Mobile Application Testing

Native / Web / Hybrid /Cross-Platform Mobile Applications

Topics

- Native Mobile Applications
- Web Mobile Applications
- Hybrid Mobile Applications
- Cross-Platform Mobile Applications

Native Mobile Applications

Native Mobile Applications

- The application that was developed for specific platform using native tools
- Examples:
  - Native Android Application: Android Developer, Android SDK, Java/Kotlin, Android Studio → *.apk → Play Store
  - Native iOS Application: Apple Developer, iOS SDK, Obj-C/Swift, Xcode → *.ipa → App Store

Native Mobile Applications

- Advantages
  - Fast and Responsive (reliable and most responsive experience to users
  - Full Mobile Device Feature Accessibility
  - Match app UI/UX to platform conventions
  - Offline Availability
- Disadvantages
  - More than one codebase
  - Native Apps cost more
  - Native Apps take longer to build usually

Mobile Web Applications

Mobile Web Applications

- **Mobile Web applications** – the applications for **mobile** devices that require only a **Web** browser to be installed on the device.
- They use Web technologies and are not limited to the underlying platform for deployment.

Mobile Web Applications

- **Advantages**
  - Immediacy
  - Compatibility
  - Upgradability
  - Findability
  - Shareability
  - Support and Maintenance
- **Disadvantages**
  - No Offline Availability
  - Limited Mobile Device Feature Accessibility
  - Stability
  - No App Store or Google Play Access

Hybrid Mobile Applications

Hybrid Mobile Applications

- Hybrid applications are web applications (or web pages) that are wrapped in a native application
- They need to be installed, run on device itself, and use device's browser engine (but not the browser) to render the HTML and process the JavaScript locally
- Classes in Android and iOS that display web content
- iOS: WKWebView Class
- Android: WebView Class

Frameworks for creating Hybrid Mobile Applications

- Apache Cordova https://cordova.apache.org/
- Ionic https://ionic.io/

Hybrid Mobile Applications

- **Advantages**
  - One codebase to manage (for web-part)
  - You save time and money
  - Easier to scale
  - You still have access to device features
- **Disadvantages**
  - Performance Challenges
  - The UX of the app may suffer

Cross-Platform Mobile Applications

Cross-Platform Mobile Applications

- Cross-platform mobile applications are mobile apps developed to function for multiple mobile platforms
- These apps are compatible with more than one operating system, such as iOS and Android

Frameworks for creating Cross-Platform Mobile Applications

- React Native https://reactnative.dev/
- Flutter https://flutter.dev/
- Xamarin https://dotnet.microsoft.com/apps/xamarin

Cross-Platform Mobile Applications

- **Advantages**
  - Reusable Code Components. One codebase to manage
  - You save time and money
  - Speed of development
  - Reduced Costs
- **Disadvantages**
  - Performance Challenges
  - Integration challenges
  - Limited User Experience
  - Cross-platform development is tough