Awarding Great British Qualifications

Dynamic Websites

Topic 9:

Mobile Application Development Integration

Scope and Coverage

This topic will cover:

- Mobile application development and integration with a website;
- HTML5 and mobile applications;
- DOM framework;
- Developing mobile application.

Learning Outcomes

By the end of this topic students will be able to:

- Create mobile applications to link into a website;
- Understand HTML5 and DOM frameworks

Introduction

- The growth of the mobile phone and tablet market has generated demand for mobile applications.
- We have seen in Topic 3 how to create a mobile website, however a separate consideration is whether to create a mobile application as well of or instead of a mobile website.

Mobile App or Mobile Website?

- A mobile website consists of browser HTML pages that can be accessed over the internet. Remember in Topic 3 the pages are created using responsive web design.
- A mobile app is downloaded and installed onto your device, information and content can be accessed without an internet connection.
- Some businesses have both – a mobile website and a mobile application.

Mobile App

- Mobile App has benefits that are not always available through a website, for example:
  - Personalisation
  - Reporting or calculations
  - Easier to access other features on device eg camera
  - Off-line content can be provided without being on the network.

Mobile App Design - UI

- In Topic 2 we looked at user interface design for mobile and websites, however you now need to consider UI for mobile applications (sometimes also known as UX/design).
- Templates can be used to help with development or they can be created from scratch.

Benefits Good UI in Mobile Apps

- The function of the app needs to meet the user needs. As we saw in Topic 2 it is essential that apps function to target audience.
  - The app needs to be usable;
  - The UI needs to be responsive;
  - The UI needs to be efficient to carry out functions with less effort;
  - The UI has clarity and user can see the functions and locate the action buttons;
  - The UI should be familiar and linked to the main site.

HTML5

- HTML5 can be used to create an app. This can be used across different platforms. There are different frameworks that can be used to support the development and we will look at these later in the topic.
- DOM operations have an effect on the performance of HTML5 mobile applications.

DOM

- As we saw in an earlier topic DOM is the Document Object model.
- As the DOM becomes more complex it can take longer to navigate and modify.
- HTML5 mobile applications need the DOM to be as simple as possible.

XSLT- 1

- XSL, stands for eXtensible Stylesheet Language, as is the styling language for XML.
- XSL is the language for expressing style sheets and it is similar to CSS and describes how to display an XML document.
- XSL is used for complex formatting where the document might be displayed in different devices.
- XSLT standards for XSL Transformations. XSLT transforms XML documents into other formats such as web pages HTML or plain text or pdf.

XSLT - 2

- XSLT is more sophisticated than CSS and you can add and remove elements and attributes.
- CSS is used to add styles to HTML elements. Remember that HTML uses predefined tags.
- XML does not use predefined tags and XSL describes how the XML element should be displayed.
- XSL consists of four parts – XSLT, Xpath, XSL-FO and Xquery.

Example XSLT Stylesheet

```
<?xml version="1.0" encoding="UTF-8"?>
<html xsl:version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<body style="font-family:Arial;font-size:12pt;background-color:#EEEEEE">
<xsl:for-each select="breakfast_menu/food">
  <div style="background-color:teal;color:white;padding:4px">
    <span style="font-weight:bold"><xsl:value-of select="name"/> - </span>
    <xsl:value-of select="price"/>
    </div>
  <div style="margin-left:20px;margin-bottom:1em;font-size:10pt">
    <p>
    <xsl:value-of select="description"/>
    <span style="font-style:italic"> (<xsl:value-of select="calories"/> calories per serving)</span>
    </p>
  </div>
</xsl:for-each>
</body>
</html>
```

Reference: w3.org. 2017

Examples of XML Document

```
<?xml version="1.0" encoding="UTF-8"?>
<catalog>
  <cd>
    <title>Empire Burlesque</title>
    <artist>Bob Dylan</artist>
    <country>USA</country>
    <company>Columbia</company>
    <price>10.90</price>
    <year>1985</year>
  </cd>
.
.
</catalog>
```

Reference: www3.schools.com (2017)

