

Making Webpages with Interactive Content

Paul Brown
p.e.brown@warwick.ac.uk

Contents

- Sitebuilder – Warwick's *In house* development platform.
<https://warwick.ac.uk/services/its/servicessupport/web/sitebuilder2/>
- Linux and Windows hosting service – Set up your own server from scratch
<https://warwick.ac.uk/services/its/servicessupport/servers/serverprovisioning/>
Apache web server software
Server and client-side programming

Sitebuilder

- Request a page by contacting parent page owner

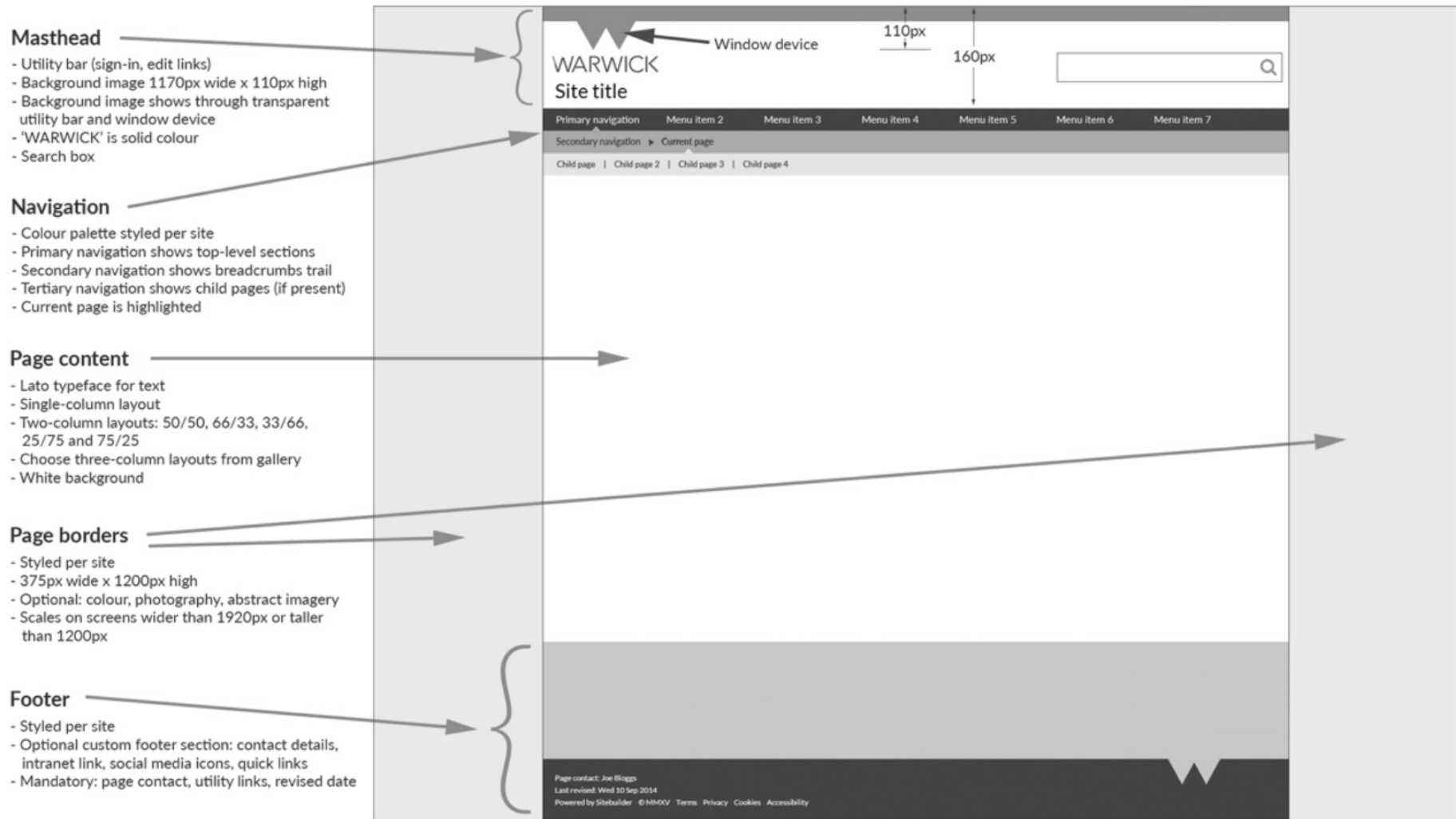
Page contact: [ITS Web Team](#)

Last revised: Tue 11 Jun 2019

Powered by Sitebuilder | © MMXIX | [Terms](#) | [Privacy](#) | [Cookies](#) | [Accessibility](#)

