Session 12

Building a Mobile Web Application

Session Overview

In this session, you will be able to:

- Explain different types of mobile devices
- Explain various mobile platforms
- Explain the various design aspects of mobile Website
- Explain architectural aspects while designing a Website for mobiles

Introduction

- Web access is not only limited to desktop systems, but also available on portable and wireless devices.
- Mobiles, smartphones, and tablets are the commonly used wireless devices that are equipped with browsers and network access providing better Web experience to their users.
- With an increase in the number of mobile users, there is a growing need for a mobile-Web experience that is identical to a desktop-user experience.
- Mobile users now look for applications that match with the performance of desktop applications. This led to the emergence of mobile Web application development.

Mobile Application Environment

- A mobile device, also known as a handheld device, is a small portable computing device with a small display screen and keyboard.
- A mobile device has an operating system on which various types of application software are executed.
- These application software are also called as apps.

Types of Mobile Devices

The different categories of mobile phones available in the market are as follows:

- Basic mobile devices: These are very basic models with only call and Short Message Service (SMS) facility. They do not provide support for any Web browser or network access.
- Low-end mobile devices: These types of devices provide more features than a basic mobile device, typically Web support. There is a large market for such devices and are preferred by users who do not need heavy Internet usage. They also include a basic camera and a basic music player. Manufacturers, such as Nokia, Motorola, Sony Ericsson, and Samsung have gained popularity for offering such kind of low-cost handsets in the global market.

Types of Mobile Devices

Example of Low-End Mobile Devices

Types of Mobile Devices

- Mid-end mobile devices: These types of devices have gained popularity due to their increased user-experience at moderate cost. Some of the key features include medium sized-screen, HTML-supported browser, a decent camera, games, and support for applications.

Example of Mid-End Mobile Devices

Types of Mobile Devices

- High-end mobile devices: These types of devices have advanced features, such as accelerometer, advanced camera features, and Bluetooth. They have a better look and feel as compared to mid-end mobile devices.

Example of High-End Mobile Devices

Types of Mobile Devices

- Smartphones: These are mobile devices with multitasking capabilities. They have several advanced features such as:
  - Digital Compass
  - Global Positioning System (GPS)
  - Touch screen
  - Camera with video recording
  - TV out
  - Bluetooth
  - Accelerometer

Example of Smartphones

Types of Mobile Devices

- Tablets and notebooks: They are larger than mobile phones with respect to size. Features of tablets include:
  - Multi-touch display
  - Better user-experience
  - High quality screen resolution
  - Better web support
  - Multitasking OS
- Some of the tablets available in the market are BlackBerry PlayBook Tablet PC, Samsung Galaxy Tab, and HCL Me Tab.

Tablet Devices

Mobile Platforms

A brief description of platforms available on mobile devices are as follows:

- Palm OS: It is a proprietary mobile OS developed by Palm Inc. and was used for Personal Digital Assistants (PDAs).
- Blackberry OS: It is a proprietary mobile OS developed by Research in Motion (RIM) and is based on the Java platform. It is primarily used by Blackberry smartphone devices.
- iOS: It is a mobile OS developed by Apple Inc. and was initially referred to as iPhone OS. It is derived from Mac OS X, which is based on the UNIX platform.
- Symbian: It is an open source mobile OS developed for mobile phones. It includes a user interface framework, libraries, and component tools.

Mobile Platforms

- Windows Mobile: It is a mobile OS that runs on top of the Windows Mobile platform.
- Linux: It is an open source OS and is supported by smartphones that are manufactured by Motorola.
- Android: It is an open source OS developed by Google. It is currently used by smartphones and tablet computers.

Design Aspects of Mobile Website

Some of the basic considerations needed for designing a Website for the intended mobile device are as follows:

- Resolution and physical dimension – It means the number of pixels (width and height) on the screen of a mobile device.
- Page orientation - Mobile devices are also categorized on their vertical and horizontal orientation. Vertical orientation devices are referred to as portrait devices with taller display and horizontal orientation devices are referred to as landscape devices with wider display.
- Input methods – some of the input methods are numeric keypad, alphanumeric keypad, virtual keypad on screen, multi-touch, external keypad, voice and handwriting recognition.

Navigation

Following points can be taken into consideration while designing the navigation of a mobile Website:

- Design Web pages based on the use cases.
- Arrange Web pages depending on the requirements of the mobile users.
- Restrict the depth of a mobile page to three clicks for a specific use case.
- Design minimum input controls for the form pages.
- A desktop Website normally has a welcome screen. In case of mobile Websites, avoid developing it.
- While designing a service, also decide its usability.
- Approximate the number of mobile pages required to separate services after the home page.

Perspective

Following are some of the user-related perspectives that need to be addressed:

- What is the location of the user?
- Why is a mobile Website accessed by the user?
- What are the needs of the user?
- What solution is offered by the mobile application to solve the user's problem?
- Where is the user present while accessing a Website? For example, walking on the street, at a workplace, at a public place, and so on.

Enhancement

Some of the core principles for enhancing mobile Websites are as follows:

- Basic content and functionality should be accessible in all browsers.
- Enhanced layout and behavior must be provided through external style sheets and JavaScript that link to Web pages.
- Markup elements used on the pages must have proper semantics.
- General Web browser settings on a user's device should be taken into consideration while designing a mobile Website.

Use of Web Standards

- Web standards, such as HTML, CSS, and JavaScript followed in the mobile Website design must be correctly used.
- This increases the possibility of displaying pages on a large number of devices.
- The well-formedness of the markup tags used on a page can be achieved by validating them.
- Apart from validating HTML pages, certain HTML elements can be avoided while designing Web pages for mobile devices.

Use of Web Standards

- Use of HTML tables: As the screen size of mobile devices is small, tables in layouts should be avoided as it makes the scrolling difficult and also slows down the loading time.
- Pop-up windows: Websites with pop-up windows make the site impractical to work with.
- Use of graphics: Use of graphics increases the download time of Web pages. Also, they can obstruct the layout of the old mobile browsers, resulting in incorrect display of pages.
- Use of frames: Many mobile devices do not provide support for frames due to usability problems.

Summary

- The different categories of mobile phones available in the market are basic mobile devices, low-end mobile devices, mid-end mobile devices, high-end mobile devices, smartphones, tablets, and notebooks.
- Mobile platform is basically responsible to interact with the device hardware and run the software on the mobile device.
- Various platforms available on mobile devices are Palm OS, Blackberry OS, iOS, Symbian, Windows Mobile, Linux, and Android.
- Some of the basic considerations for designing a Website are resolution, page orientation, and input methods.
- Various architectural aspects that need to be considered while designing a mobile Website are navigation, perspective, enhancement, and Web standards.