1. What are the popular Mobile operating systems?

Ans:

1. Android OS: It is a mobile OS based on the Linux Kernel and open-source software. The android operating system was developed by Google.

2. Bada (Samsung Electronics): Bada is a Samsung mobile operating system that was launched in 2010.The bada operating system offers many mobile features such as 3-D graphics, application installation, and multipoint-touch.

3. BlackBerry OS: The BlackBerry operating system is a mobile operating system developed by Research In Motion (RIM).This operating system is beneficial for the corporate users because it provides synchronization with Microsoft Exchange, Novell GroupWise email, Lotus Domino, and other business software when used with the BlackBerry Enterprise Server.

4. iPhone OS / iOS: The iOS was developed by Apple inc for the use of its device. It is a secured operating system. The iOS operating system is not available for any other mobiles.

5. Windows Mobile OS: The window mobile OS is a mobile operating system that was developed by Microsoft. It was designed for the pocket PCs and smart mobiles.

6. Harmony OS: The harmony operating system is the latest mobile operating system that was developed by Huawei for the use of its devices. It is designed primarily for IoT devices.

7. WebOS (Palm/HP): The WebOS is a mobile operating system that was developed by Palm. It is based on the Linux Kernel. The HP uses this operating system in its mobile and touchpads.

1. Five key challenges in mobile application testing?

Ans:

1. Screen Size

* Screen sizes of mobile devices vary.
* Apple’s screen sizes range from 3.5’’ to 12’’. Android screen sizes range from 2,6’’ to 6’’. These changes occur whenever any new model is launched.
* Apps have to be tested to ensure they work across these different screen sizes.
* Performance of different layouts and elements against different pixel densities and aspect ratios must be checked.

2. OS Fragmentation

* Different mobiles have different operating systems which are upgraded often.
* Fragmentation is a big issue for Android which has 11 different OS. 93% of iOS devices are using version 9 or 10, so Apple’s OS fragmentation is a smaller issue than Android.

3. Battery

* Mobile apps can be demanding on batteries. They consume a lot of power. Using multiple apps as people often do drains battery life faster.
* A [mobile application testing company](https://www.kualitatem.com/mobile-testing) must factor in power consumption by mobile apps while designing their testing processes.

4. Changing user requirements

* Mobile app upgrades are frequent as user requirements change. Mobile features go through continuous feature upgrades.
* Agile processes are best suited for developing mobile apps as changes can be put into every sprint. With all these changes, new bugs are detected that must be fixed.
* Testing challenges grow because of the rapidly changing environment of mobile apps development.

5. Mobile networks

* People move from place to place, and internet networks change.
* In underground places, network signals are weak. During boarding and flight takeoffs, the network may be off entirely, requiring the mobile app to work offline for features like ticket access, etc.
* Testers have the challenge of testing mobile apps under different networks.

1. Two categories of Mobile Testing and the difference between them?

Ans:

MOBILE DEVICE TESTING

* This type of testing is generally being done to ensure the quality of a mobile device.
* It is hardware testing
* Testing includes hardware and software testing for a mobile
* Device testing is generally being carried out to check the mobile device itself
* Mobile-device testing involves a set of activities from monitoring and troubleshooting mobile application, content, and services on real handsets.
* Mobile device testing means newly launch device comparison to other device and check mobile feature like memory , camera , battery , operating system , screen

MOBILE APP TESTING

* This type of testing is generally being done to ensure the quality of a mobile application.
* It is software testing
* Process by which application a software developed for handheld mobile devices is tested for its functionality, usability, and consistency
* Mobile application testing involves testing of an application which will be running on the chosen device.
* Mobile applications either come pre-installed or can be installed from mobile software distribution platforms.
* Mobile app testing means , testing of mobile application feature like snipping tool app -Snipping tool - Capture screenshot & share link - Android Apps on Google Play

1. What are the extensions for the Android and iOS executable files?

Ans:

iOS

* .ipa file extension is used for Apple iOS application file and each “.ipa” file includes a binary for the ARM architecture and can only be installed on an iPhone or iOS-device.
* Full form of the .ipa file is an iOS application archive file

Android

* Android OS is .apk (Android application package).
* So APK is the package file format used by the Android OS for distribution and installation of smartphone apps.

