

Moon-1

Data Path

CS31

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Overview

Moon-1 (II)

- Single Cycle Implementation of Moon
- Data-Path

Single Cycle Implementation

Key Idea

- Each instruction executes in a single clock cycle

Advantages

- Simplicity of the data-path
- Simplicity of the control

Inconveniences

- See later

Moon-1

Basic Cycle of Execution

- Fetch and Decode
- Execute

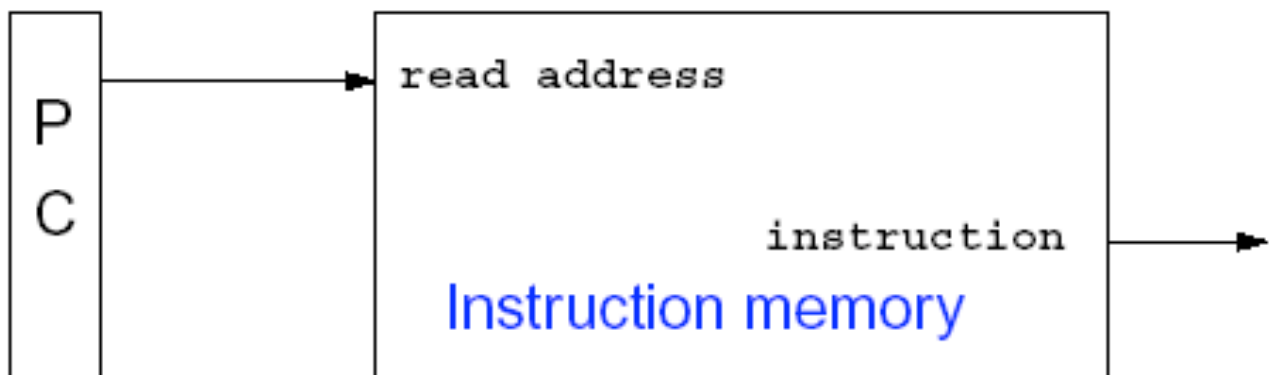
Fetch

Where is the program?

- Instruction Memory (ROM)

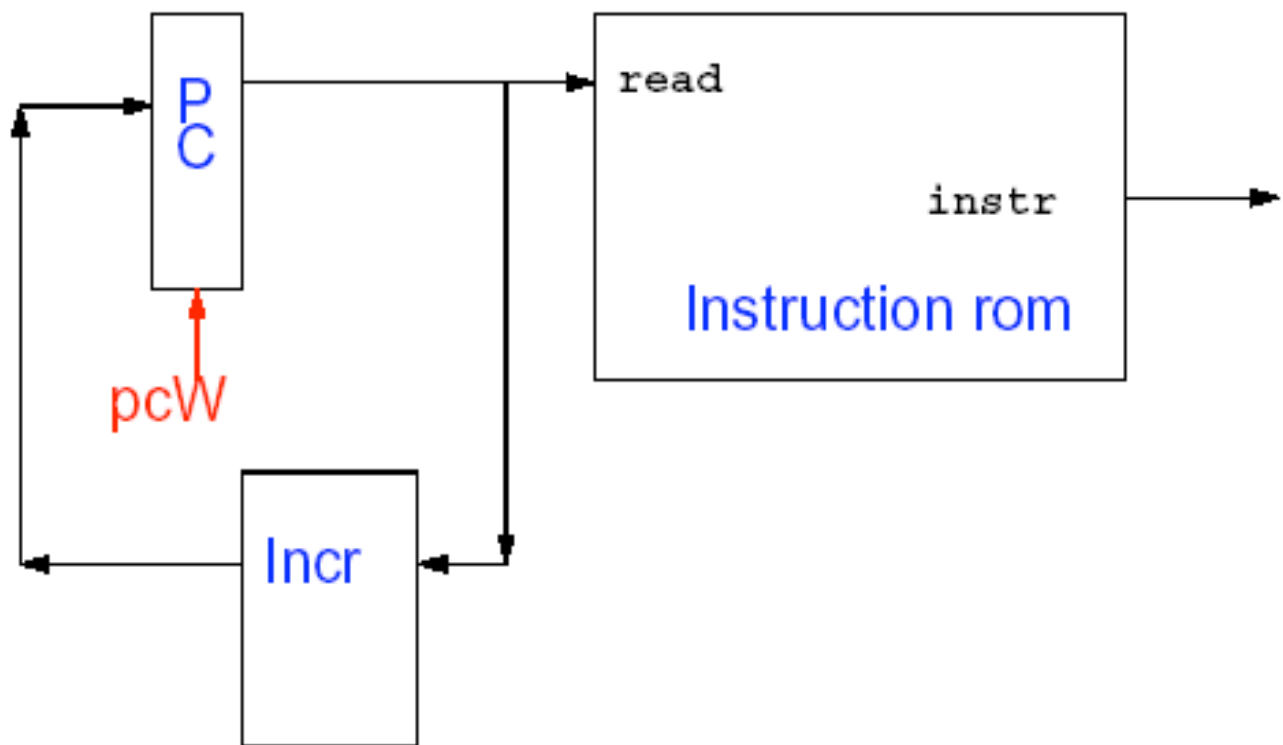
Where to find the next instruction?