- Choose a template layout, ready made or design your own

Main elements of the ID7 common website template



Page templates

- Select from a number of standard templates, or inherit from the parent site
- Choose to have a special area on the right for feeds from other pages
- Templates include
 - Blank – free layout
 - Slideshow/Gallery – images only
 - Discussion forum
 - News – series of articles sorted chronologically
 - Calendar
 - Form dataset – a spreadsheet of submitted data
 - Podcast page
 - Glossary page

Homepage layouts

Simple plus quote



Choose this layout

Simple plus one image



Choose this layout

Simple plus three images



Choose this layout

Simple plus six images



Choose this layout

Simple with nine blocks



Choose this layout

Complex plus tabs



Choose this layout

Complex plus buttons



Choose this layout

Complex plus image



Choose this layout

Complex plus events



Choose this layout

Large slideshow



Choose this layout

Slideshow plus feature



Choose this layout

Slideshow plus two features



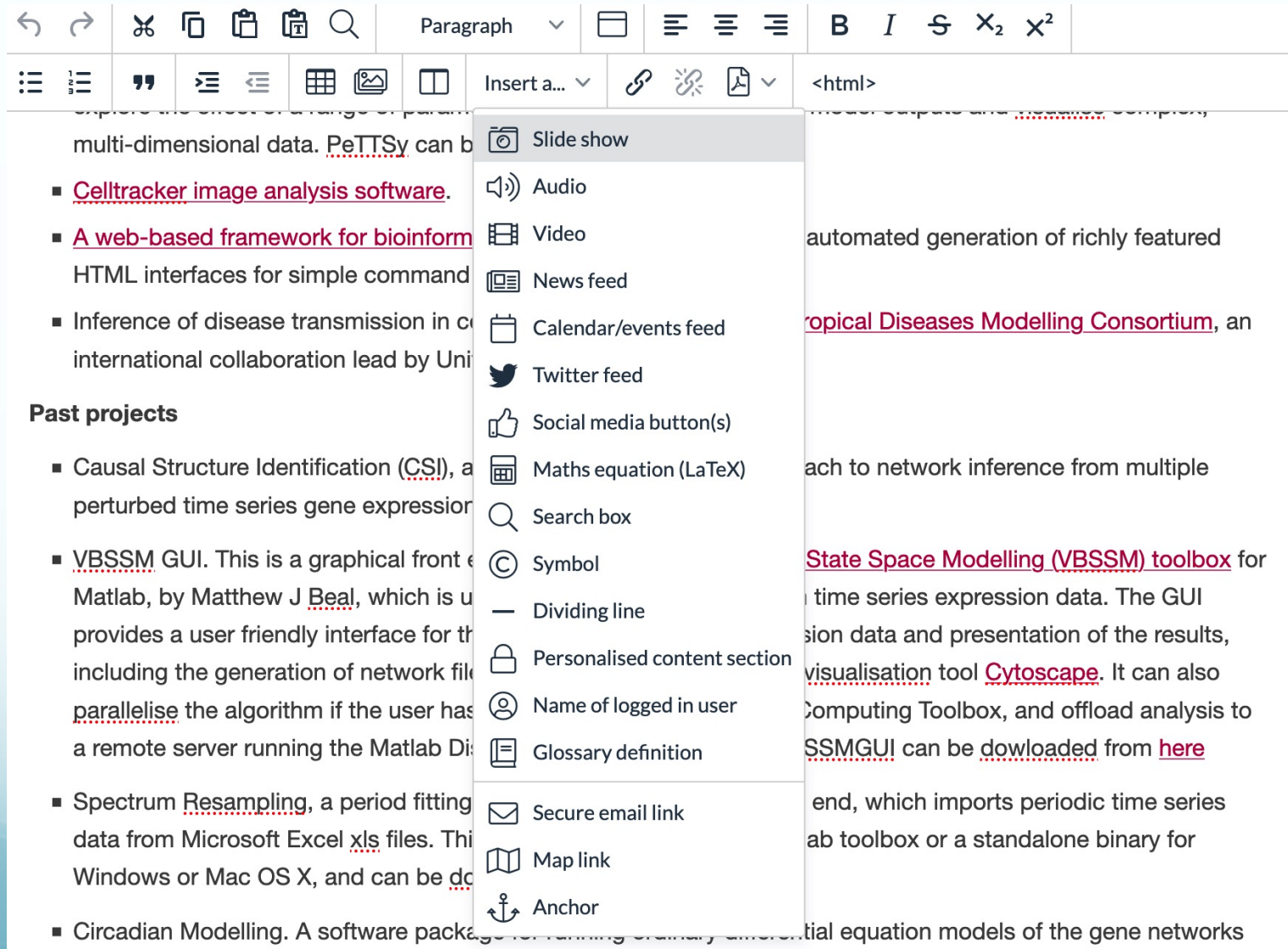
Choose this layout

Content Blocks

- Either one, two or three columns
- Can contain text, images or content from another page
- Use colour themes
- Edited on a separate page

