CSCI 210: Computer Architecture
Lecture 38: Last Class!

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Slides from Cynthia Taylor

Announcements

- Cache Lab (final project)

- Course Evals!
  - Extra credit for 90% response rate
  - Currently at 59%

- Office Hours today 13:30-14:30
 - Zoom only

Lab 8: Cache Simulator

- Take in a trace of load/stores from a real program

- Simulate running the program on a given cache

- Calculate how well a given cache would perform for that trace

What do you need to do?

- Create data structures that emulate a cache

- For each instruction, find where it would go in the cache, check if it's already there

- Calculate number of miss penalty cycles, load misses, store misses, instructions, etc

Cache Questions?

Previous Conceptions of How Computers Work

2 + 4

6
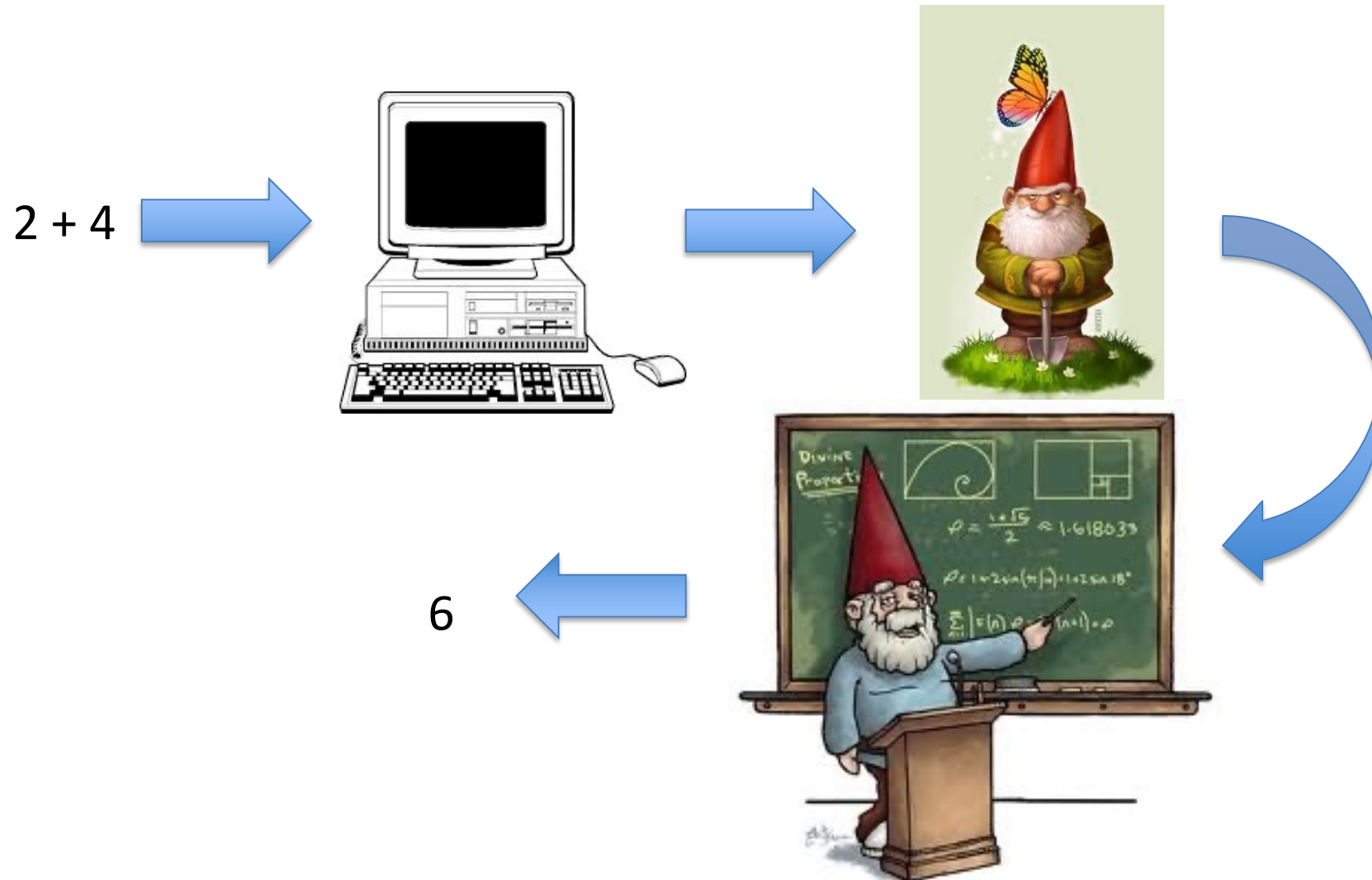
Actually Assembly

High Level:

```
x = 2 + 4
```

Assembly (assuming we have a mem address for x in $s0):

```
li      $t1, 2
addi    $t1, $t1, 4
sw      $t1, 0($s0)
```