- Special register: PC (program counter)

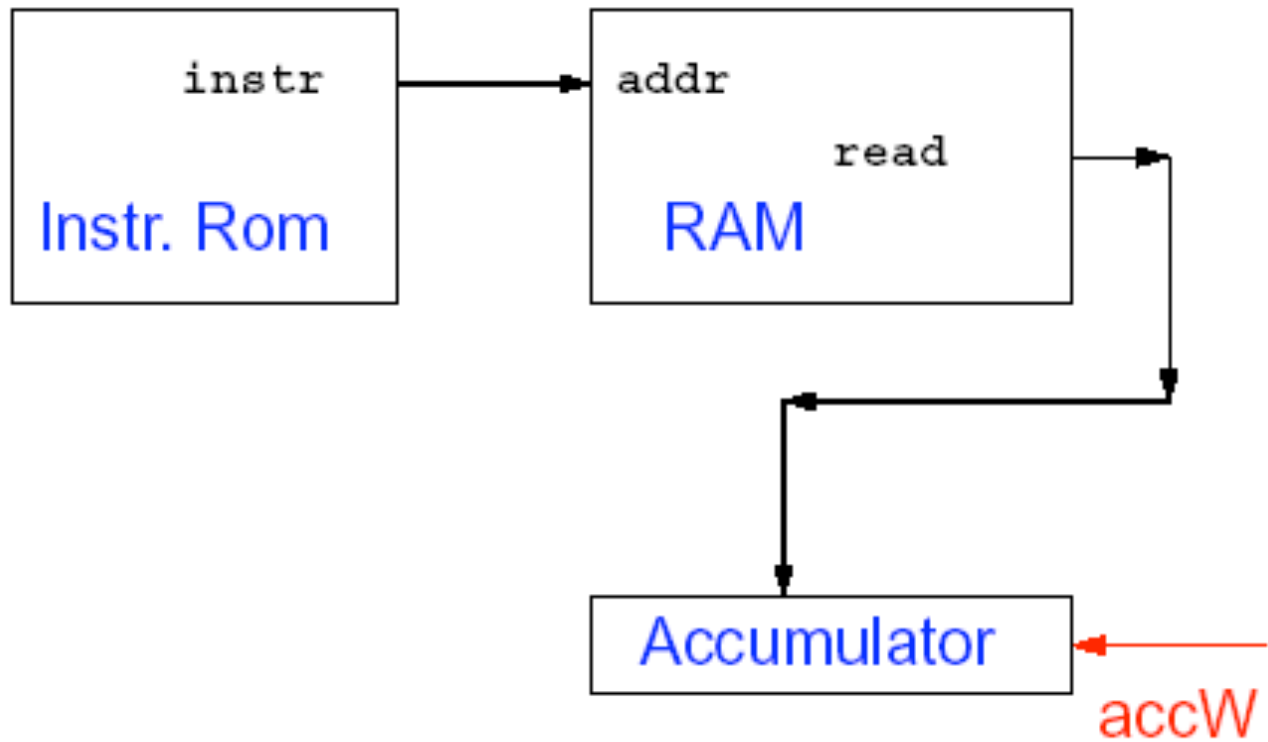


Preparing for next instruction