Editing centre content

- Can be edited like a word processor



The image shows a screenshot of a rich text editor interface. At the top, there is a toolbar with various icons for undo, redo, cut, copy, paste, search, paragraph alignment, text alignment, bold, italic, strikethrough, subscript, and superscript. Below the toolbar is a menu bar with options like 'Insert a...', 'Link', 'Unlink', and 'Image'. A dropdown menu is open, listing various insertable elements: Slide show, Audio, Video, News feed, Calendar/events feed, Twitter feed, Social media button(s), Maths equation (LaTeX), Search box, Symbol, Dividing line, Personalised content section, Name of logged in user, Glossary definition, Secure email link, Map link, and Anchor. The background text is partially visible, showing a list of projects and their descriptions.

multi-dimensional data. [PeTTSy](#) can be

- [Celltracker image analysis software](#).
- [A web-based framework for bioinform](#)

HTML interfaces for simple command

- Inference of disease transmission in c
- international collaboration lead by Uni

Past projects

- Causal Structure Identification (CSI), a
- perturbed time series gene expression

- [VBSSM GUI](#). This is a graphical front e
- Matlab, by [Matthew J Beal](#), which is u
- provides a user friendly interface for th
- including the generation of network file
- [parallelise](#) the algorithm if the user has
- a remote server running the Matlab Di
- [Spectrum Resampling](#), a period fitting
- data from Microsoft Excel [xls](#) files. Thi
- Windows or Mac OS X, and can be [dc](#)
- [Circadian Modelling](#). A software packa

automated generation of richly featured

[tropical Diseases Modelling Consortium](#), an

ach to network inference from multiple

[State Space Modelling \(VBSSM\) toolbox](#) for

time series expression data. The GUI

sion data and presentation of the results,

visualisation tool [Cytoscape](#). It can also

Computing Toolbox, and offload analysis to

[SSMGUI](#) can be [downloaded from here](#)

end, which imports periodic time series

ab toolbox or a standalone binary for

tial equation models of the gene networks

Editing centre content

- Or switch to html view

Source Code



```
<li><strong>Brown, P.E.</strong> & Dale, N. (2000a). Adenosine A1 receptors modulate high voltage-activated Ca2+ currents and motor pattern generation in the <em>Xenopus</em> embryo. <em>Journal of Physiology</em> <strong>525:</strong>655-667</li>
<li><strong>Brown, P.E.</strong> & Dale, N. (2000b). Activation of presynaptic glutamate receptors evokes ATP release from Xenopus spinal pre-motor interneurons. <em>Journal of Physiology</em> 528P: 63</li>
<li><strong>Brown, P.E.</strong> & Dale, N. (2000c). Release of ATP from spinal neurones mediated by pre-synaptic glutamate receptors. <em>Society for Neuroscience Abstracts</em> <strong>26:</strong> 404</li>
<li><strong>Brown, P.E.</strong> & Dale, N (1999). Purinergic modulation of ionic currents in <em>Xenopus</em> spinal neurones. <em>Journal of Physiology</em> 515P: 115P</li>
<li><strong>Brown, P.E.</strong> & Anderson, M. (1999). Factors affecting the ovipositor probing response of <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae), a parasitoid of the cabbage root fly. <em>Entomologia Experimentalis et Applicata</em> <strong>93:</strong> 217-225</li>
<li><strong>Brown, P.E.</strong>, Frank, C. P., Groves, H. L. & Anderson, M. (1998). Spectral sensitivity and visual conditioning in the parasitoid wasp <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae). <em>Bulletin of Entomological Research</em> <strong>88:</strong> 239-245</li>
<li><strong>Brown, P.E.</strong> & Anderson, M. (1998). Morphology and ultrastructure of the sense organs of the ovipositor of <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae), a parasitoid of the cabbage root fly. <em>Journal of Insect Physiology</em> <strong>44:</strong> 1017-1025</li>
<li>King, F. C. & <strong>Brown, P.E.</strong> (1997). Is experience important? A behavioural and electrophysiological study on the parasitoid wasp <em>Trybliographa rapae</em> (Hymenoptera: Cynipidae). Abstracts of the British Ecological Society Winter and Annual General Meeting, December 1997</li>
<li><strong>Brown, P.E.</strong> & Anderson, M. (1996). Spectral sensitivity of the compound eye of the cabbage root fly, <em>Delia radicum</em> (Diptera: Anthomyiidae). <em>Bulletin of Entomological Research</em> <strong>86:</strong> 337-342</li>
<li>Anderson, M., <strong>Brown, P.E.</strong> & Skilbeck, C. A. (1994). Sensory ecology of insect parasitoids. Abstracts of the British Ecological Society Winter and Annual General Meeting, December 1994, pp. 70</li>
</ul>
```







