Angstromers Engineering Solutions Pvt. Ltd.
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RISC-V and Applications Development

Introduction:

RISC-V is an open-source instruction set architecture (ISA) that is gaining traction in academia and industry due to its flexibility and scalability. This course provides a comprehensive understanding of RISC-V architecture and its applications, with hands-on experience in programming, optimization, and complex application development. Participants will gain the necessary skills to work on advanced-level programming, develop novel applications, and contribute to the growing RISC-V ecosystem.

Total duration: 100 Hours (60 hours contact sessions and 40 hours self-learning)

No. of days (contact hours): 10 days with 6 hours per day

Course Objectives:

- Provide a deep understanding of RISC-V architecture and its components
- Train participants in assembly-level and high-level programming for RISC-V
- Enable hands-on experience with tools such as SPIKE and PULP Simulator
- Develop and optimize real-world applications using RISC-V
- Foster innovation through project-based learning, hackathons, and research
- Prepare engineers for higher-level certifications and industrial applications

Course Deliverables:

- 60 hours of contact sessions
- 40 hours of Self Learning
- Project work execution and mentorship
- Hackathon participation and evaluation.
- Certification upon successful completion.

Course Outcomes: By the end of this course, participants will:

- Develop 10 projects/prototypes and technical papers.
- Create 5 novel and patentable applications.

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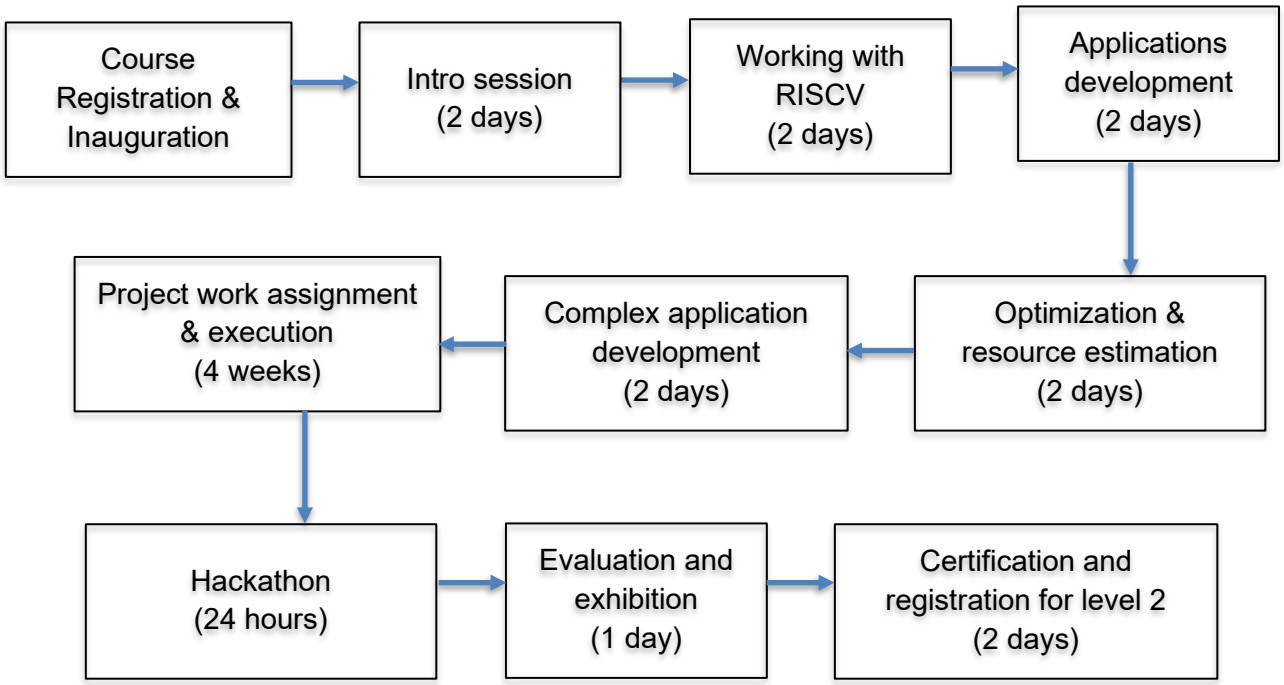
- Generate 10 innovative solutions as outcomes of the hackathon.
- Be proficient in advanced programming and application development with RISC-V.

Process flow:

In this program, students will gain hands-on expertise with the RISC-V platform, working with both software and hardware modules. They will develop applications ranging from simple to complex and demonstrate their functionality. The program provides opportunities for students to participate in a hackathon and engage in industry-relevant projects. Additionally, students will work on innovative projects that may lead to technical papers, prototypes, patents, and functional models.



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Program Details

Topics
1.RISC-V Introduction **2.Introduction to GitHub - Repository under Angstromers (Org.)** **3.Installations:** Ubuntu SPIKE **3.Introduction to the program**
Simulate 4 programs: -Fibonacci -Palindrome -binary search -Bubble sort **Using RIPES**
RISC-V single cycle architecture -Assembly level programming: Operations(+,-,*./)
Simulate 4 programs: -Fibonacci -Palindrome -binary search -Bubble sort **Using SPIKE**
RISC-V architecture
RISC-V ISA
Multi-Cycle architecture and Pipeline with PULP simulator
FSMs and recursive methods
DFT **FFT**
Cholesky decomposition **Matrix multiplication** **&** **Capstone project**

----------Thank you----------