MOBILE EMULATORS VS. REAL DEVICES

Different aspects of app testing with emulators and real devices.

Advantages and disadvantages of Android and iOS emulator

Advantages:

- Simulates both software and hardware.
- App runs unmodified.
- Helps you find unexpected behavior.
- Tends to be free and open source. It is a fairly inexpensive solution, so the most obvious advantage is the price. All you need to do, is to download the software, install it on your PC, and you're ready to go.
- Can be connected to an IDE for early testing during development. The emulator is usually a part of the SDK provided to developers. Due to their integration with the development environment, mobile emulators provide the developer or tester with an access to detailed information, such as debugging information, which is very important for the development phase. It allows for convenient step-by-step debugging of your application on the emulator.
- Since emulators are simple client software that run locally on your PC, they run faster and with less latency than real devices connected to the local network or in the cloud.
- In addition, there may be cases where mobile emulators can give you the benefit of simulating hard-to reproduce scenarios (low battery, certain GPS coordinates, and others) that a real device connected to a network cannot easily support. However, this simulation is incomplete at best, as there is no guarantee that real devices would behave the same way in such cases.

Disadvantages:

- There are cases and situations when mobile device emulators are very slow (because they simulate both hardware and software).
- A mobile device emulator doesn’t take into consideration such factors as battery overheating, drainage, or conflicts with other (default) apps.
- Setting up a good emulator takes time and it is expensive.
- Emulators may be incompatible with the app or app elements, which means that you need to create patches here and there to keep on using the emulator.
- Emulators may support only certain OS versions.
- Even if the testing goes perfectly, you cannot be 100% sure that your data can actually apply to a real device. This raises the question of which tests need to be double-checked on a real device and which can be assumed reliable on the emulator. Also, in the event of a test that fails on the emulator, testers need to decide whether to perform the test on a real device or simply assume that the function does not work and requires correction.