Client Side Web Development

CSWD

(Module MHI324187)

MHI322924

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Another ? Possibly Dr. Paterson

Module Introduction

Module Outcomes

On completion of this module, students should be able to:

➢ Demonstrate a detailed understanding of the architecture and design patterns commonly used in client-side web applications

➢ Critically appraise and select libraries and frameworks which meet specific purposes within the architecture of client-side web applications

➢ Evaluate the requirement for real-time functionality to enhance responsiveness within a client-side web application

➢ Develop and test a rich, responsive and scalable client-side web application solution which can be executed within a modern web browser and interacts with remote services, making use of appropriate technologies, libraries and frameworks

Time-tabled Classes

The course has **two** supervised timetabled elements: **see own timetable for details**

➢ A lecture class where new concepts will be introduced and explained

➢ A lab session where students will have the opportunity to put the theory into practice by programming the algorithms

➢ Doesn't appear to be a tutorial class so we may have to use the lecture and lab from time to time

Main CSWD topic areas

- **HTML5**
  - canvas, video and audio, forms and data, browser history, offline support and client-side storage elements, geolocation, 'draggables & droppables'

- **JavaScript**
  - Basic syntax
  - Applying 'object-oriented' principles
  - Callbacks
  - Patterns : - Constructor, Module, Revealing Module, Singleton, Observer …

- **Working with services on the client**
  - XMLHttpRequest / AJAX / DOM
  - Consuming REST services, asynchronous requests and callbacks

- **Real-time web communication**
  - Server push - Publish-subscribe - Peer-to-peer - Techniques and technologies for real-time web communication, including: polling, long polling, WebSocket, HTML5 Server-Sent Events, WebRTC - Frameworks which support development of real-time web applications

- **Testing and debugging**
  - Unit testing in JavaScript - Client-side test frameworks - Use of tools for debugging JavaScript - Use of tools for debugging HTTP requests/responses

Backend stuff- not covered!

- No traditional server-side Database stuff

- However, **indexeddb** is a new HTML5 concept to store the data inside user's browser.

- indexeddb is more power than local storage and useful for applications that requires to store large amount of the data.

- these applications can run more efficiency and load faster.

Overview

Activity	Hours
Lectures	24
Practicals/Labs	12
Tutorials	12
Independent Learning	134
Assessment	18
Notional Student Effort	200

The 134 hours of independent learning: this is you working outside the class periods! You are therefore expected to come to class prepared and will need to practice, practice …

Assessment criteria

- 1 Coursework mark (50%)
  - **Multiple exercise (s) (100%)**
    - *including MCQ class test(s) and*
    - *major programming exercise*

- 1 Formal exam mark (50%)
  - 3 from 4 questions, (4 from 6) 2 hours

If combined weighted marks >= 39.5% then you've **PASS**ed !

Anyone with a mark < 40% has a **Fail**!
NB A fail means doing **all** parts again (You've been warned).

Suggested Readings

- Indicative Reading
  - Learning Javascript Design Patterns, A. Osmani, 2012, O'Reilly
  - Javascript the good parts, D. Crockford, 2008, O'Reilly
  - Patterns of Enterprise Application Architecture, M. Fowler, 2002, Addison Wesley
  - Design Patterns: Elements Of Reusable Object-Oriented Software, E.Gamma, R. Helm, R.Johnson and J.Vlissides, 1994, Addison Wesley
  - Single Page Web Applications: JavaScript end-to-end, Michael Mikowski and Josh Powell, 2013, Manning
  - Real-time Web Apps With HTML5 WebSocket, PHP, and jQuery, J. Lengstorf and P. Legetter, 2013, Apress

 - Some of these will now be in later editions!

An IDE environment

- **Make sure you know how to use an Integrated Development Environment!**
  - ➢ **Eg WebStorm, Visual Studio …**

- Quick Start Tutorials available at:

  - ➢ Lynda.com
    - » Search for D. Crockford and you'll get plenty of background info plust loads of tips and hints, best practice suggestions etc

In addition you will be issued with:

- all notes as required *(**only** if you attend, otherwise get them from GCU Learn whenever suits you)*

- all lab material as required

You should also provide yourself with:

- a lab book to record your progress in the labs

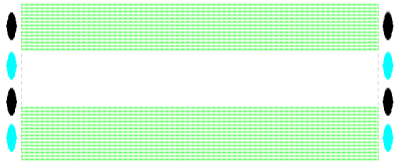- a usb pen/disk in order to save and back up your work.