Actually Machine Instructions

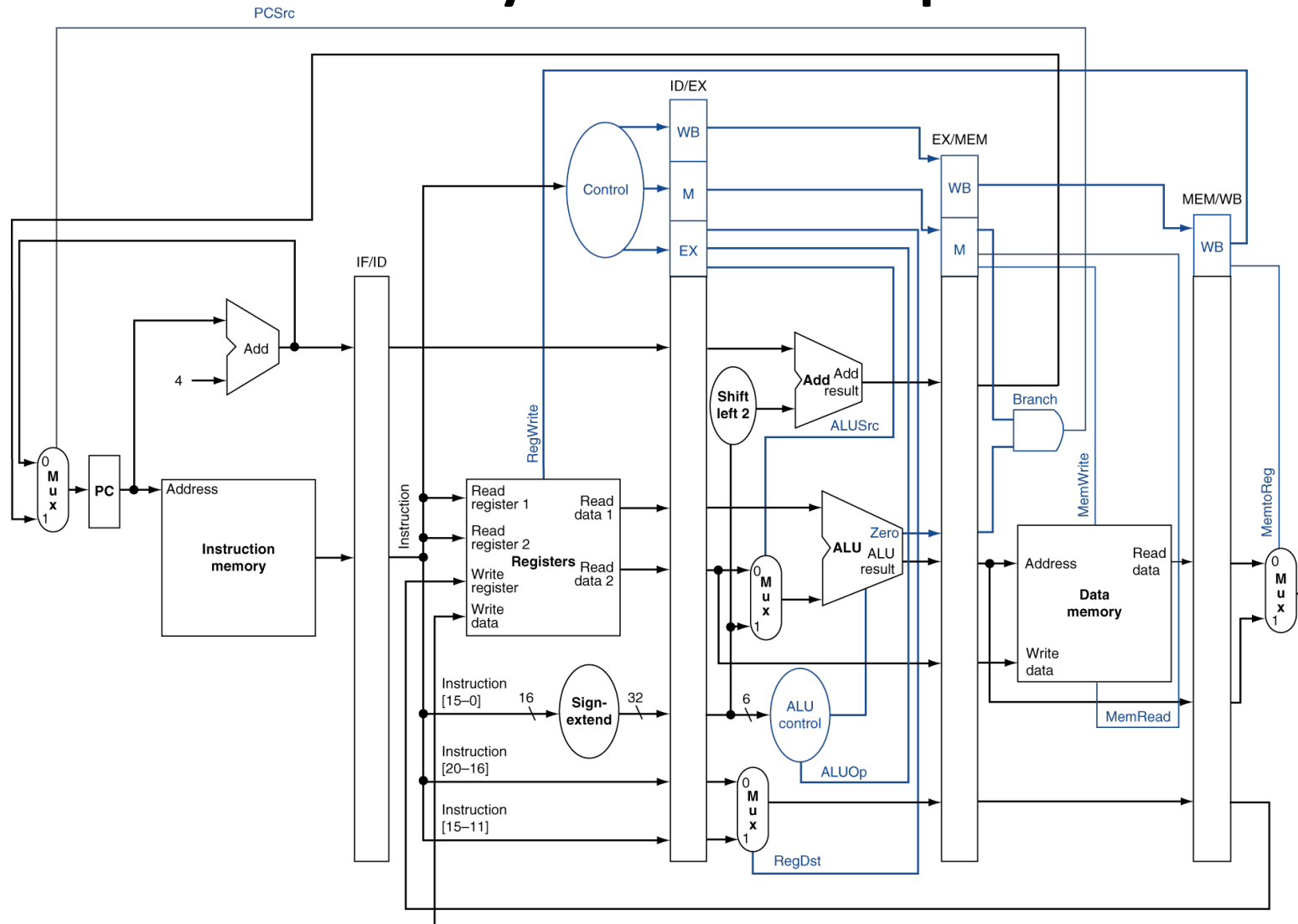