Training: The Linux Foundation
RVFA RISC-V Foundational Associate

THE LINUX FOUNDATION AUTHORIZED TRAINING PARTNER

TRAINING GOALS:

An RVFA will have demonstrated skills and knowledge relating to the RISC-V ISA (Instruction Set Architecture), including basic architecture and terminology. In addition, an RVFA candidate understands Embedded Hardware Design, including Internet of Things (IoT), industrial, medical, and automotive applications.

RVFA certificate holders have demonstrated the ability to write, debug, optimize, and compile code in RISC-V Assembly Language, as well as the ability to use toolchains (GCC, LLVM) and understand RISC-V calling conventions.

A candidate looking to begin preparations for the RVFA certification should already have familiarity with Git, High-Level Programming Languages (C), Debuggers (GDB), and System Architecture.

An RVFA candidate will have programming or design experience and may have completed computer science, software engineering, computer engineering, or electrical engineering coursework.

Who Is It For

The (RVFA) certification is intended for those interested in an entry-level RISC-V role or transitioning from another architecture. The certification is ideal for those pursuing a career in roles such as Embedded Engineer, RTL Design Engineer, Design Verification Engineer, Software Developer (specifically Device Driver, Kernel, and Toolchain), or Documentation Engineer.

Domains & Competencies

- RISC-V Overview 10%
  - History of RISC-V: The Free and Open ISA
  - RISC-V International
  - RISC-V Documentation
  - Contribute to RISC-V
- RISC-V Instruction Set Architecture 35%
  - RV32I and RV64I
  - Understand Instruction Formats: branching, accessing memory, and accessing data structures
  - Understand the modularity of RISC-V as an ISA: core ratified (M, C, F, D, A) and other

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extensions
    - Understand Privilege Modes, system calls, CSRs, exceptions, and interrupt handling
    - Understand memory model, cache management, and virtual memory management

- Assembly Language for RISC-V 25%
    - Understand RISC-V specific assembly language syntax and features, including CSR access
    - Write and debug RISC-V assembly code
    - Assess performance of assembly code
    - Convert high-level code to assembly code

- High Level Languages for RISC-V: C Programming 15%
    - Understand RISC-V tools including compilers, debuggers, simulators, performance tools, OSes, and SDKs
    - Understand calling conventions (ABIs), the stack, and disassembly
    - Understand inline assembly

- RISC-V Operating Systems & Tools 15%
    - Fundamentals of Operating Systems including implementing basic OS functionality in RISC-V ASM
    - Understanding basic use and functionality of firmware for RISC-V platforms
    - Understanding microcontrollers versus application processors
    - Running RISC-V Applications in a General Purpose OS

Exam Details & Resources

This exam is an online, proctored, multiple-choice exam.

- Linux Foundation Global Certification & Confidentiality Agreement
- Candidate Handbook
- RVFA Important Instructions
- RVFA FAQ

Difficulty level

CERTIFICATE:

After passing the exam, candidates will receive the RISC-V Foundational Associate (RVFA) certificate in pdf form.

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ADDITIONAL INFORMATION:

Exam Includes

- Online
- Certification Valid for 3 Years
- Includes 12 Month Exam Eligibility
- One Retake
- Multiple Choice Exam
- Duration of Exam 90 minutes

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