GCU Learn
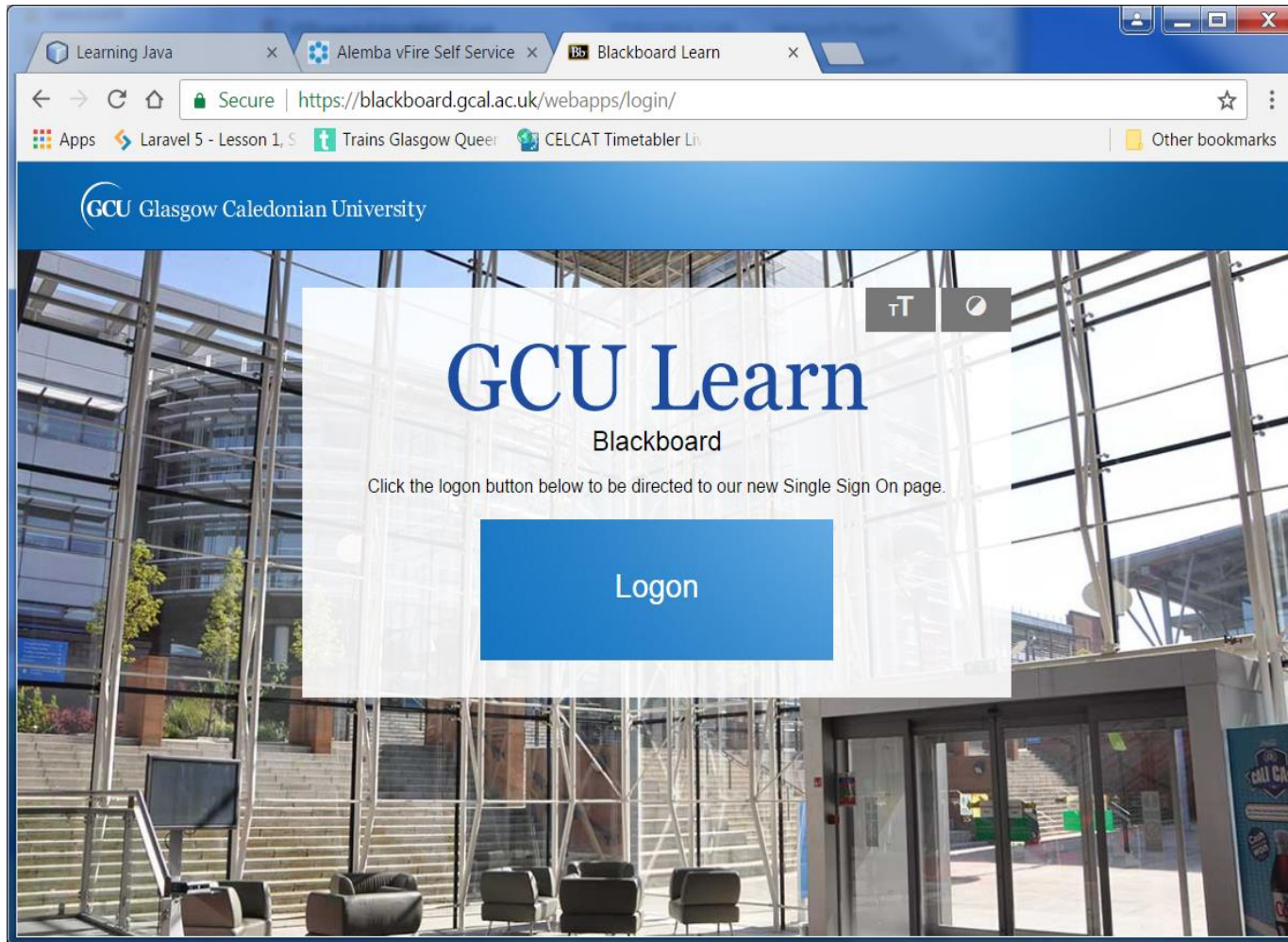
Make sure you have Blackboard access!

Info will be placed here on an 'as required' basis - *so check regularly - it is your responsibility!*

Icons you might find in slides

used to indicate parts that you can type in and try for yourself

used to indicate short samples of code

Q^2 Quick Quiz, a few short questions for you to try

Q & A   Question and Answer