

A Proposed Comparison for Architecture of two Processors

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Abstract—Microprocessor is a very basic and integral part of a computer system. Our comparison for Architecture of AMD Ryzen 9 3950x and Intel Core i9-9900K is based on online research and the architecture of these microprocessors. Our method of research includes, breaking down their architecture, comparing them based on clock speed, CPU, Memory and various other things. At the end, we came to a conclusion.

Index Terms—AMD Ryzen 9 3950x, Intel Core i9-9900K

I. INTRODUCTION

AMD Ryzen 9 3950x:

This microprocessor is a release of year 2019. Few good features have been added to this version than the previous one.

Intel Core i9-9900K:

Core i9-9900K is a 64-bit octa-core high-end performance x86 desktop microprocessor introduced by Intel in late 2018. This processor, which is based on the Coffee Lake microarchitecture, is manufactured on Intel's 3rd generation enhanced 14nm++ process.

II. LITERATURE REVIEW

There have been few studies on the architecture of both AMD Ryzen 9 3950x and Intel Core i9-9900K.

[1] Paul Alcorn says that the Ryzen 9 3950X lets you jam highly threaded horsepower into an affordable motherboard, creating a new CPU class all its own. Its 16 cores and 32 threads redefine what's possible for the mainstream, and its comparatively affordable price-per-core is a great value. He emphasized on number of cores and threads, Power efficiency, high boost frequencies and reasonable price per core.

[2] Mark Knapp on his review of AMD Ryzen 9 3950x said, "The AMD Ryzen 9 3950X is the processor to pick for heavily threaded computer work. It blasts through processing tasks, and can handle high-end gaming, but cheaper Ryzen chips handle gaming just as well." But he found himself amused by the fact that In his testing, the Ryzen 9 3950X's power draw maxed out just below 144 W.

[3] Paul Acorn in his research of Intel Core i9-9900K found that this one shows good performance in both single- and multi-threaded workloads but heavy power consumption under heavy load.

[4] Kevin Lee finds Intel Core i9-9900K's high clock speed boosting (up to 5.0GHz) very satisfying. But this one will not make a good gaming pc and also a little bit expensive.

III. PROPOSED METHODOLOGY

Advantage of Comparison

Comparing these two models by their architecture will help us understand the lacks in today's parallel processing and whether there is room for improvement or not.

Problem Statement

Is parallel processing and distributed system is properly incorporated in AMD Ryzen 9 3950x and Intel Core i99900K?

Comparison on which measure:

- Clock speed
- Instruction Set
- Word size
- CPU
- Memory

Scopes:

- We can find out which one is more efficient.
- We can detect the area of improvement.

Limitation:

- We can only find out what is disclosed by the owner company. So the comparison will not be 100

IV. CONCLUSION AND FUTURE WORK

With all our findings, we came to understand that though in previous versions intel has dominated the market for a long time. AMD processors have been side lined . But with AMD Ryzen-9 this will change. This microprocessor has potential to grab the market with its fine architecture and efficiency.

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