

Mobile Applications Development Overview

Benefits of Using Mobile Apps

- **Convenience:** A mobile app user can access and share information anytime or anywhere. Internet connection is not required on most apps.
- **Personalization:** A user can change the settings of the mobile app based on his preferences. He can also receive notifications real time.
- **Productivity:** Users can write, read, and present their reports using only their mobile phones. They can also manage their multimedia files and share to friends through social sites.

Development Environments

- An **IDE (Integrated Development Environment)** is a programming environment that has been packaged as an application program.
- An IDE typically consists of a code editor, compiler, debugger, and a GUI builder.
- Some of the IDEs used in developing mobile apps:
 - **Android Studio** is the official IDE for Android application development, based on IntelliJ IDEA (a Java IDE).
 - **Xcode** allows users to build apps and run them directly on their Apple devices. The programming language used is **Swift**, created by Apple for iOS, OS X, and *watchOS* development.
 - **Xamarin** extends the .NET developer platform with tools and libraries specifically for building cross-platform apps.
 - **Corona** is a free, cross-platform framework ideal for creating mobile apps and games. It uses **Lua**, an easy-to-learn scripting language.
 - **Apache Cordova** is an open-source mobile development framework that allows use of standard web technologies - HTML5, CSS3, and JavaScript for cross-platform development.

Challenges in Developing Mobile Apps

- **Understanding the market and the user:** The current market scenario must be studied and the needs of the target users must be addressed.

- **Supporting multiple screen types:** Devices come in different sizes and shapes, which affects how you design the screens and UI elements in your apps.
- **Maximizing app performance:** The performance of an app is affected by factors such as battery life, multimedia content, and internet access.
- **Securing users:** The users' data is the most valuable asset. Users' sensitive information must be protected at all times.
- **Remaining compatible with older versions:** Not all users may have upgraded or may be able to upgrade their devices.

App Development Workflow

1. **Setup:** During this phase, you install and setup your chosen IDE. This is also where you create an emulator and connect hardware devices, which you can install your apps.
2. **Development:** During this phase, you write code, design a UI, and create resources for different device types.
3. **Building and Running:** During this phase, you build your project into a package that you can install and run on the emulator or an Android-powered device.
4. **Debugging, Profiling, and Testing:** This is the iterative phase in which you continue writing your app but with a focus on eliminating bugs and optimizing app performance (profiling).
5. **Publishing:** During this phase, the app is configured and built for release and distributed to users.

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