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

[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 3 watts.

III. Proposed Methodology

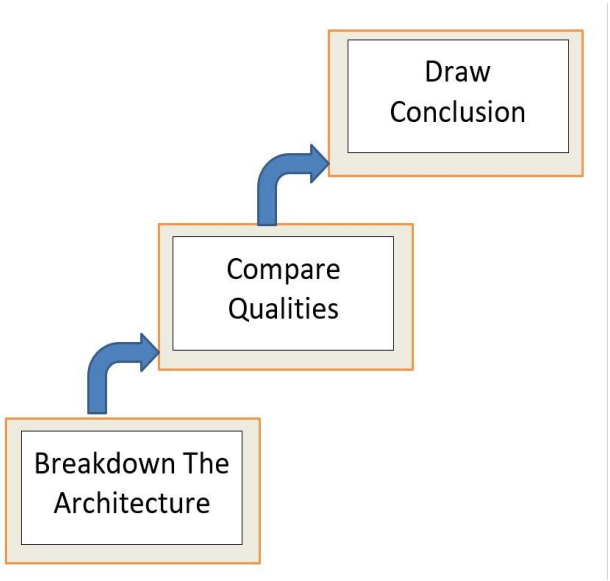

Fig. 1. Proposed Methodology Breakdown

Primary Findings AMD

Ryzen 9 3950X

1. A 64-bit hexadeca-core high-end x86 desktop processorwith 16 cores, launched in November 2019. Parts of Ryzen 9 lineup, using the Zen 2 (Matisse) architecture with Socket AM4.
2. 64MB of 1.3 cache and operates at 3.5 GHz by default.
3. The core-count is effectively doubled to 32 threads.

4. Highest supported memory speed is 3200 Mhz.

5. CPU cores are located on two dies.

Intel Core i9-9900K

1. A 64-bit octa-core high-end performance x86 desktopmicroprocessor introduced by Intel in late 2018.

2. Manufactured on Intel's 3rd generation enhanced 14nanometer++ process.

3. Processor has dual channel of max 128GB of sizethat supports up to DDR4-2666 bus speed.

4. The performance in multi-threaded applications is upto 25 percent faster than the older Core i7-8700K.

5. This processor operates at 3.6 GHz with a TDP of95W and a Turbo Boost frequency of up to 5GHz.

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