1. What are the Pros and Cons of Hybrid, Native and Web apps?

Ans:

HYBRID APPS

PROS-

* Cost —Hybrid apps have Lowest cost of development. As you are not going to create several versions for different app stores and the development cycle is lesser too.
* Easy Scaling —Hybrid apps are very easy to scale up to a variety of platforms and OSes. This is because web technology is almost 100% similar across different platforms. So the code can be simply reused with no need to rebuild the entire app from scratch.
* Faster Go-to-Market —As the development cycle is less and we already saved time by coding only once, the initial launching time for hybrid apps is less. Apps undergo quality assurance testing like a standard software or website. Initial testing can be performed from a web browser. App store distribution and platform testing are quick.
* Time —Hybrid apps are typically much faster to build and deploy provided you’re not trying to build a lot of custom features.If you stick to the basics, it’s a matter of translating your web code for iOS/Android using a [hybrid app framework](https://blog.jscrambler.com/10-frameworks-for-mobile-hybrid-apps/).But, trying to add many additional, custom features could make a hybrid app more time-consuming to build than a native app.
* Native APIs —The most popular hybrid mobile app development platforms offer a range of plugins that enable you to access features on the device, including gestures, camera, and contacts. This means you can offer a more native-feeling app experience.
* One Codebase —Native apps must be developed entirely separate for each platform. A hybrid app can be built just once and released on both Android and iOS.
* Maintenance —It’s generally simpler to maintain and update web technology than native app technology.

CONS-

* Connection Limitations —Because they’re essentially websites, hybrid apps don’t work offline.Hybrid apps will also typically be slower since each element has to download. This is one important reason why they should be simple.
* Native Functionality —Because a hybrid app relies on plugins, you might not be able to incorporate all of the built-in features a user’s device offers.

Since you’re relying on someone else’s code, plugins may not always be available or may be unreliable or out of date. You may even find you have to write your own, which can defeat the purpose of opting for a hybrid app.

* Platform Inconsistencies —While a benefit of a hybrid app is only developing one codebase for both platforms, you will likely find that certain features or designs aren’t supported on both devices, which requires you to make modifications.
* User Experience —User experience should always be of utmost importance, regardless of whether you choose hybrid or native. Nothing is more important to your app’s success.A frustrated user will quickly stop using your app or switch to a competitor, and they may even leave a bad review.Mobile games, for instance, are almost universally native because speed and graphics performance are so vital to the app experience.

NATIVE APPS

PRO-

* Better User Experience —Hands down, a superior user experience is the best reason to opt for a native app.

Native apps are:

1. Intuitive and fluid for the user to learn and interact with
2. Fast
3. Reliable
4. Responsive
5. Have a robust feature set

* Offline Mode —Content and images are stored on the device, so nothing needs to download when the user accesses the app.Native apps can be used offline (depending on the app’s functionality), and speed is not impacted by slow server connections or other potential website issues.
* Graphics and Animation —Native app development provides fast graphics, fluid animation, and smooth transitions.It may not matter if you’re a banking app displaying a static screen, but for gaming, visualizations, video editing or other applications where fast performance is important, native apps come out on top.
* Greater Security —Native apps can be [more secure](http://davidbressler.com/2016/03/08/4-reasons-native-mobile-app-can-secure-mobile-browser-based-app/) for a variety of reasons:

1. Easier implementation of two-factor authentication
2. [Certificate pinning](https://www.owasp.org/index.php/Certificate_and_Public_Key_Pinning)
3. Access to built-in security features like TouchID

* Documentation and Support —There are far more support documentation and online resources dedicated to iOS and Android development.
* Testing —There are better testing and debugging tools and environments available for native app development. Identifying and fixing a problem in a hybrid app can take much longer.

Cons-

* Cost —Native apps are more expensive to build and deploy, in part because you must develop multiple versions of your app for each platform.
* More Technical —Native apps are built using more technical languages, which means you [need more experienced (read: more expensive) developers](https://themanifest.com/app-development/companies).Plus, unless your developers know how to develop for both Android and iOS, you’ll likely need a larger team specialized in each platform.
* Slower Build Time —You can expect it to take [4-6 months](https://savvyapps.com/blog/how-long-does-it-take-to-make-an-app) (or longer) to develop and deploy a native mobile app.However, if the goal is to get it right the first time then the extra initial build time is worth it.
* Maintenance —Developing native apps mean two (or more) separate codebases to maintain.Additionally, native app developers must account for a range of devices and components, known as device fragmentation.Developers must also continue to provide support for older operating systems since many users are slow to upgrade from older versions.

