



Chapter 17

Hacking Mobile Platforms

Theory



Ethical Hacking

Mobile operating system

A mobile operating system is an OS that is specifically designed to run on mobile devices such as mobile phones, smartphones, PDAs, tablet computers and other handheld devices. Mobile operating systems combine features of a personal computer operating system with other features useful for mobile or handheld use

List of Mobile OS

- | | |
|--------------------|-------------------|
| 1. Android OS | 5. Palm OS |
| 2. Bada | 6. Symbian OS |
| 3. BlackBerry OS | 7. webOS |
| 4. iPhone OS / iOS | 8. Windows Mobile |

Terms in Mobile Hacking

Stock ROM: It is the default ROM (operating system) of an Android Device.

Rooting: Rooting is the process of allowing users of smartphones, tablets and other devices running the Android mobile operating system to attain privileged control (known as root access) over various Android subsystems.

Lineage OS: LineageOS is a free and open-source operating system for smartphones and tablet computers, based on the Android mobile platform. It is the successor to the custom ROM Cyanogen Mod

Bricking Mobile: A device that does not turn on and function normally. The bricked device cannot be fixed through normal procedures. Devices are bricked due to overwriting of the Firmware or low-level system software.

Bring Your Own Device (BYOD): Bring your own device (BYOD) is a business policy that allows employees to bring their mobile devices to their workplace.

Mobile Platform Vulnerabilities and Risks

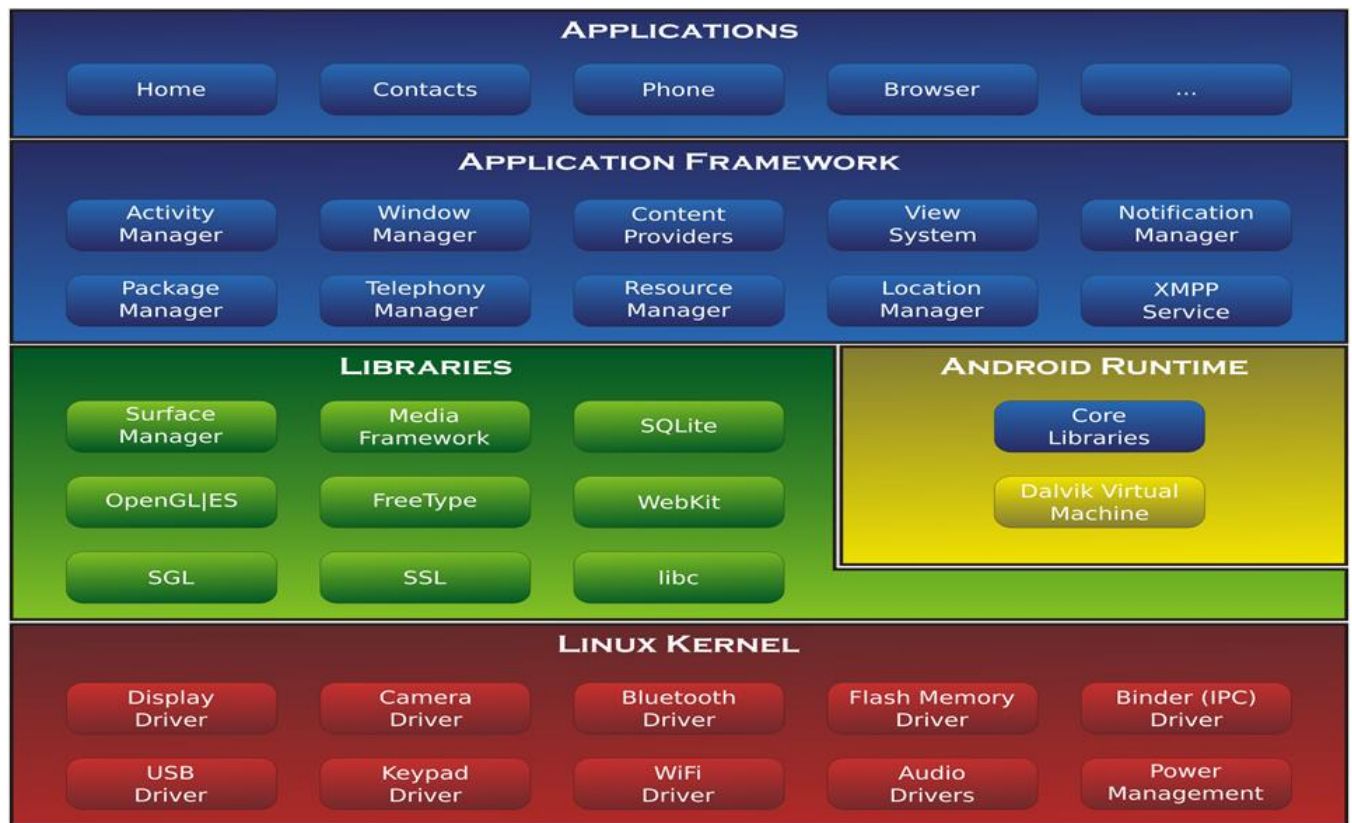
- Malicious Apps in Store
- Mobile Malware
- Jailbreaking or Rooting
- Mobile Application Vulnerabilities
- Weak Data Security and App Encryption
- Excessive Permissions
- Weak Communication Security

