# Server Side Scripting for web-based applications

## Visit <http://www.tinyurl.com/GlowCompSci> click on the Higher Folder in Documents and then Server-side Scripting. You will need your Glow Login and Password.

## Overview

This activity allows students to explore the client/server process used in web-based applications. They will simulate different interactions of data flowing between the browser and the webserver (specifically the HTTP server). They will start with simple examples and then gradually build up towards pages requiring a server side scripting engine and a database server. This can be used as either at the start of a block of learning as an overview or at the end to bring the different concepts together.

## Suitable for

Higher Computing Science and as a refresher exercise for Advanced Higher students

## Key concepts

Server-side scripting

Database driven websites and dynamic web pages

## Learning outcomes

* Understand the relationship between the browser and the web server
* Understand how files are requested from a web server, and how a server-side scripting language makes the contents of the pages dynamic
* Understand the GET method of sending an item of data with a URL
* Understand how a web server can use a server-side scripting language to interact with a database to retrieve information.

## Success criteria

* I am able to explain how a web server responds to a request from a browser, and how the browser uses the HTML data.
* I can explain how a web server dynamically generates a page using a server-side script
* I can explain how parameter can be passed with a URL to send data between the browser and the HTTP server
* I can explain how a database can be used to store information that appears on a web page

## Time required

2 single periods or one double period

## Preparation

1. Print 1 per group of 6 of the pupil handouts single sided documents 1 and 2 and the pupil handouts double sided document ideally on white card and in colour. (Most handouts can be reused each year)
2. Cut along the dashed grey lines where they appear on a sheet.
3. Open the slides for Server Side Scripting

## Prior learning assumed

Pupils should be familiar with web browsers, HTML, the internet and web servers and what their main functions are.

# Outline of Activity

* Students will work in groups of 6 for this task. If a group has less than six members, the member acting as the internet should also take the role of web browser.
* Tasks one and two involve just the coordinator, web browser, internet and http server roles and task three involves just the coordinator, web browser, internet, http server and scripting engine.
* Between each task, each member should switch round to a new role, with the previous member(s) helping to explain the role.

## Part 1 Introduction

Outline the learning intentions and success criteria for this activity and mention that this provides an overview of how all of the parts of a web-based application such as Facebook work together to produce the web pages they use every day. Organise students into teams of six.

**5 mins**

Demonstrate moving through the example web pages that are being used for this activity and then explain how a url gets turned into an HTTP request.

**5 mins**

**5 mins**

Each team should review their role using the role sheets to help them and then identify which one each team member will perform for task one.

## Part 1 Activity

For each task students should carry out the process with one group chosen to do a walkthrough

**Task one– static web page**

When a static HTML page is requested, the HTTP server will locate the file and send it back.

**6 mins**

User types in url <http://testserver.com/index.html> into the browser

**Task two– static web page with images**

**6 mins**

When a static HTML page is requested, the HTTP server will locate the file and send it back. When rendering the page, images may also need to be requested.

User clicks on the click here to access our sale link <http://testserver.com/page2.html>

**Parameters**

Explain how extra information can be added to a request as a parameter using the GET or POST method and demonstrate changing the url <http://www.google.co.uk/search?q=computing+science> directly to carry out different searches.

**5 mins**

**Task three – server-side script request**

When the user types in information into a form on a webpage and clicks a button this information added to the request for the particular server-side scripted page. The scripting engine will use the information from the user and the code in server-side scripted page to generate a new custom html page. This newly generated page will be sent back to the user.

**8 mins**

User types in secret code MAGICDUCKS into the form on page2.html which submits request for <http://testserver.com/check.php> with secret code parameter ?code=MAGICDUCKS

## Part 1 Review

Students should write down in their own words the function of a web browser, the internet and the http server. They should swap with a partner and then review. The teacher should choose a person at random to share their definition with the class.

**10 mins**

## Part 2 Introduction

**5 mins**

Quickly recap the overall learning intentions but use think/pair/share to test each other on the success criteria they should be able to do from part 1.

**1 min**

What were the four main parts of a web application we looked at?

*Web browser, internet, http server, scripting engine*

**5 mins**

Put up task three again and ask them to explain the process to their partner. Ask someone to share this with the whole class.

**2 mins**

Team members should choose a role they haven’t done before and get ready for task 4.

## Part 2 Activity

For each task students should carry out the process and then one group should be chosen at random to walk the class through what happens.

**Database queries**

Explain how to find the part of the server side script that creates a query and then connects and sends it to the Database Management System

**9 mins**

**Task four– Server side script with database query**

When a PHP file is requested, it may access a database file as part of the dynamically generated response. The database results can be used in the PHP – they are always turned into HTML by the server-side script. Database results are not shown directly in web browsers.

**10 mins**

User clicks on secret sale link which requests <http://testserver.com/sale.php>

**Task five – Server side script with a parameter based database query**

When a PHP file is requested, it may access a database file as part of the dynamically generated response.The GET parameter from the URL will be passed to PHP and can be used in the script. The database results can be used in the PHP – they are always turned into HTML by the server-side script. Database results are not shown directly in a web browser.

**10 mins**

## User clicks on Rocking horse click for more information link which requests <http://testserver.com/item.php?id=1>

## Part 2 Review

Students should write down in their own words the function of a scripting engine and a database server. They should swap with a partner and then review. The teacher should choose a person at random to share their definition with the class.

**8 mins**

# Suggested follow up work

* Students can investigate which well-known websites they use everyday use server side scripting to generate the web pages they see.
* Students can study how to create simple SQL queries of their own before moving on to creating server side pages that can retrieve, insert, amend and delete data from a database.
* Students could create their own simple web based application like a to-do list or a simple messenger application using XAMP or Google Coder.

# Acknowledgements

This idea and associated resources were developed by

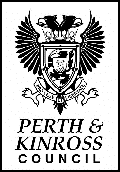


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