Cancel



Save









More Editing








Editing site The Zeeman Institute: SBIDER | page Paul Brown

/ fac / cross_fac / zeeman_institute / staffv2 / paulbrown

 Current site	 Current page	 Sub-pages	 Files	 History	 Stats
--	--	---	---	---	---

 Manage content	 Manage page
--	---

 Edit centre content	Visual editor 
 Edit right content	Visual editor 
 Find and replace	
 Schedule changes	
<hr/>	
 Check for broken links and images	
 Check page content for errors	

 Edit properties
 Edit permissions
 Delete this page
 Rename this page
 Move this page
 Copy pages
 Save pages as template

- Properties – page heading, search engine options, page template
- Permissions – Any, all Warwick, staff only, groups eg department. Levels are view, edit , admin and password protected

More Editing

- Sub-pages displays a list of all sub-pages of the current page. Here you can add a new sub-page or rename/delete
- Files displays a list of all uploaded files belonging to this page. You can upload another or rename/delete
- History allows the page to be restored to a previous version

News and events

- Select News template. Creates a blank page with a button to add new items to the list
- Item has an abstract and details
- News items can be filtered by tag
- Can choose how many to show
- Embed feed into another page using Insert a... -> New feed
- Calendar works in a similar way. Insert an events feed

Forms and data

- Select Form page template
- There are links to add text boxes, file upload controls, drop-down lists, option buttons and checkboxes
- Some non-standard compound controls such as address fields, date picker, rating controls, online payment fields, personal details fields
- The form owner can view submissions and download as a csv or XML file

Forms and data

Add/Edit a set of option buttons

Field name * ? *Appears in submissions file*

Opt1

Label ? *Displayed on page*

Select an option

Options * ?

A

B

C

Selected option button

A

Label on top ?

Read-only ?

Only visible to editors ?

Ensure answer is one of the valid options ?

User must tick one option ?

Notify | Edit | Paul Brown

WARWICK

Search Warwick

Zeeman Institute

People Paul Brown form

form

Select an option *

A


B

C

*** indicates a required field**

Privacy statement This form is anonymous. No data which personally identifies you is collected on the form, and the data you provide is used solely to help us improve the delivery of our courses.



Forms and data

 **formsbuilder** Done


Viewing submissions in page [form](#)

Show 20 submissions From 11 Oct 2019 To 11 Nov 2019 With text


[Filter forms](#)

 **Column filters.** Click on the filter icon  to add or edit a filter in the corresponding column.

There was only one submission matching the specified filters

Select	Submission ID	Submission time	Opt1 
<input type="checkbox"/>	506957984	11/11/2019 16:04	A

[Delete selected](#) [Edit selected](#) Select [all](#) | [none](#)

[Summary](#) [Deleted submissions](#) [Not submitted](#) [Download all](#) [Download selected](#) 

Other Features

- Scheduled changes – eg multiple pages in a site can be updated at the same time so none are out of date
- Version control
- Automated site maps
- Content feeds – from another Sitebuilder or a non-Sitebuilder page
- RSS news feeds

Creating your own webserver

<https://warwick.ac.uk/services/its/service-support/servers/serverprovisioning/>

- CentOS 7 or Windows virtual machine
- Unsuitable for computationally intensive work, eg modelling and simulation, machine learning
- Nightly snapshots taken
- Select webserver and database options or request your own requirements
- Containers specifically excluded, eg Docker, Singularity
- No root access is granted

Creating your own webserver using Apache

- Webserver document root
 - `/var/www/html` (CentOS)
 - `/Library/WebServer/Documents` (macOS)
- Store any private data, such as passwords, outside this to stop the web server accidentally displaying it
- Web server user owning httpd process needs at least read access to this
 - `httpd, apache, www, wwwuser`

Server-side scripting

- Code which is executed by the *server*, before output is sent to the client browser
- Produces responses customised to the user's request
- Code remains on the server and is hidden from the user
- Downside is that it increases network traffic and load on the server
- Upside is when it requires access to data, this can remain on server
- Usually the web server software itself can directly execute the code, eg ASP, JSP, PHP, Perl