WEB APPS-

CONS-

* Accessibility — Web apps provide access to users on a wide range of devices, regardless of operating system, through the browser.
* Ease of Updates — Developers make changes to a common code base, so updates are simple. And developers can push updates to a server quickly for instant visibility across all devices.
* Better Discovery on Search Engines — Web apps are displayed in search results (think: Google), so anyone can find them.
* Cost-Effective Development — It’s less costly to develop web apps than mobile apps due to the smaller amount of development time required. This is largely due to only needing to build one version of a web app to serve all operating systems.
* Traffic from Website — Visitors to your website can be automatically sent to your web app on mobile devices, with no need to download anything.
* Faster Speed to Market — Web apps don’t need to be approved by app stores and marketplaces, so it is faster to get them to market.

CONS-

* Limited Mobile Device Feature Accessibility — Web apps offer limited ability to access a mobile device’s native features like camera and location services.
* Stability — Variations in web browsers can occasionally cause challenges in running the web app without issues. This is why it’s necessary to budget for regular updates.
* No Offline Availability — Web apps are dependent on the Internet for use, so they are not available when a user does not have WiFi or Cell access.
* No App Store or Google Play Access — Users won’t find the app on marketplaces, where they are used to finding them. So they may not be aware of availability.

1. List down the types of testing we perform for mobile apps?

Ans:

1. Usability testing-This test is used to evaluate how easy it is for users to reach their goals.The goal is to identify whether users are able to complete specific tasks and how long it takes them.In usability testing feedback is collected directly from the end user.

2. Compatibility Testing-Test the application to see if it is capable of running on the different hardware specifications, devices, operating systems, browsers and varying networks as per requirement.The different types of Compatibility tests include:

* *Browser* -compatibility with Chrome, Firefox, Internet Explorer and Safari.
* *Device* -compatibility with different Screen size, resolution, storage etc
* *Hardware* -compatibility with different hardware configuration
* *Mobile*-compatibility with Android, iOS,Windows etc.
* *Network*-performance of the app in networks with varying bandwidth, operating speed and capacity.
* *Operating Systems*-compatibility with Windows,Mac Os etc.
* *Versions of software*: compatibility with older and newer versions of software.

3. Performance testing-It is used to determine the speed, responsiveness and stability of the application under various workloads (i.e. varying number of users).

4. Security Testing-Ensures applications are free from vulnerabilities so that the data is protected and access to it is restricted.Aims to find all the possible loopholes and weaknesses.It ensures that the software system and application are free from any threats or risks that can cause a loss.

5. Installation Testing-Installation testing checks whether the mobile app installs, un-installs, updates properly without any interruption. And works as expected after installation.

6. Localisation Testing-Localization Testing is a type of software testing that is performed to verify the quality of a product for a specific culture or locale. Localization testing is performed only on the local version of the product

7. Functional Testing-Used to test the functionalities of the application and verify that each function works as specified in the requirement specification.

8. System Testing-The process of testing the complete integrated system; how components interact with one another and with the system as a whole ⁠—to verify that it meets the specified requirements of the customer.

9. Acceptance Testing-The customer either accepts the product developed meets the criteria or rejects it.The different types of functional tests include:User Acceptance Testing,Business Acceptance Test,Alpha testing , beta testing

10. Interruption Testing-It is used to test the behaviour of an application when it is interrupted before resuming to its previous state before the interruptionCommon examples of interruptions

* Battery low/ full
* Incoming phone call,SMS
* Plugged in/out while charging
* Alarm
* Network connection loss and recovery
* Push Notifications from mobile apps

Usually an app when interrupted runs in the background , and is expected to resume to the state it was in before the interruption when called to the foreground.

11. Recovery Testing-It is used to test the recoverability of the application from crashes, hardware failures or other critical problems.This involves manually simulating the failure of the software in order to verify that the application can recover quickly.

