Introduction to Mobile Application

Dilman A. Salih

University of Halabja

Slides: 5,9,10,11,12,14,15 and 19.

Outline

- ✓ What is Mobile Apps?
- ✓ Technology in 21st century
- ✓ Best Apps to Adopt !!!
- ✓ Mobile Apps Development
  - ✓ Types of Mobile Apps
- ✓ Mobile Apps Developing Model

Computer Programs

- A computer program is a collection of instructions that can be executed by a computer to perform a specific task. "Wikipedia"

"hello, world" computer program by Brian Kernighan (1978).

Desktop Applications

- People used to talk about **programs** while discussing **desktop** operating systems like Windows. And they spoke about **apps** while discussing **mobile OS** like Android and iOS. Over the years, **desktop apps** surfaced to join them.

- A Desktop app is a program or a collection of programs meant for the **end user** to perform a task or achieve a purpose.
  - Has UI.
  - Not separate Install (setup) and Uninstall files.
  - Example: Universal Windows Platform (UWP) apps.
    - Installed from Windows Store.
  - All apps are programs, but not all programs are necessarily apps.

What is Mobile Apps?

- A *mobile application*, also referred to as *a mobile app* or simply an *app*, is a computer program or software application designed to run on a mobile device such as a *phone*, *tablet*, or *watch*.

- Apps that are not preinstalled are usually available through distribution platforms called app stores.
- The three biggest app stores:
  - Google Play for Android.
  - App Store for iOS.
  - Microsoft Store for Windows 10, Windows 10 Mobile, and Xbox One.

Why Mobile Apps?

- Estimated smartphone users worldwide total **1.75 billion** in 2014, which will grow to **5 billion** by the middle of 2017.
- Provide mobile phone users with apps that can keep them productive, informed, entertained, or connected whenever they feel the need
- Large potential for financial gain in the field of mobile applications
- Solve problems which have many challenges and obstacles

Technology in 21st century

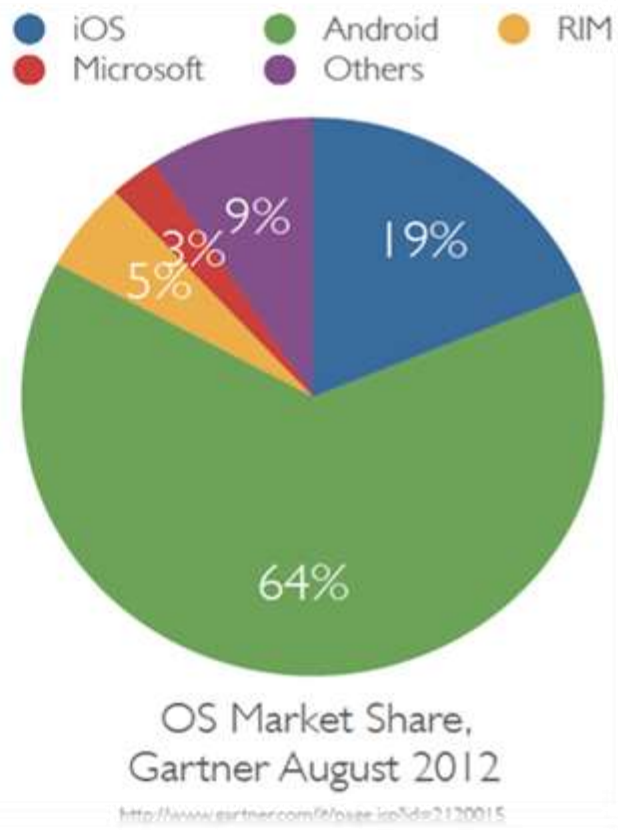
Best Apps to Adopt !!!

There are several mobile OS:

- Android
- iOS
- Research in Motion
- Microsoft
- Symbian

In this course we are going to focus on:

- Android platform



OS Market Share,
Gartner August 2012

Types of Mobile Apps

1. Native Applications

- Native applications are those applications that are installed on the device, such as Address Book, Calendar, Calculator, Games, Maps and Web Browser …etc.

- These applications have their own runtime environment for execution.

