



## CENTER FOR TEXTUAL STUDIES AND DIGITAL HUMANITIES

# DIGH 401 - Introduction to Computing

Fall Semester 2013

Week 4

## Today's Class

### Programming Languages

- assessment of 'Curly Bracket' languages
- scripting languages
- variables etc

### Programming tools

## Alternative methods for writing programs

### Object-Oriented Programming - a quick recap

- makes programs easier to write
- easier to understand
- easier to modify
- these advantages allow a programmer to focus more on solving problems

## 'Curly Bracket' Languages

- a family of related languages commonly known as 'curly bracket' languages
- curly brackets used to define start and end of a block of commands

```
#include <stdio.h>
```

```
void main()
```

```
{
```

```
    printf("Notice how the curly brackets\n");
```

```
    printf("identify the beginning and end\n");
```

```
    printf("of your commands?\n");
```

```
}
```

## 'Curly Bracket' Languages - C language

the power of C

- combination of assembly language options and high-level ease
- C lets you focus on the logic of a program
- often used for writing large, complicated programs such as
  - Operating Systems
  - Word Processors...
- C programs can crash other applications and the OS itself

## 'Curly Bracket' Languages - C language

the efficiency of C

- compiler tends to create smaller, faster, more efficient programs
- keywords are special commands used in every programming language
- the more keywords, the fewer commands you need
- more keywords can lead to a less efficient compiler & more work
- C uses libraries of sub-programs to mimic keywords in other languages

## 'Curly Bracket' Languages - C language

the portability of C

- C makes it easier to create compilers compared with comparative languages
- easier to compile and run on multiple computers and OSs
- portable language and programs

## 'Curly Bracket' Languages - C++

### Adding Object-Oriented to C with C++

- object-oriented principles and benefits added to C
- more programs now being written in C++
- many learn C, and then migrate to C++ for OO principles



## 'Curly Bracket' Languages - Java

a few benefits and portability

- C and C++ not truly portable (minor and often major changes required)
- Java created by Sun Microsystems
  - [fun timeline for Java](#)
- Java also based on C
- Java isolates programmer from accessing computer's memory
- reduces power of Java but does translate in safer programs
- Java compiled into 'bytecode' or 'pseudocode' (p-code)
- Java Virtual Machine (Java VM)

## Scripting Languages

- languages such as C and C++ often called 'system programming languages'
- scripting languages customise existing programs & work with one or more existing program
- scripting languages can work in suites such as MS Office...
- scripting languages differ from more traditional languages
  - interpreted & require source code and associated programs to run
  - typeless

## Variables in PHP

- used to hold values or expressions

A few simple rules:

- variables start with \$ sign
- must begin with a letter or \_ character
- can only contain alphanumeric or underscore characters
- avoid spaces in the names
- names are case-sensitive

```
$course2 = "DIGH 401";
```

- PHP is a loosely typed language

## Variables in PHP

- 4 scopes for variables in PHP
  - local
  - global
  - static
  - parameter

## Scripting Languages

typically used in four different ways

- automate repetitive tasks
- customise the behaviour of one or more programs
- transfer data between two or more programs
- create standalone programs

## Scripting Languages

### 1. automate repetitive tasks

- macro to record a given task
- use macro to repeat a task

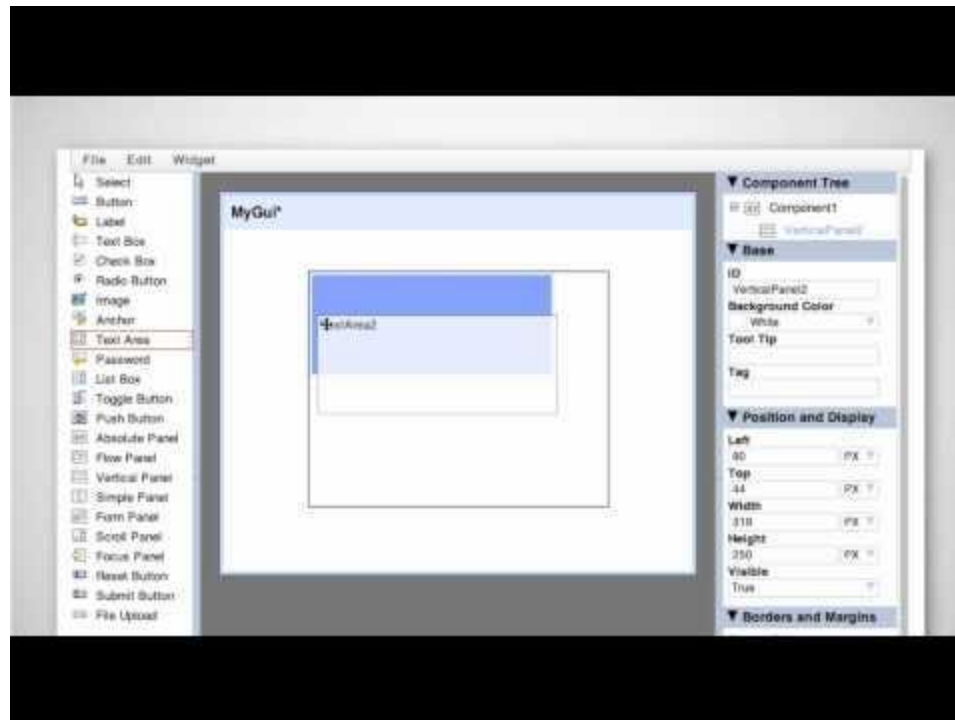
## Scripting Languages

2. customise the behaviour of one or more programs

- easy to customise and reduce potential errors
- can automatically add data correctly
- combine automation and customisation eg: AppleScript

[Google Apps Script](#)

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## Scripting Languages

3. transfer data between two or more programs

- independent scripting language such as PHP, Perl, Python, Ruby or Javascript
- these linking scripting languages are often referred to as 'glue'
- use 'glue' to combine existing programs to create custom solutions

## Scripting Languages

create standalone programs

- a good example is Visual Basic
- LiveCode, or Revolution, is another popular example
- interpreter for LiveCode allows programs to run on different OSs