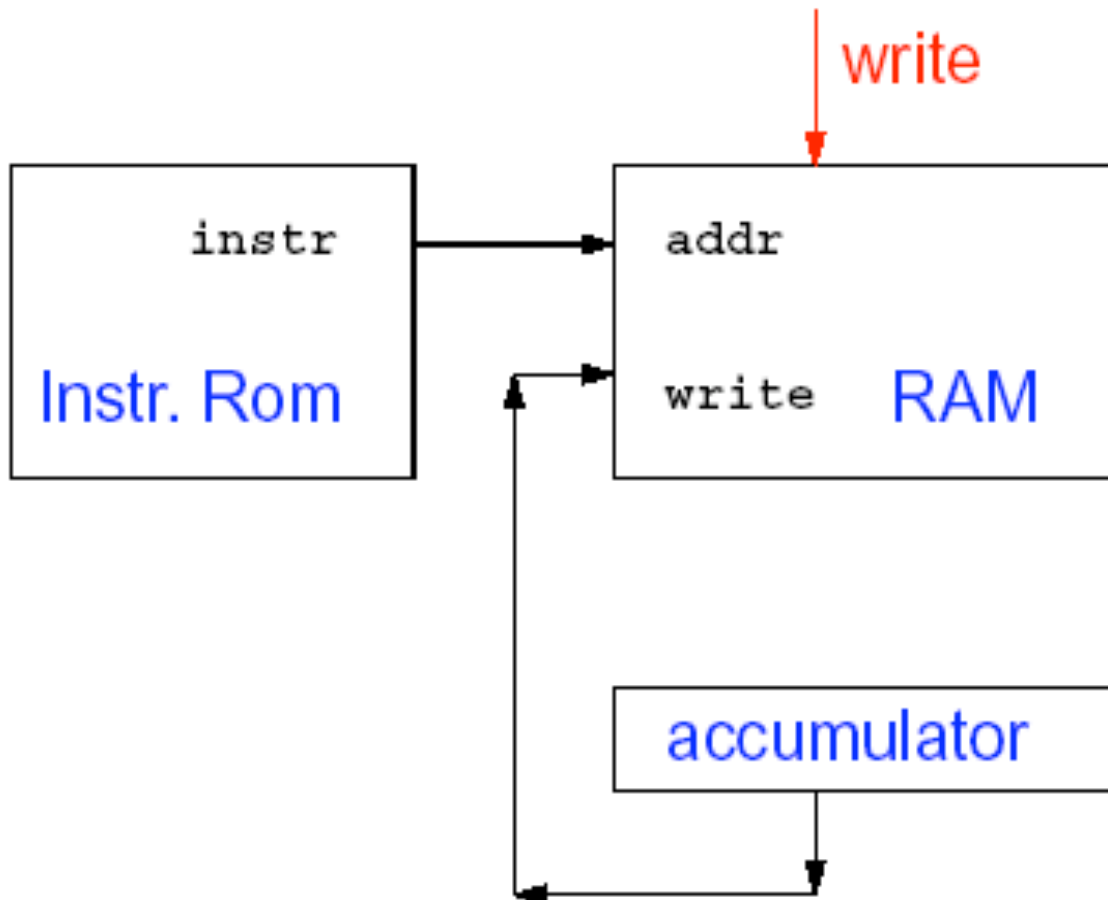
Need to increment the PC by one



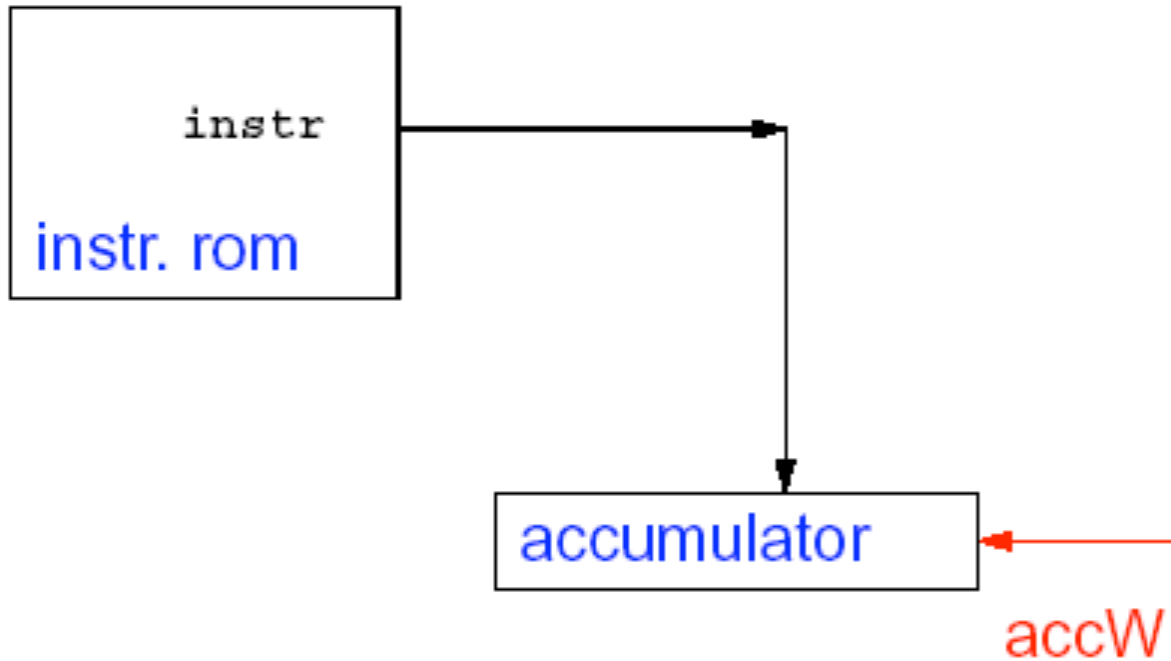
Load Instruction