Server-side scripting

- Install php
`yum install php`
- One or more configuration files
`/etc/httpd/httpd.conf` (CentOS)
`/etc/apache2/httpd.conf` (macOS)
- May need to configure `mod_php`
In `httpd.conf`, line
`LoadModule php7_module modules/libphp7.so`
- Restart apache
`systemctl restart httpd` (CentOS)
`apachectl restart` (macOS)

Server-side scripting

```
<?php
```

```
session_start();  
$list_of_countries = Array();  
$countries_file = "countries.json";  
if (file_exists($countries_file)) {  
    //process data  
    $list_counties = .....  
    echo json_encode($list_of_countries);  
}
```

```
?>
```

```
<html>
```

```
....
```

```
<body>
```

```
<?php echo "Welcome ".$username ?>
```

```
</body>
```

```
</html>
```

Client-side scripting

- Executed on the *client* browser, after being sent from the server
- Often used to respond to user actions/events
- Code is embedded in the page and sent to the user
- Offloading processing to the client reduces network traffic and load on the server, and can make websites independent of a network connection. Javascript can even be used to write desktop applications
- Downsides are the limitations on what can be done on then client, and cross-browser compatibility
- JavaScript by far the most common platform
- Many libraries available, eg jQuery and react.js for user interfaces, vue.js and bootstrap for presentation, d3 for plotting data

Client-side scripting

- Nothing to install, all browsers have a JavaScript engine

- Embed your code in a `<script>` tag

```
<script type = 'text/javascript'>  
    function displayMessage(msg) {  
        alert(msg);  
    }  
</script>
```

- Or in a separate file

```
<script src = 'js/myscript.js'></script>
```

Example – a login form

login.html

Welcome to HATMEPP



Please log in to continue

username

password

Login

HAT
Modelling &
Economic
Predictions for
Policy

```
<script src="login.js"></script>  
<div class="loginform">
```

```
<form method="post" action="checklogin.php"  
      onSubmit="return check_form();">
```

```
<h2>Welcome to HATMEPP</h2>
```

```
<h3>Please log in to continue</h3>
```

```
<input type="text" name="name" id="name">
```

```
<input type="password" name="pword" id="pword">
```

```
<input type="submit" value="Login">
```

```
</form>
```

```
<div>
```

```
  
```

```
</div>
```

```
</div>
```


Example – a login form

On the client, can access document object model (DOM)

login.js

```
function check_form (){  
    var name = document.getElementById("name").value;  
  
    if( name == ''){  
        document.getElementById("name").style.border = "red";  
        alert("Please enter a valid username and password.");  
        return false;  
    }else{  
        document.getElementById("name").style.border = "lightgrey";  
        return true;  
    }  
}
```

Example – a login form

- Form 'action' attribute indicated where to send data, and use of POST method
- Always use POST for sensitive data, the alternative GET is not secure. It appends data to the URL

`https://myserver.org/checklogin.php?username=pbrown&password=mysecretpassword`

Example – a login form

On the server

checklogin.php

```
<?php
    require("/var/www/private/dbase.php")

    $username = $_POST["name"];
    $pword = $_POST["pword"];
    $result = db_login( $username, $pword);
    if (!is_null($result)){
        session_start();
        $_SESSION['name'] = $username;
        header("Location: mainpage.php");
    }else
        header("Location: login.html");

?>
```

mainpage.php

```
<?php
    session_start();
    if(!isset($_SESSION['name'])){
        header("Location:login.html");
        exit;
    }
?>
<html>
    <head>
        ...
    </head>
    <body>
        <?php
            echo "Hello ".$_SESSION['name'];
        ?>
        ...
    </body>
</html>
```

Web Libraries and Frameworks

- Javascript frameworks include
 - Angular for data binding
 - bootstrap, vue.js, react.js for UI development
 - jQuery general purpose
- Provide a set of templates you replace with your own structures
- Bind data to the display, which is automatically updated as data changes
- Can provide their own simple web server, removing need for apache
 - Node.js runtime environment
 - Python eg Flask
 - R/Shiny-R

Examples

```
const server = http.createServer(function(request, resource){
  resource.setHeader(http headers);
  switch (request.url) {
    case "/edit":
      resource.end(html content);
      break;
    case: "/data"
      resource.render("data" {title: "New data", key: datakey});
      break;
  }
});
server.listen(port, hostname);
```

Helpful resources

- For sitebuilder queries webteam@warwick.ac.uk
- For Warwick linux hosting
https://warwick.ac.uk/services/its/service-support/unix/linux_hosting
- www.w3schools.com for html, css, javascript, php, python and lots more