12. Mobile Device Testing-Also known as Hardware Testing.This includes testing the internal hardware ,memory, camera,WIFI,bluetooth etc

13. Storage testing-Tests how the software performs its storage functionalities and the speed at which this is done.Ensures that data is stored in the right format and in the specified directory.

14. Regression Testing-This test confirms that a code change has not affected existing functions and the previous working version of the application is unaffected by the new code.

15. Reliability Testing- It is used to ensure the software is reliable i.e. it satisfies the purpose for which it was made for the specified time period in the given environment.

1. What is the best way to test different screen sizes of the devices?

Ans:

We use different tools that are available for testing using different screen sizes instead of buying devices with different screen sizes. Different screen sizes that are tested are- desktop screens, tablets, smartphones (different screen sizes and resolutions of smartphones).

The tools that are used provide emulators of different devices with many different screen sizes and resolutions. This helps in getting a view of how our application/web app will behave when screen size varies.

Some tools that are used are- Responsinator, ScreenFly, Google Resizer, etc.

1. What is meant by Responsive testing in Mobile sites?

Ans:

Responsive testing in mobile sites is done to ensure complete functionality of the website when accessing through mobile. When a site is accessed in mobile, it should be responsive in a way that the user does not face any issue when using the site and all elements are visible and accessible.

Responsive websites are compatible with multiple devices like all browsers, resolutions, screen sizes on different screen size desktops and devices like Smartphone, tablets etc. It is very important to test the responsiveness of the website for excellent user experiences.

Responsive website testing can be done by using:

1) Changing the size of your browser

2) Emulators

3) DevTools

4) Online responsive checker

1. What do you understand by usability? Why it is more important to be taken care of? Give 3 points of usability from real-time apps you have in your phones.

Ans:

* Usability Testing also known as User Experience(UX) Testing, is a testing method for measuring how easy and user-friendly a software application is and A small set of target end-users, use software application to expose usability defects.
* It mainly focuses on user's ease of using application, flexibility of application to handle controls and ability of application to meet its objectives.
* It helps to uncover problems in the design. It is done to check the effectiveness, efficiency, accuracy and user friendliness of the website.

1. Should the user(QA) use their own devices or provided devices to perform usability testing? Give the reasons if you strongly feel “Yes" or "No”, or if you feel we can go with both ways together.

Ans:

Yes, the QA should use their own devices as well as the provided devices to perform usability testing. Depending upon the device available it will give the QA a chance to test the usability of the website in a more comprehensive manner. Using an emulator takes more time as compared to testing on a device hands on. So, this will help in reducing the time taken and will increase the efficiency of usability testing.

1. What do you mean by Soft Keys and Hard Keys in mobile?

Ans:

* Soft keys are basically keys that can be programmed to perform multiple different functions of the user’s choosing. In a smartphone, soft keys are defined as a simulated button or keyboard key that is displayed on a touchscreen. They are a simulated button or keyboard key displayed on a touchscreen. They enable the device to display any style of user interface.
* Hard keys are the hardware keys present in the smartphone. They perform only the function that they are programmed to. Eg. lock phone button will only always lock the phone.

1. Difference between Mobile application testing and web application testing?

Ans:

MOBILE APP TESTING

* Mobile apps can work offline
* It is critical to verify that a mobile application works correctly when a device connects to Wi-Fi or cellular network (3/4/5G) and when the connection is interrupted and when the data is off an app shouldn’t crash but launch and display no internet connection message.
* Some things slow down web apps, too: outdated hardware, low storage, many tabs opened simultaneously, etc.
* Battery life is a point of concern for mobile applications.
* mobile applications are updated more frequently, so the need for automating regression testing is higher.
* Tools-Appium,Espresso,XCTest

WEB APP TESTING

* Web apps don’t work offline
* It is critical to verify that a web application works correctly when a device connects to Wi-Fi or cellular network (3/4/5G) and when the connection is interrupted. When the data is off and an app should crash and display no internet connection message.
* web apps are updated less frequently, and these updates don’t affect device memory.
* Battery life isn’t a point of concern for desktop computers.
* Web applications are not updated very frequently.
* Tools- Selenium