- Highly interactive applications are really only feasible when they are native applications

Types of Mobile Apps (2)

2. Browser-Based Applications

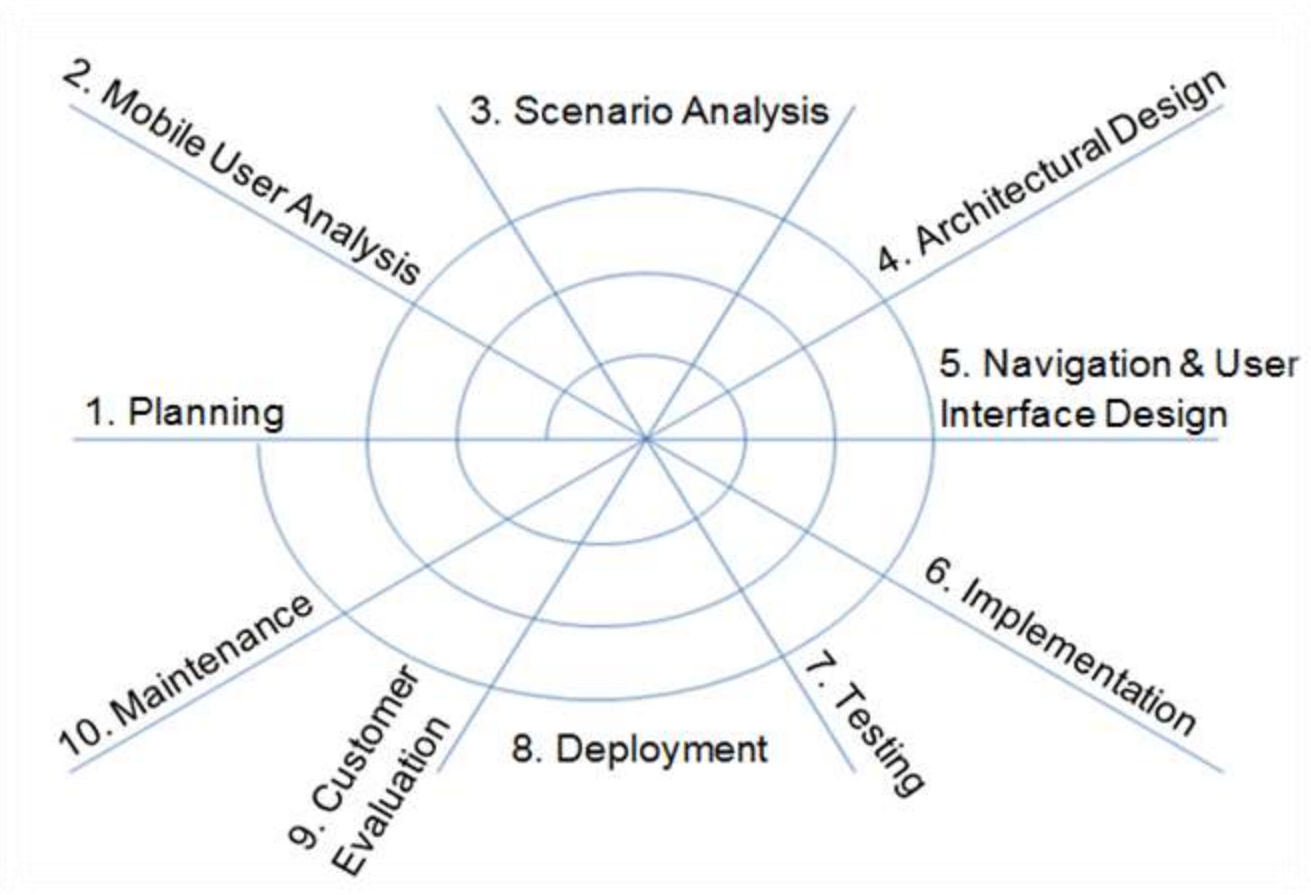
- A Browser-Based application is an application that is accessed through the use of the mobile device's web browser.
- The Web app resides on server and is accessed via the Internet
- Browser-Based applications are coded with the use of a Markup Language HTML, XML, CSS…etc

Types of Mobile Apps (3)

3. Hybrid Applications

- A mix of native and web-based apps.
- Apps developed using Apache Cordova, Xamarin, React Native, Sencha Touch and other similar technology fall into this category.
- These are made to support web and native technologies across multiple platforms.
- Easier and faster to develop.
  - It involves use of single code base which works in multiple mobile operating systems.
- Despite such advantages, hybrid apps exhibit lower performance. Often, apps fail to bear the same look-and-feel in different mobile operating systems.

