Mobile CPU architecture

Introduction

To develop for mobile, you need to be familiar with the architecture of a mobile's central processing unit (or CPU). In this reading, you'll explore what a CPU is and types of CPU architectures. This knowledge will help to prepare you for developing applications for mobile.

Overview of a central processing unit (CPU)

A CPU is like a middleman that enables software to communicate with the hardware of a device. It can take high-level software instructions and translate them into native machine language that a mobile phone can understand and perform specific operations based on.

To deliver the best experience to users, what you most likely want is a CPU that’s a mix of efficiency and power and doesn't use a lot of resources—something that its architecture will determine. A CPU with great architecture provides mobile users with a seamless experience without consuming many battery resources.

CPU architectures

When developing and deploying apps for different mobile devices, you must consider the CPU architecture. For example, building a social network app for a large audience requires that most mobile devices be targeted.

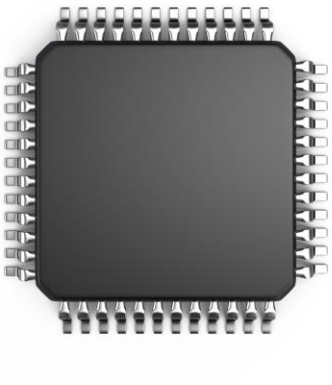
As of now, there are three main CPU architectures used in most smartphones:

- ARM,
- ARM64,
- and x86.

Here's a brief overview of these architectures:

ARM

Of these three, ARM (or Advanced RISC Machines) is the most used architecture because it is optimized for battery use. Examples of ARM include ARMv7 and armeabi. ARM is more of an embodiment of the mobile-first mentality, with simple sets of instructions, efficiency, and low energy consumption as its main priorities. The fact that it requires fewer transistors and frees up this hardware space more than compensates for using RAM in a mobile phone.



ARM64

On the other hand, ARM64 is a 64-bit extension of the original ARM architecture. Examples of ARM64 include AArch64. ARM64 provides additional support for more powerful computing in the form of 64-bit processing, and it’s gradually becoming the standard in many newer devices.

x86

The x86 is slightly more sophisticated than ARM. However, it's not quite as battery-friendly. Due to this drawback, it is the least commonly used of the three. An example of x86 is x86abi.

Conclusion

You should now be familiar with the architecture of a mobile's central processing unit (or CPU) and the various CPU architectures available.