Android OS

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets.

Android Architecture

Android Architecture is implemented in the form of a software stack architecture consisting of a Linux kernel, a runtime environment and corresponding libraries, an application framework and a set of applications.



iPhone OS (IOS)

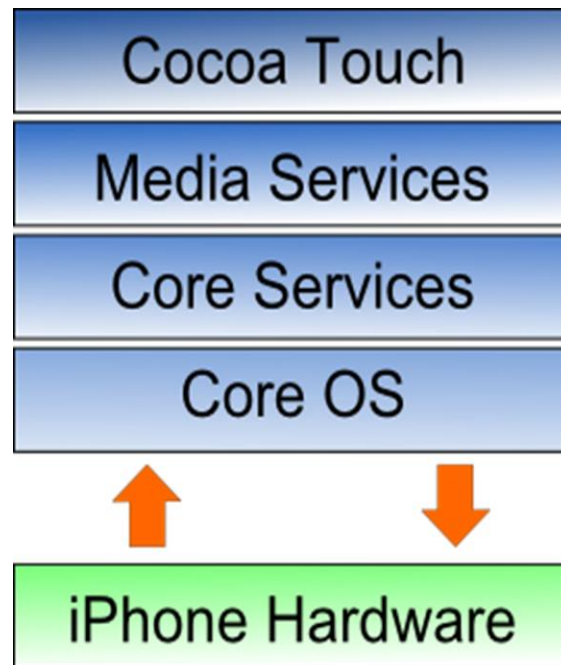
iOS is a mobile operating system created and developed by Apple Inc. and distributed exclusively for Apple hardware. It is a proprietary operating system which runs on Apple mobile devices (iPhone, iPad, and iPod touch).

iOS Architecture

The architecture of iOS is a layered architecture. At the uppermost level iOS works as an intermediary between the underlying hardware and the applications.

running on the device. Apps communicate with the hardware through a collection of well-defined system interfaces instead of directly interacting with hardware.

Interfaces make it simple to write apps that constantly work on devices having various hardware abilities.



Hacking Android Device

- Hacking Android By using Malicious App Infection
 - Dendroid
 - Droid Jack
 - AndroRAT
- Using Kernel Level Vulnerabilities to Exploit Mobile Devices
 - Stage Fright

General Guidelines for Mobile Security

- Do not load too many applications and avoid auto-upload of photos to social networks.
- Securely wipe or delete the data disposing of the device.
- Turn off Bluetooth if it is not necessary.
- Do not share the information within GPS-enabled apps unless they are necessary.
- Install applications from trusted application stores.

Countermeasures

- Do not directly download Android Package Files from untrusted websites.
- Never root your Android device.
- Update the operating system regularly.
- Use iOS devices on a secured and protected WiFi network.
- Deploy only trusted third-party applications on iOS devices.
- Configure 'Find My iPhone' and utilize it to wipe a lost or stolen device.
- In the case of IT companies, it is important to educate employees in the organization about the BYOD policy.

References

1. Rooting (Android). (2018, July 27). Retrieved from [https://en.wikipedia.org/wiki/Rooting_\(Android\)](https://en.wikipedia.org/wiki/Rooting_(Android))
2. LineageOS. (2018, August 05). Retrieved from <https://en.wikipedia.org/wiki/LineageOS>