Mobile Apps Developing Model



1. Planning

The planning phase deals with:

- Identifying the objectives of the application
- Specifying the scope of the first step
- Estimating the possible cost of the project
- Analyzing the possible risks involved
- Creating a tentative schedule

2. Mobile User Analysis

- This phase deals with understanding our target audience for the application
- We need to examine the types of users that with use the application and any special requirements or functionality they require
- We can gather information by:
  - asking experts in the field
  - reading literature on the topic
  - asking current users

3. Scenario Analysis

In this phase we focus on three areas:

1. Screen and Interaction Analysis

- How the user will interact with the system, how content will be displayed

2. Usage Analysis

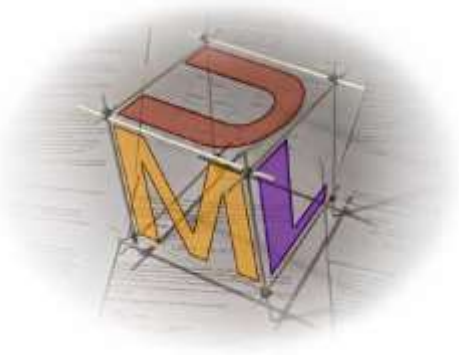
- The functionality of the system, use cases should be considered to relay this information

3. Environment Analysis

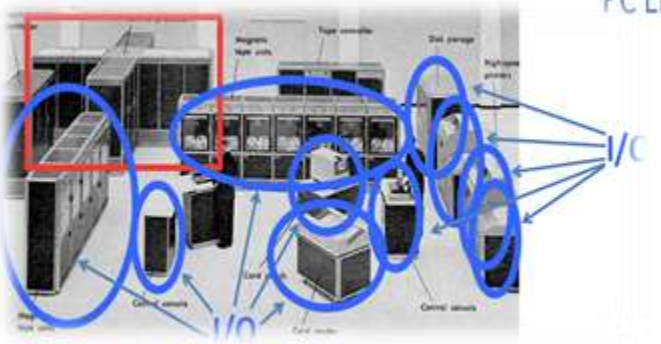
- The interaction between this system and other networks and devices

4. Architectural Design

- This phase deals with the architecture of the system when dealing with network based applications
- It should discuss how the system will be split and the challenges and benefits of such a design
- As discussed, attention must be paid to message latency and application partitioning to ensure performance, reliability, and security



5. Navigation & User Interface Design



PC Era: Mid 1980s -

Post-PC Era: Late 2000s - ???

Personal Mobile Devices (PMD):

6. Implementation

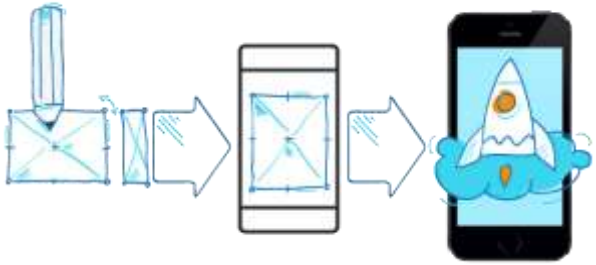
- Implementation of the application is done in this phase with the use of any number of development tools
- Code Conventions, class and object diagrams, API specifications can all be included in any documentation that is created at this point for the system
- This allows developers who join the project at later stages to follow the same format and style as the original authors

7. Testing

- Testing is extremely important in mobile application development not only due to the heterogeneity of mobile devices
- It is important to test *not only in an emulator but on the physical device as well*, and to test on all or as many physical devices as the application can be located
- Testing also assists us to remove bugs and flaws in programs which become inevitable in larger systems as they become complex

8. Deployment

- Deployment of the application on physical devices will allow you to see the system in the real world
- Applications may be fine in an emulator but when transferred to a mobile device developers may find the application slow, impossible to use, not functioning all together, or consuming too much bandwidth
- It may not economically feasible to test on every possible device that a system may be used on but a wide variety of devices should be tested



9. Customer Evaluation

- At this point the application is ready for download by customers in the network
- Customers should be given a way of providing feedback to the developers and reporting any issues they encounter when using the application
- Consider providing an email or web form where users can fill in the necessary information or provide an automated process which sends the error to the server

10. Maintenance

Maintenance of the system after deployment deals with several issues:

- resolving any bugs found in the application and creating necessary patches
- improving the quality of the application with upgrades
- providing new services and capabilities to customers


Q & A