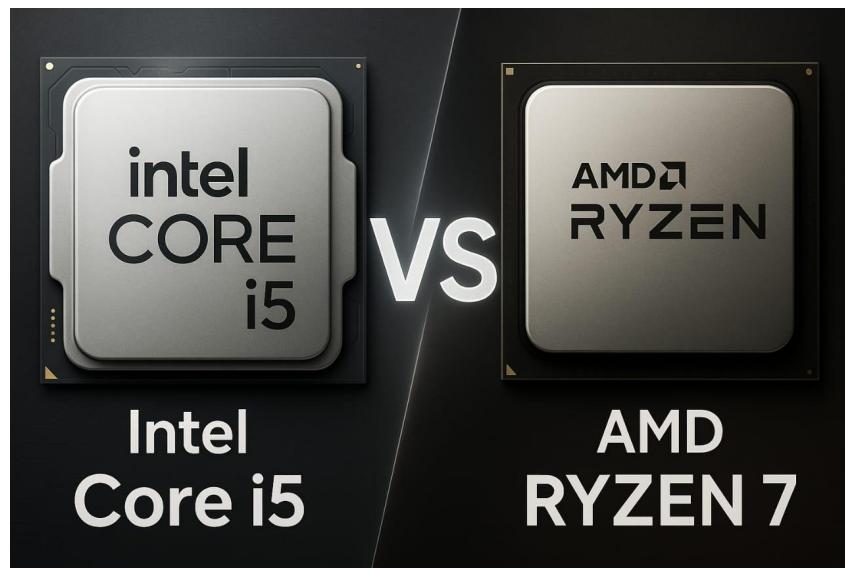


CS2843 Assignment II

Intel i5 vs AMD Ryzen 7



Introduction

➤ Intel Core i5 Processor

The Intel Core i5-1335U processor is a part of Intel's 13th Gen Lake U- series. It was designed specifically for thin and light laptops. This processor's hybrid performance architecture integrates high-efficiency and high-performance cores. And it helps to balance battery life and computing performance depending on the workloads. Compared to the previous generations, the Intel Core i5-1335U processor guarantees better speed, power efficiency and multitasking responsiveness. Also, these processors have some special features such as Intel Thread Director, Intel Deep Learning Boost, Thunderbolt 4 support and advanced power management. And, it supports Wi-Fi 6E which enables faster wireless connectivity and better internet stability. Students who need lightweight laptops for studies, professionals working in business, administration who prioritise portability, content creators doing light video editing, photo editing and design work, casual gamers, travellers and remote workers are the typical users and applications of these processors.

➤ AMD Ryzen 7

Ryzen 7 is a family of high-performance microprocessors introduced by a semiconductor company that focuses on microprocessors and graphic cards, called Advanced Micro Devices, Inc. (AMD) as a successor to the Ryzen 5 family in 2017. Ryzen 7 is the first family of processors that are based on the Zen microarchitecture. As a successor to both Excavator and Puma, the Zen microarchitecture is developed by AMD, and it is manufactured on GlobalFoundries's 14 nm process. It is an entirely new design, built from the base for an excellent balance of performance and power capable of covering the entire computing scope from notebooks to high-performance desktop computers. Ryzen 7 processor is a

complete system on a chip, including memory controller, and northbridge along with southbridge built directly onto the main chip. These include 16 PCIe lanes for GPU along with NVMe controller and additional 4 PCIe's for input & output along with SATA and USB 3.0 links. Two-way simultaneous multithreading and Precision Boost are two of the new technologies that are not previously offered by AMD. There are number of ways that AMD deals with thread management. AMD performs analysis on the data stream of each thread to see which one has algorithmic priority. Threads can be tagged based on their priority. AMD has a couple of tricks for Zen, along with including the standard ISA. Additionally models are unlocked. Ryzen 7 is marketed towards the high-end desktop market providing the highest level of performance. Ryzen 7 is placed against Intel's high-end Core i7 processors, providing competitive performance at lower prices.

Comparison

Features	Intel i5	AMD Ryzen 7
Architecture	Raptor Lake U	Hawk Point (Zen 4)
Cores It determines how many tasks the processor can handle simultaneously.	Performance cores – 2 Efficient cores – 8 Total cores - 10	8
Threads Virtual divisions of a core that help run multiple tasks simultaneously.	12	16
Clock Speed This shows how quickly data can be processed	Base Clock Speed 1.3 GHz	Base Clock Speed 3.3 GHz
	Turbo Clock Speed 4.6 GHz	Turbo Clock Speed 5.1 GHz
Cache It helps the CPU access data faster, improving overall speed.	L1 – 80 KB (per core) L2 – 1280 KB (per core) L3 – 12 MB (shared)	L1 – 64 KB (per core) L2 – 1 MB (per core) L3 – 16 MB (shared)
Maximum Memory Size	96 GB	256 GB
Thermal Design Power (TDP) It shows the power use and heat output	15 W	28 W
Integrated Graphics	Iris Xe Graphics (80EU)	Radeon 780M

Table 1: Comparison done between Intel® Core™ i5-1335U Processor and AMD Ryzen™ 7 8840U

Conclusion

In terms of performance AMD Ryzen 7 usually generates more power and multitasking ability compared to intel i5. (When performing tasks that require **a lot of threading**.) As a result, AMD Rysen 7 processors are frequently chosen for demanding applications but may consume slightly more power. The decision between these two processors highly depends on users' workload and power requirements. Intel i5 is a better choice if users consider battery life, portability and day-to-day tasks like browsing, office work and light editing. It is also good for users who don't need massive memory capacity. However, AMD Rysen 7 is beneficial if users require strong multitasking performance, better graphic capabilities, and faster speeds for activities like video editing and gaming. It supports a larger memory capacity up to 256GB (High flexible). Besides, AMD Rysen 7 is based on the more advanced Zen 4 architecture which improves instructions per cycle, enhances energy efficiency and provides more modern design compared to Intel's Raptor Lake U architecture.

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