Example XSL Style Sheet

```
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="1.0"
xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:template match="/">
  <html>
  <body>
  <h2>My CD Collection</h2>
  <table border="1">
    <tr bgcolor="#9acd32">
      <th>Title</th>
      <th>Artist</th>
    </tr>
    <xsl:for-each select="catalog/cd">
    <tr>
      <td><xsl:value-of select="title"/></td>
      <td><xsl:value-of select="artist"/></td>
    </tr>
    </xsl:for-each>
  </table>
  </body>
  </html>
</xsl:template>
</xsl:stylesheet>
```

Reference: www3.schools.com (2017)

Example Link Style Sheet to XML Document

```
<?xml version="1.0" encoding="UTF-8"?>
<?xml-stylesheet type="text/xsl" href="cdcatalog.xsl"?>
<catalog>
  <cd>
    <title>Empire Burlesque</title>
    <artist>Bob Dylan</artist>
    <country>USA</country>
    <company>Columbia</company>
    <price>10.90</price>
    <year>1985</year>
  </cd>
.
.
</catalog>
```

Reference: www3.schools.com (2017)

App Builders

- There are a number of app builders that you can use to create your own app.
  - iBuildApp;
  - PhoneGap;
  - AppsGeyser

iBuildApp

- iBuildApp contains a number of templates that you can use either free of charge or for a small fee.
- You can work through the different layout/design and pages that you require for your mobile application and when you have added all content you can publish to the App Store.

PhoneGap -1

- Phonegap is open source framework that helps you build apps using web technology using HTML, CSS and JavaScript.
  - Access to native device APIs;
  - Apps created for each platform;
  - Free and open source.

PhoneGap - 2

- The software needs to be installed a computer as well as the Mobile App.
- To create a new project:
  - File
  - Create New Project
  - Choose Hello World
  - Next
  - Choose where to store the project
  - Give the Project a name and optional ID
  - Create Project

AppsGeyser

- This is a software package which can create a mobile version of your existing website by entering URL:
  - Enter URL and follow the instructions;
  - Click Preview and a copy of the site on your mobile device.

APIs (Application-Programming Interface)

- API are programming instructions and standards that are used to access web-based software.
- Amazon.com have an API so that web developers can easily access Amazon's product information.
- The API directs links to Amazon products, updated prices and option to "buy now".

Example API - 1

- Some example APIs are:
  - GoogleMaps
  - Bing Tanslate
  - YouTube
  - Facebook (as seen in an earlier topic)
  - Ebay
- A full list of examples that can be used can be found at: https://www.programmableweb.com

Example API -2

- Imagine users wanted to login to your site using Facebook rather than registering their details directly with your company.
  - This can be done by adding Facebook Login API:

```
FB.getLoginStatus(function(response) {
if (response.status === 'connected') {
console.log('Logged in.');
}
else {
FB.login();
}
});
```

Example API - 3

- The Facebook login button will also need to be added:

```
<script>
// Only works after `FB.init` is called
function myFacebookLogin() {
FB.login(function(){}, {scope: 'publish_actions'});
}
</script>
 <button onclick="myFacebookLogin()">Login with Facebook</button>
```

Linking Website To Mobile App

- Once the app has been created then the website can include a link which makes the existing web page content discoverable to mobile clients through supported App Links.
- When the links on the web page are clicked on the content can be loaded in the app instead of web view.

Linking to other mobile apps -1

- App Links in one method that can be used to describe the how content in a web page can be viewed within mobile applications.
- Code can be added to pages which then drive customers directly to other apps rather than web pages.

Linking to other mobile apps - 2

- An example of this could be when you have a free sample game from the app store but you want the user to purchase more content.
- Instead of directing them to the URL, the code you add should directly them to the App Store directly from the app.

Conclusion

- This topic has looked at how mobile applications can be linked into websites and users directed to apps rather than URLs in websites. This is a complex area and we have only just touched on some of the requirements. You are encouraged to look further and have a go at creating an app for a mobile website.

Terminology

- *API –* Application programming interface which are programming instructions and standards for accessing web based applications.
- *XSLT –* Extensible StyleSheet Language Transformations which transforms documents into other formats
- *XML -* Extensible Markup Language .

References

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Any Questions?