

Apple's iOS and Android's OS have been competing for many years. They have been in one of the biggest flagship phones and are the top of the line. They have many differences but also have very similar systems in terms of system calls, inter-process communication, memory management, file management and security. iOS is primarily written in C, C++, Objective-C, assembly language and Swift while Android is primarily written in C, Java, C++ and other languages.

Android relies on Linux version 2.6 for core system services for security, memory management, process management, network stack, and driver model. The Kernel also acts as an abstraction layer between the hardware and software stack. For the Android, everytime an application is started, it will generate a Linux process and a main thread. Android uses a single thread model to complete certain tasks. Such as, if you click on a button, the UI thread dispatches the touch event to the widget which in turn sets its pressed state and posts an invalidate request to the event queue. The UI thread dequeues the request and notifies the widget to redraw itself. Androids use system calls by dispatching from the applications' threads. Android has two categories for interprocess communication: intent and remote methods. Intent is an abstract description of an operation that is performed. The remote method uses AIDL or Android Interface Definition Language. This means that if you have code in a process that needs to call methods on an object in another process, you can use AIDL to generate code to arrange the parameters. Android manages its memory automatically by Dalvik garbage collector. This means it will recollect memory resources when an ongoing application is running and by how important it is. One major problem with using this is when allocation happens, the garbage collector will kick in and stop the user's application to free some memory but this can be avoided by using allocation tracker. Android operating system allows you to access the entire file system. It uses basic data manipulation to manage files. Android uses the security of the Linux kernel, as well as a secure inter-process communication to enable secure communication between applications.

iOS has four abstract layers: the core OS layer, Core services layer, media layer, and the Cocoa Touch layer. The core OS and core services layer contains the fundamental interface for iOS, it controls accessing files, low level data types, Bonjour services, and network sockets. The media layer contains the fundamental technology to support 2D and 3D drawing, audio and video. Lastly, the Cocoa Touch layer provides the fundamental infrastructure used by the application. Each process on the iOS is made up of one or more threads. Each of these threads runs the application's main function and the application can spawn additional threads to execute the code of a specific function.

iOS forbids the back-ground process and rejects applications that attempt to read databases and media folders directly based on the cern of restricting and confining third-party apps to their sandbox. The system calls for iOS are achieved by the combination of API, framework, and library calls. It is for providing a high-level, developer-friendly interface to the UNIX kernel. iOS does not use garbage collection instead they use the mechanism that allows you to mark an object if it is useful. So that I can determine if they should destroy the object or keep it running. Unlike the android OS, iOS does not grant you full access to the file. instead iOS limits the directors inside the app's sandbox directory. iOS provides a powerful method to secure the iOS. They have a dedicated hardware processor and use AES-256 encryption.

In conclusion, I think iOS is better because it provides an easy to understand system and runs a smoother operating system. The reason behind this is because iOS separates the system into four parts which allows a higher efficiency system. Additionally, it has a power encryption for security. But in the end it all depends on what you use the operating system for because there are limitations of the iOS since you do not have access to the file manager.