**RISC-V Roadshow Workshop Report**

**By:- B Aadarsh Kumar**

**Introduction**

On 13th of December, 2024, I had the incredible opportunity to participate in the *RISC-V Roadshow Workshop*, an event that brought together technology enthusiasts, students, and professionals to explore the open-source world of RISC-V architecture. Organized to promote awareness and hands-on experience with modern chip design, this workshop turned out to be an enlightening experience that introduced me to the future of computing and programming.

**About RISC-V**

RISC-V is an open-source Instruction Set Architecture (ISA) that has been gaining popularity due to its flexibility, scalability, and free-to-use nature. Unlike proprietary architectures, RISC-V allows developers, engineers, and students to customize and innovate without restrictions. It opens the door to designing processors that meet specific requirements in industries such as IoT, AI, embedded systems, and cloud computing.

**Workshop Highlights**

The workshop began with a comprehensive session explaining RISC-V and its significance in the tech world. Experts described how this architecture simplifies design processes while maintaining high performance going through explaining every part of a chip and its functioning. I learned about the core principles behind RISC-V—Reduced Instruction Set Computing—and how it contrasts with traditional Complex Instruction Set Computing (CISC).

What stood out to me was the hands-on session where we explored the tools and technologies needed to design a chip based on the RISC-V architecture. The facilitators introduced us to open-source tools like **QEMU** and **Xilinx**, which helped us simulate and analyze the performance of our designs. These sessions were challenging and sometimes very lengthy but deeply rewarding.

**Designing My First Chip:-** The most exciting part of the workshop was when we were tasked with designing our own basic RISC-V chip! At first, the idea of designing a chip seemed intimidating, but the mentors broke down the process step by step. Using the open-source tools, I:

1. Studied the basic RISC-V instruction set.
2. Learned to write and implement a simple to complex assembly codes.
3. Designed and simulated a functional processor module.

Through this process, I realized the beauty of open-source technology—the ability to freely experiment, collaborate, and innovate. My final design was simple but functional, marking my first step into the world of chip architecture.

**Key Takeaways**

The RISC-V Roadshow Workshop provided me with both theoretical knowledge and practical skills. Some key lessons I learned include:

* The importance of open-source hardware in driving technological innovation.
* How RISC-V enables flexible, cost-effective chip design solutions for industries and academia.
* The power of collaboration and experimentation when working on cutting-edge technology.

Additionally, the workshop enhanced my problem-solving skills and boosted my confidence in working with hardware design tools. I realized that chip design, once seen as a complex domain, is now accessible to students like me, thanks to RISC-V.

**Conclusion**

Participating in the RISC-V Roadshow Workshop was an unforgettable experience. It not only introduced me to the potential of open-source hardware but also allowed me to design my very first chip. This event has inspired me to explore chip architecture further and contribute to the world of open hardware in the future.

As technology evolves, RISC-V stands as a beacon of innovation, and I am grateful to have been part of this journey. I look forward to applying the skills I learned in this workshop to future projects and pushing the boundaries of what I can achieve in the world of computing and programming.