g. **char**
- Objects
  - Can store values but also
    - Can have specific behaviour and added functionality
  - Denoted by upper case e.g. **Character**
- Will explain in more detail in next lesson

Summary and points to look at

- Summary
  - Variables used to store important pieces of data
  - Values can be changed (in almost all situations)
  - Different types used in different situations
- Points to look at
  - Use of variables in programs
  - Mathematical operations
  - Decision constructs
    - If, Switch

Links

- http://docs.oracle.com/javase/tutorial/java/nutsandbolts/variables.html
- http://www.javatutorialhub.com/java-variables.html