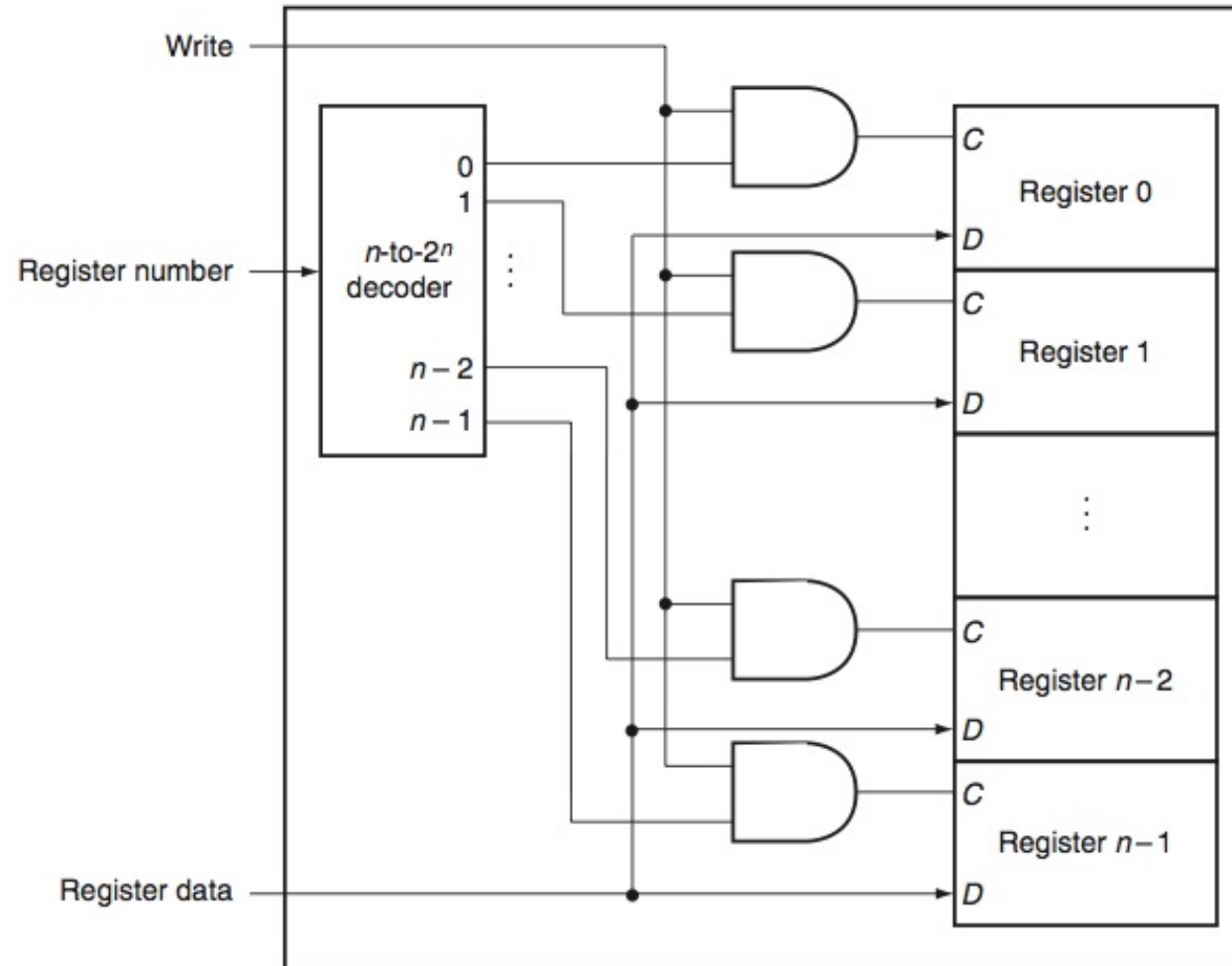`addi $t1, $t1 5`

