

M1 CHIP ASSIGNMENT

INTRODUCTION

The M1 chip is the first Apple designed “System on a chip”, that was developed for use in the Macs, and was released in November 2020. It marked Apple’s transition from Intel chips which had been in use in Apple computers since 2006.

The M1’s high respect is garnered from the fact that it is faster and more efficient due to its integration of numerous components inside it, such as the CPU, GPU, RAM, Neural Engine, SSD controller, Image Signal processor, Thunderbolt controller with USB 4 support, just to name a few contrary to the previous Macs which had use multiple chips for the CPU, I/O and security.

The M1 chips are available in the latest versions of Apple computers such as: the 2020 MacBook Air, 13-inch MacBook Pro and the Mac mini and in the newer versions of the iMac and the iPad Pro.

CHARACTERISTICS OF THE M1 CHIP AND HOW IT WAS DESIGNED

The M1 has in it multiple components that make it very powerful.

The M1 has an 8-core CPU with 4 high-performance cores and 4 high-efficiency cores which are made to offer the best performance for all types of tasks.

For less intensive tasks such as web browsing, the 4 high-efficiency cores use a tenth of the power to preserve battery life while on the other hand, all 8 cores can be engaged at the same time if the task at hand is demanding of power.

For the Graphical Processor Unit, the M1 MacBook models have 8-core GPUs with capabilities of running approximately 25,000 threads simultaneously and with 2.6 teraflops of throughput and according to Apple, the M1 has the fastest integrated graphics in a personal computer.

The M1 has the Neural Engine built inside it and this component is designed to boost machine learning across the Macs to aid in processes such as voice recognition, image processing and video analysis.

The M1 also contains an improved Image Signal Processor (ISP), which offers higher-quality videos with better noise reduction, greater dynamic range and improved auto white range.

The M1 has buffed up CPU performance to 3.5X faster, the GPU 6X faster and the machine learning process 15X faster than the Intel chips previously used and when compared to new PC laptop chips, the M1 offers 2X faster CPU performance with just 25% of its power.

The M1 Mac's battery life lasts about 2X longer than in previous Mac generations, with the longest battery life Mac (The 13-inch MacBook Pro) lasting up to 20 hours. This is brought about by the low power, highly efficient media encode and decode engines.

The M1 chip also contains a thunderbolt controller which supports USB 4, transfer speeds of up to 40 GBps and compatibility with more peripherals than the previous versions.

Contrary to the Intel chip Macs which had a built in T2 chip, which dealt with security, the M1 chip has a built in Secure Enclave that manages Touch ID and a storage controller with Advanced Encryption Standard (AES) encryption for faster and more secure SSD performance.

WHY THE M1 DESIGN WAS INTRODUCED RECENTLY AND NOT DECADES AGO?

The long delay was brought about since to produce such a powerful chip, there needed to be proper planning and research of its creation since Apple is not a chip company and was venturing into a new field. It was also brought about by the worry about the transition from Intel to its own Silicon chip, the company had previously faced a tough time during its transition from PowerPC to Intel in 2006 and had feared the same would happen during this recent transition and that would be costly and at the same time embarrassing.

WHAT IS NEXT AFTER THE M1?

After the M1, Apple is expected to release an improved version of it called the M2.

The M2 is expected to have similar characteristics such as an 8-core CPU but will have: improvements in its speed and efficiency as it will be built on a smaller node and a 9 and 10-core GPU

References

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