Instructions

Objective

In this lab you will write a RISCV assembly language program that reads an non-negative input value from the console, computes its square root, and prints the result to the console.

The input value is assumed to be scaled by 2^14 = 16384 and rounded down. For example, an input of 3.75 will be entered as floor(3.75 * 16384) = 61440.

Internally your code will treat the input value as a fixed-point value with 14 fractional bits.

The output value will also be assumed to be scaled by 2^14 = 16384. For example, the corresponding output for an input of 61,440 (3.75) will be 31,727 (16384 * 1.93649).

Your code should run in the RARS simulator.

Deliverables

- Submit your RISCV program as a single ASCII text file with name “sqrt.asm”.
- Each group only needs to submit once via either partner.

Rubric

- (A) 10 points – reads input value.
- (B) 10 points – squares and shifts guess.
- (C) 20 points – compares guess with input value with outcomes to <, >, and ==.
- (D) 20 points – adds or subtracts guess.
- (E) 10 points – shifts step.
- (F) 20 points – loops until step becomes 0.
- (G) 10 points – prints final guess.

Maximum score: 100 points.