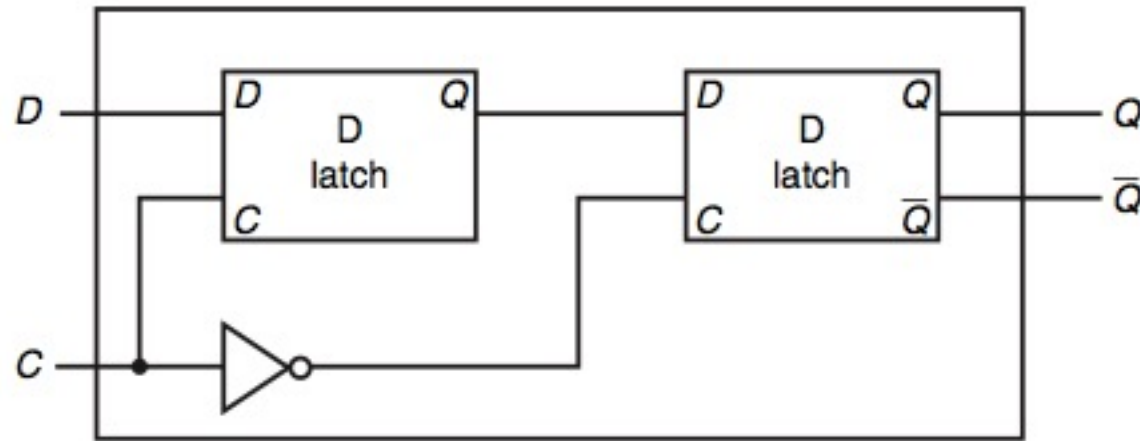| op	rs	rt	constant or address
6 bits	5 bits	5 bits	16 bits

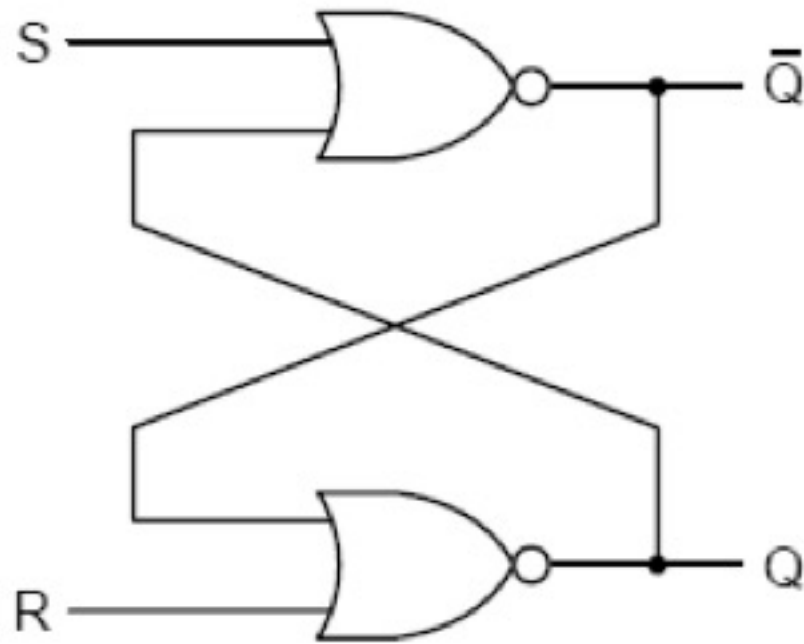0010000100101001000000000001001
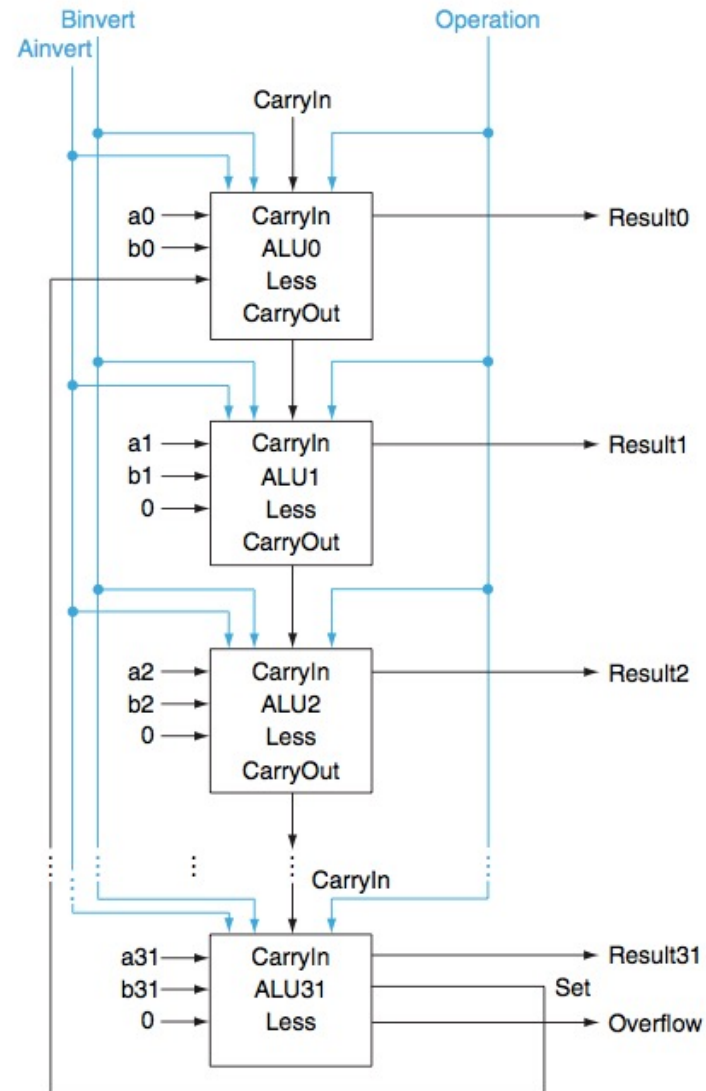
Actually The Datapath

