

# Moon-1 (Control)

*CSCI-0310*

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# Overview

## Moon-1 (III)

- Single Cycle Implementation of Moon
- Control

# Moon-1

## What needs to be controlled

- PC (multiplexer)
- RAM (write signal)
- Acc (write signal + multiplexers)
- Output (write signal)
- Jump (multiplexer of PC)

## How to control them?

- The opcode alone decides how to set them up

## How to implement this control?

- ROM
- Input: the opcodes
- Output: the control signals

# Moon-1

## The control signals

jump: true for JZ

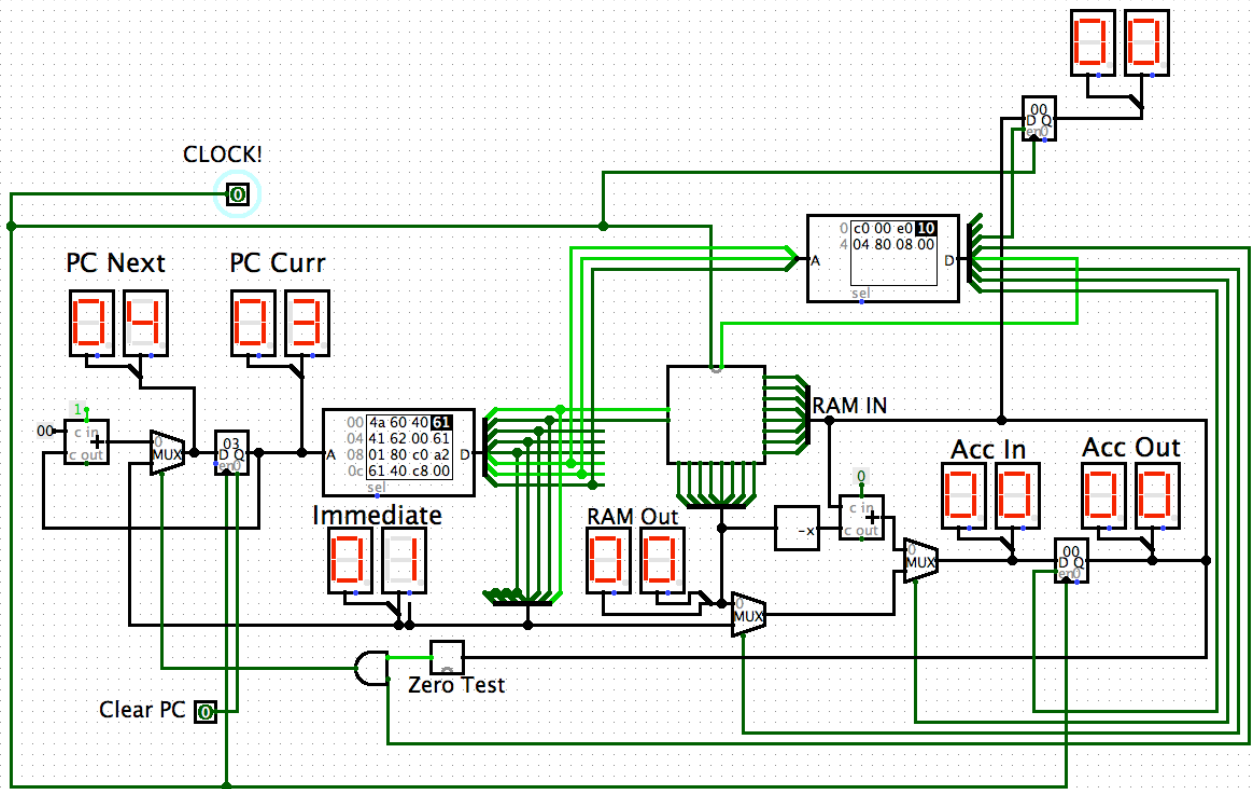
immediate: true for LIM

mem: true for LAD

ramWrite: true to write the RAM

outWrite: true to write the output

# Moon-1



# Control

	accW	muxA	muxI	ramW	jump	outW
LAD	1	1	0	0	0	0
LIM	1	1	1	0	0	0
SAD	0	x(0)	x(0)	1	0	0
SOU	0	x(0)	x(0)	0	0	1
SUB	1	0	x(0)	0	0	0
JZ	0	x(0)	x(0)	0	1	0

In the above notation  $x(0)$  means that we don't care about the value, but it happens to be 0 by default in the Moon-1 circuit

# Details

Transform table into hex

	accW	muxA	muxI	ramW	jump	outW
LAD	1	1	0	0	0	0
LIM	1	1	1	0	0	0
SAD	0	x(0)	x(0)	1	0	0
SOU	0	x(0)	x(0)	0	0	1
SUB	1	0	x(0)	0	0	0
JZ	0	x(0)	x(0)	0	1	0

The table is filled with

```
1100 0000 (last 2 zeros to get 8 bits)
0000 0000
0111 0000
0001 0000
0000 0100
1000 0000
0010 0100
```

```
C000E0100480
```