

F21SC: Guide for independent distance learners

Introduction

Welcome to the course *F21SC Systems Programming and Scripting*. This document gives you an overview of the course including: topics covered in this course; recommendations on where to find the materials, and how and when to study them; and details of assessment.

Lecturer

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Overview of purpose and topics

The purpose of the Course *F21SC System Programming and Scripting* is to deepen the understanding of a range of programming languages and to obtain a critical understanding of the outstanding features of each of the languages. In doing so, it provides advanced programming language skills, exercised through a series of courseworks. In particular, this course conveys the idea of scripting languages acting as **glueware** between components of existing software systems in order to build large systems.

More specifically, the course will cover C# as an advanced general purpose and systems programming language (first half of the course), shell scripting and PHP-based web scripting (second half of the course). This course **assumes solid knowledge of an object-oriented language**, such as Java. The course will revise the main concepts of object-oriented programming, but will not provide a gentle introduction into this topic.

Resources

Heriot Watt lectures

You will be using the same material as the on-campus students, which is found on Vision under 'Learning Materials'.

Books and web references

See the on-line reading list at the 'Course Information' page under Vision.

Software

The first half of the course will use C#, the second half PHP as programming languages. You can obtain all necessary software from the links below.

C# with Microsoft Visual Studio 2010 (available for free as Express edition)

<http://www.microsoft.com/express/download/>

You can also get student version of Visual Studio, that doesn't expire, through

<https://www.dreamspark.com/>

For more information and other .NET software to download, check:

<http://msdn.microsoft.com/en-us/netframework/default.aspx>

Alternatively, you can use the C# implementation in Mono (on Linux):

<http://www.go-mono.com/>

For GUI-based programming under Linux monodevelop is available. However, note that its functionality is significantly smaller than the Windows-based Visual Studio:

<http://monodevelop.com/>

For PHP, you can use any web server that supports PHP 5.x. For example, the departmental web server can be accessed like this (use your <username>).

<http://www.macs.hw.ac.uk/~<username>>

You have to put your web pages in a subdirectory public_html from your home directory that you have on the Linux machines.

If you want to install a web server, with PHP and a database backend, yourself, eg. on your laptop, lookup the LAMP collection of Linux packages. Detailed documentation can be found here: <http://www.lamphowto.com/>

Studying

Timetable

In Vision, the topics are laid out by week, so you should progress through the materials at that rate.

How to study the material

Typically a topic consists of the slides of the lecture and sometimes an ancillary document that discusses one topic in more detail. For most of the lectures you can find sample code, that is discussed in these printed documents, for download and to help you with the exercises posed in the lectures. It is highly recommended to download the sample code for each lecture, while studying the material of the lecture, and to run the code in Visual Studio (C#) or in a web browser (PHP). Modifying the code to slightly alter its behaviour is a good way to deepen your understanding of the material under discussion.

Typically the set of slides covering lectures on one topic will contain exercises at the end, to help your understanding. These exercises are *optional* (they are not assessed), but it is highly recommended that you finish most of these exercises before you proceed to the next topic: the only way to obtain a deep understanding of programming languages is to use their core concepts on, at least small, examples. If you manage to do all the optional exercises, you are in very good shape for doing the mandatory, assessed coursework.

Answers for most of the exercises are provided on Vision. If you have any specific question on these exercises, or if you want feedback on your solutions, just email them to the lecturer. When working on these exercises, focus on using advanced language features of C# and other mechanisms that aide abstraction (for example,

developing a good class hierarchy). Using such tools and techniques will help you when moving on to more substantial programming tasks later on.

Assessment

Assessment of the course is 100% by coursework.

For each coursework, the functionality of the program, the quality of the code and the quality of the report describing the program will be assessed.

For Coursework 1 and 2, there will be demonstrations, where you will present the program and the code. This can be done remotely, eg. via Skype. As part of the demonstration the lecturer will ask questions about the code, probing your background knowledge of the topic.

If the final mark, composed out of the marks on the coursework, is a fail, you will be required to resit the assessment, which again will be by coursework.

Coursework

Please submit electronically using the instructions given within the assignment, and posting paper copy (see instructions on the MSc Computing web page <http://www.macs.hw.ac.uk/macshome/cspgMScComputing.htm>)

There are 2 pieces of coursework:

1. A moderate C# application, implementing a basic web browser. *Weight 50%.*
2. A PHP application, implementing a basic book store, involving database interaction and user management. *Weight 50%.*

The details on the 3 assignments will be posted on Vision under 'Assessment'.

If you are studying the course in the same semester as the on campus students, it is highly recommended that you match the same deadlines.

If you are studying the course in a different semester, please consult the lecturer to determine suitable deadlines.

Please submit electronically using the instructions given within the assignment, and posting a paper copy (see instructions on the MSc Computing web page <http://www.macs.hw.ac.uk/macshome/cspgMScComputing.htm>)

Examination

There is no written examination for this course. The demonstration of the completed Coursework 1 and 2 will typically include questions on C# and PHP that will test your background knowledge on these two languages.

The resit will be in the form of one, extended piece of coursework, covering both C# and PHP, and will be posted in July, with a deadline in August.