CSCI 1320
Creating Modern Web Applications
Lecture 38: Mobile Applications
Mobile Applications

• Front end
  • Native code on the phone/tablet
    • Java for Android
    • Swift for IOS
    • C# for Windows
  • Using built in widgets
  • Using APIs to access functionality
  • Front-end often generated from a data file

• Back end
  • Web-accessible
  • Basically the same as a web application
Why Write Multiple Front Ends

• Pros
  • They will look slightly different (look like native applications)
  • They might use different UI capabilities (interactions)
  • They might use different phone capabilities

• Cons
  • Most of the functionality is the same
  • Most of the capabilities on one platform exist on others as well
  • Want your application to be about the same on all platforms
  • More difficult to maintain multiple versions
Alternative: Write a Web Application

- Front end is HTML, CSS and JavaScript
  - Needs to be responsive to handle different sizes
  - Can provide different functionality based on platform
  - Most of the technologies are available through HTML
    - Geolocation, camera, sound, ...
- A web application can be packaged to look like a native app
  - Screen icon, with click to start
  - Packaging tools exist and are easy to use
- Disadvantages
  - Performance is not as good as a native app
  - Can’t access latest OS features
  - Interface might not look or feel native
Alternative: Write Once

- The target platforms are quite similar
  - Languages, APIs, capabilities
- Write the front end in language X for some X
  - Using a fixed set of libraries
  - Compile X into Java/Swift/C#/...
    - Map library calls to library calls on native platform
    - Either directly or through an intermediate library
- Generate multiple applications from a single source
- Still need to determine how to specify UI
  - Take a common UI format and map to UI data for applications
  - Take a common set of widgets and map to native widgets
Xamarin: C#

- Xamarin lets you write the app in C#
  - Using Visual Studio if desired
- Using a standard UI library (and XAML)
- Using libraries to access native APIs
- Available for Windows (VS) and Mac development
  - Community (free) edition or Enterprise (paid)
NativeScript: JavaScript

• Write the front end in JavaScript
  • With a static description of the user interface
• Have that generate native code for
  • Apple, Google, ...
• Demo:
  https://www.youtube.com/watch?v=N8zsFIVdLwY
Next Time

- Future of Web Applications (discussion)
- Programming tools (nobbies and eslint)
- No class on Friday