

The RISC-v or Arm for the new processor

Every single day, we, as computer engineers, find new technologies and improvements so you should look up to them when you design a new processor. The most famous architectures in current time are ARM and RISC-V. In this article, I'll speak about RISC-V as one of the choices.

History of RISC-v:

for a long time, the x86 was one of the famous architectures and widely used around the world, but ARM started a new age of energy-efficient processors. In this age, the RISC come out with the capability of improvements and serves many applications such as computers, IoT, and micro-controllers. The RISC represents of Reduce Instruction Set Architecture. The philosophy of RISC is simple Instructions mean fast program. In RISC architecture we make the instruction size is fixed 32-bit and many registers. This architecture was developed at the University Of California by Dave Patterson.

For RISC-v, the journey began in 2010 at the University of California as an open-source ISA that broke the traditional form of architecture that was CISC. As a promising architecture, many large companies adopt it. That was correct due to it makes anyone who has the knowledge and resources build his processor without the constraints of licensing fees and closed-source design.

Core Features of RISC-V

RISC-V is a load-store architecture, meaning that data transfers between registers and memory are explicitly handled by load and store instructions. This design principle simplifies the instruction set, making it easier to implement and optimize. RISC-V also employs a fixed-length instruction format, ensuring consistent instruction decoding and execution. Additionally, RISC-V's modular design allows for the incorporation of optional extensions, providing flexibility to tailor the architecture to specific application requirements.

The Reasons why I choose RISC-v:

1-Flexibility

The design of RISC-v allows flexibility. the flexibility gives us the freedom to customize and use the total ability to build a processor that has features to fit the application of the processor.

2-Open-source

Open-source means it's freely available for use and modification by anyone. the open source allows us to work in a collaborative development environment to enable rapid development.

3-Performance

For a long time, Arm has been the dominant player in performance. But the RISC-v can compete with Arm in performance, specifically, Risc-v is open-source.

4-Power-efficiency and power consumption

The most important things to make a processor fit any purpose are power-effective and power consumption. If you use it for robots and systems that are powered by batteries, the power consumption will play a vital role in the design. Another important term in design is power efficiency because to it refers the ability to do tasks with the smallest amount of power.

5-Rapidly grown and adaption:

In previous lines, I mentioned many reasons why the RISC-v is growing rapidly. That's the reason gives us the freedom to develop our processor in the future and we'll find a large number of people that use the RISC-v Architecture that helps in rapid growth. Flexibility offers the adoption or the capability to use many different devices and systems.

Concussion :

In conclusion, The world of processors is developing rapidly. before decades we used X86 after that we used Arm. Now, the competition between Arm and RISC-v is very strong. every processor offers advantages As a student studying Computer Architecture, the RISC-v offers me, as an open source, many features that I want to build the new processors: flexibility, performance, power efficiency, power consumption, and rapid growth.

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