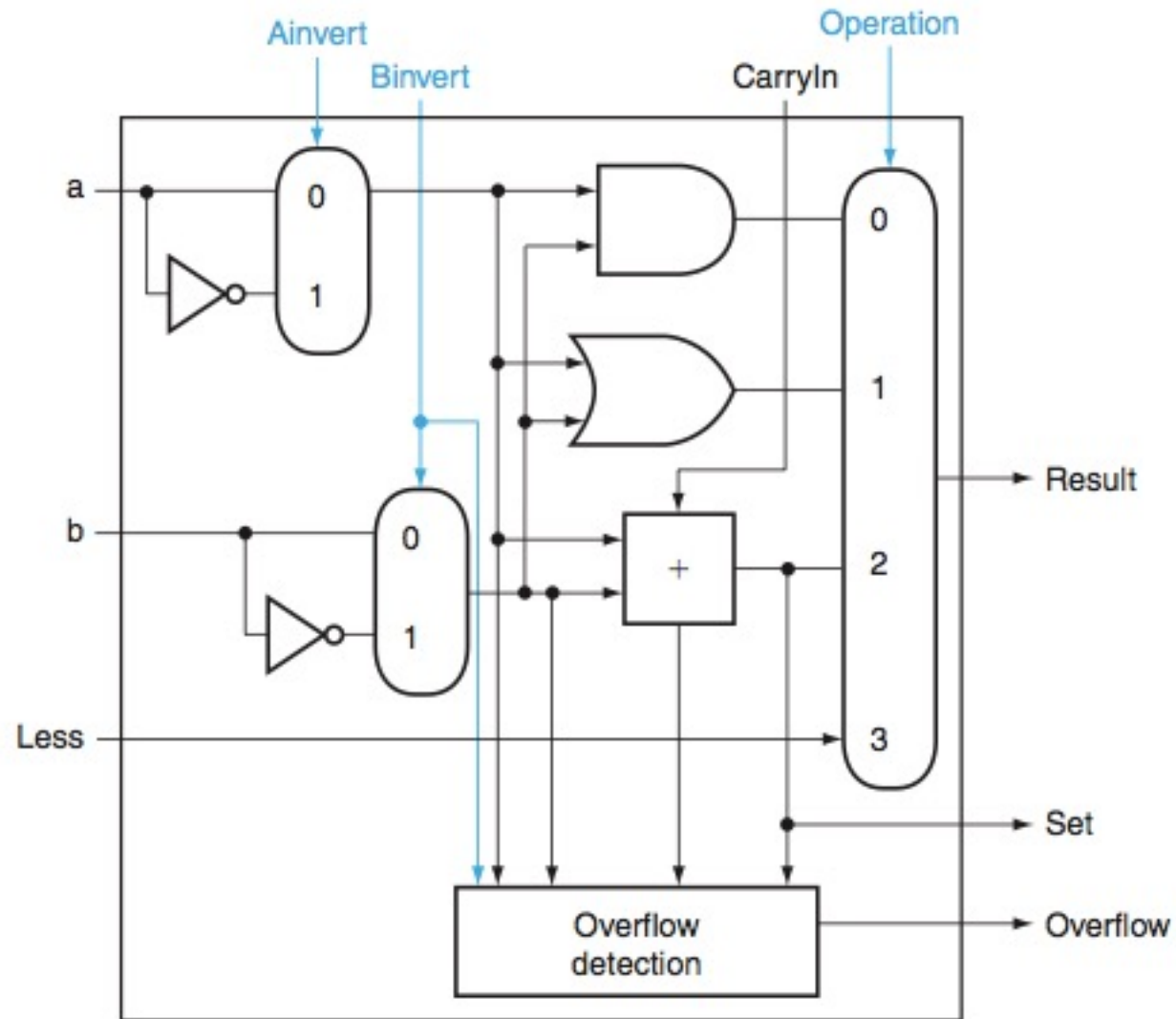# Actually Registers