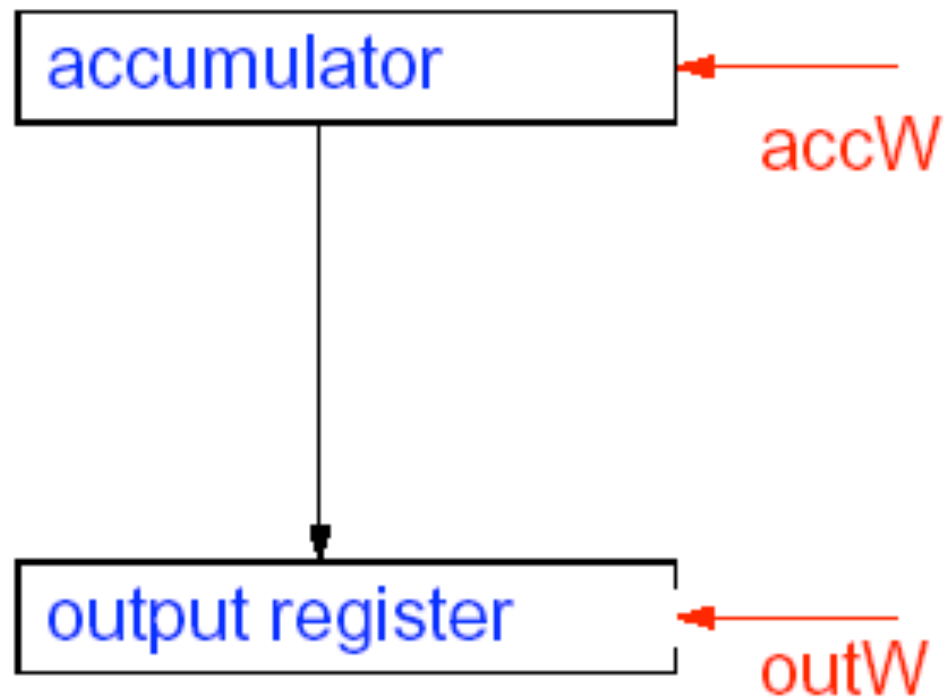
Store Instruction



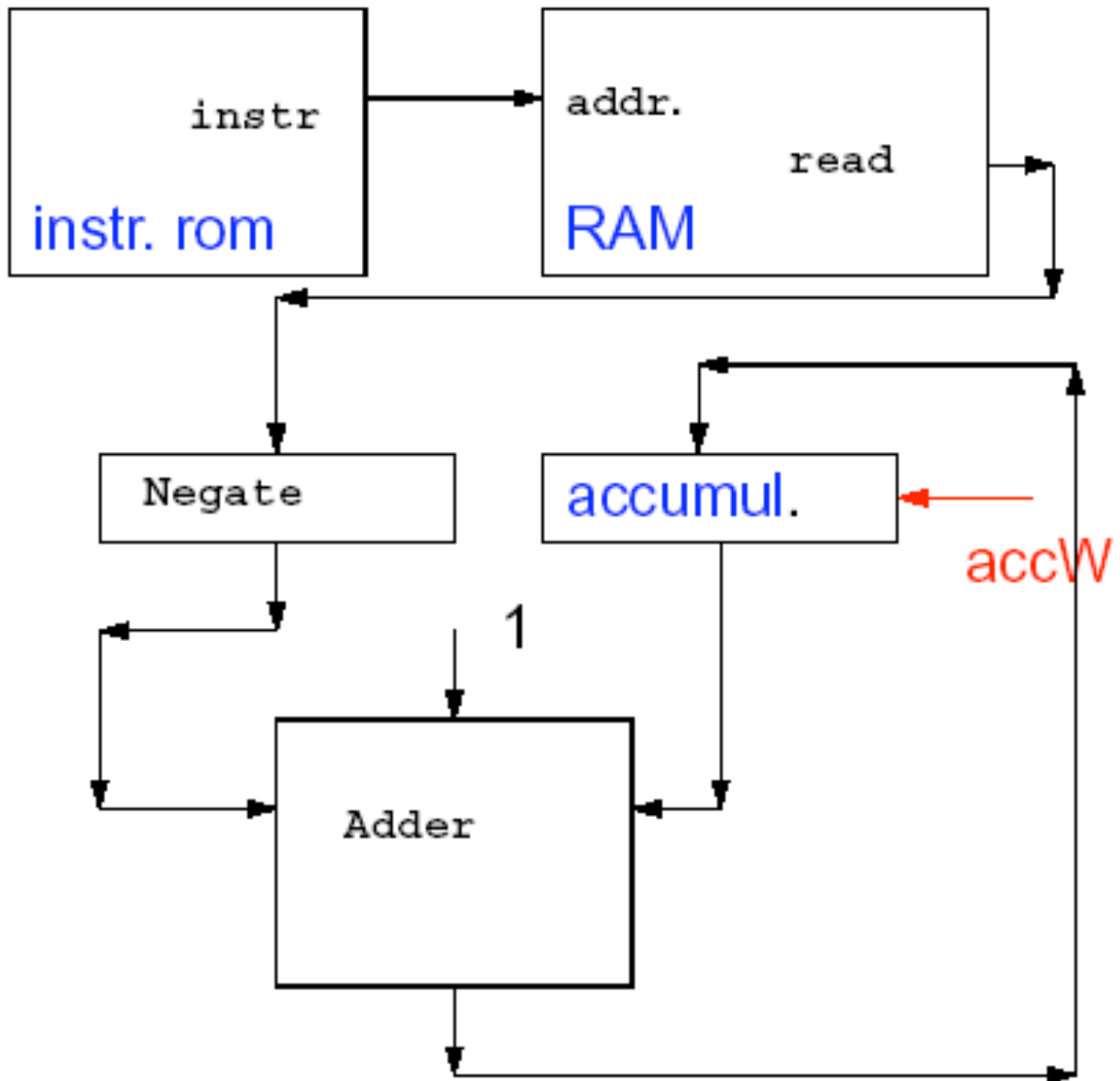
LIM Instruction