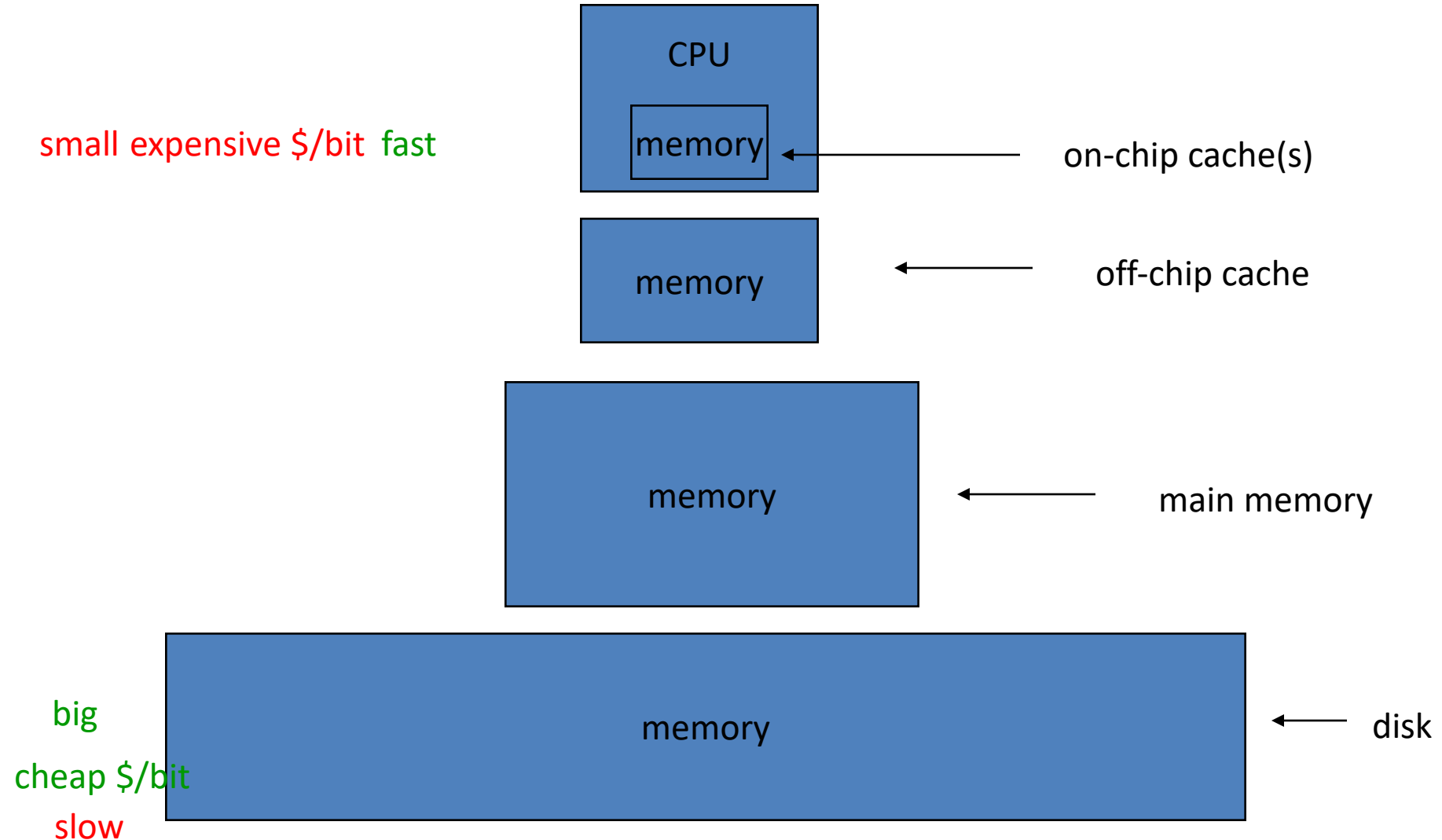# Actually Flip-flops

Actually Latches