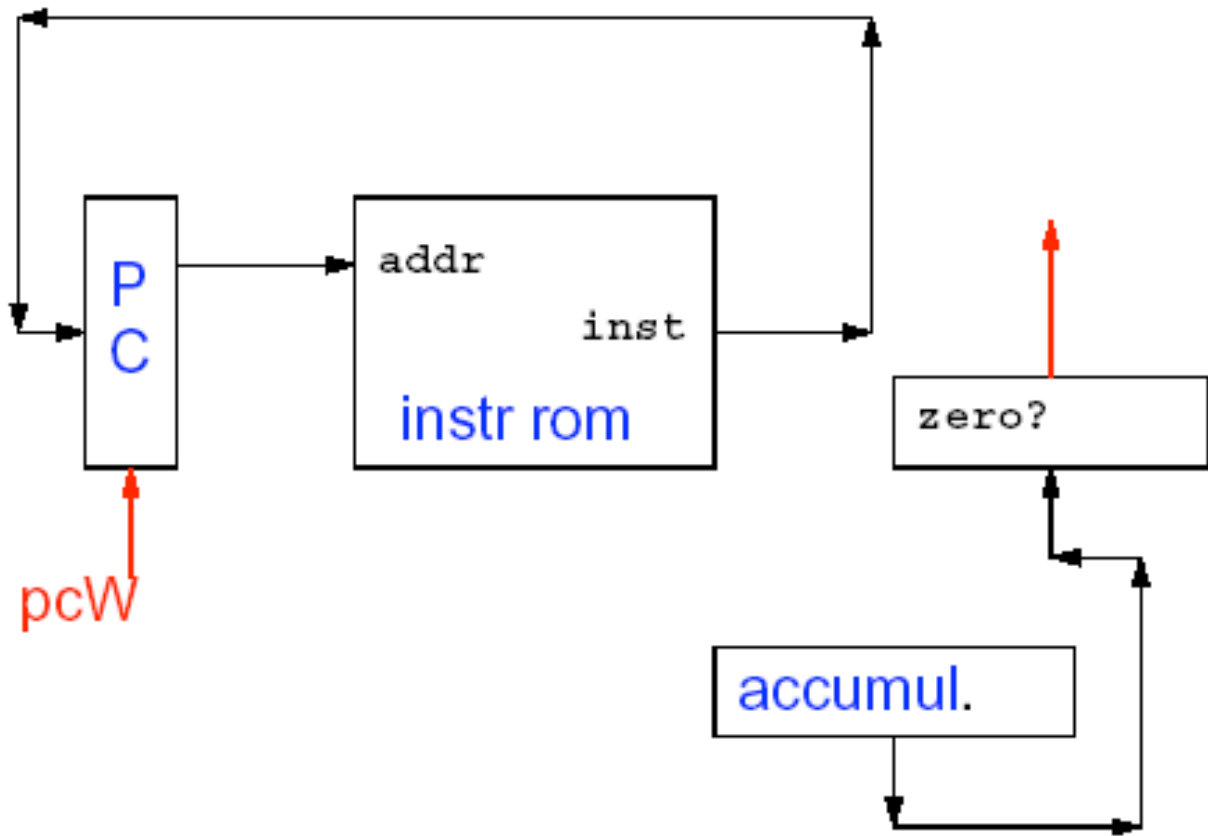
SOU Instruction



SUB Instruction



Jump Instruction



Give Piece a chance

How to put the pieces together?

- Need some multiplexers

PC

- all instructions but jump / jump

Accumulator

- LIM / SUB / LAD