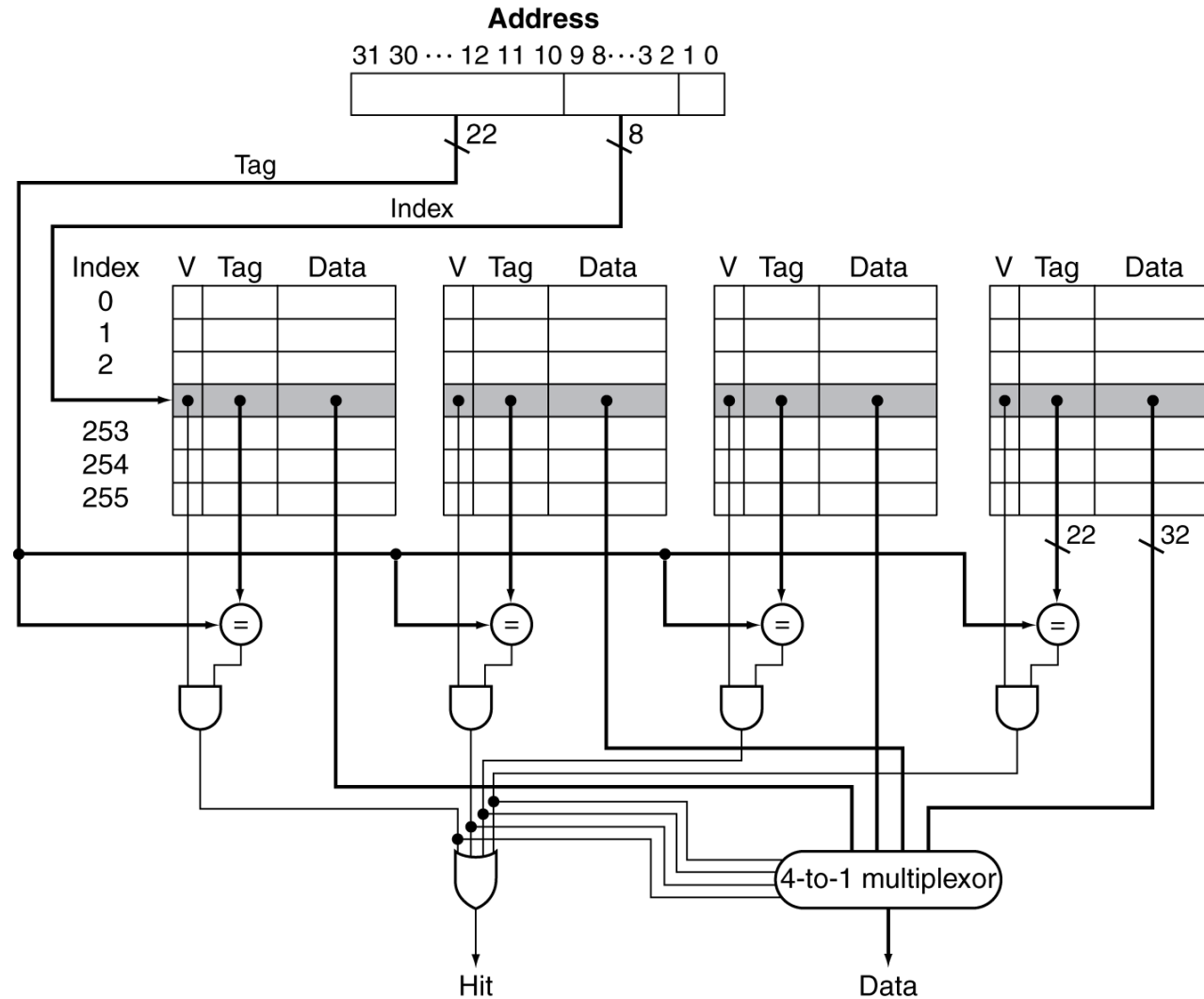
Actually the ALU

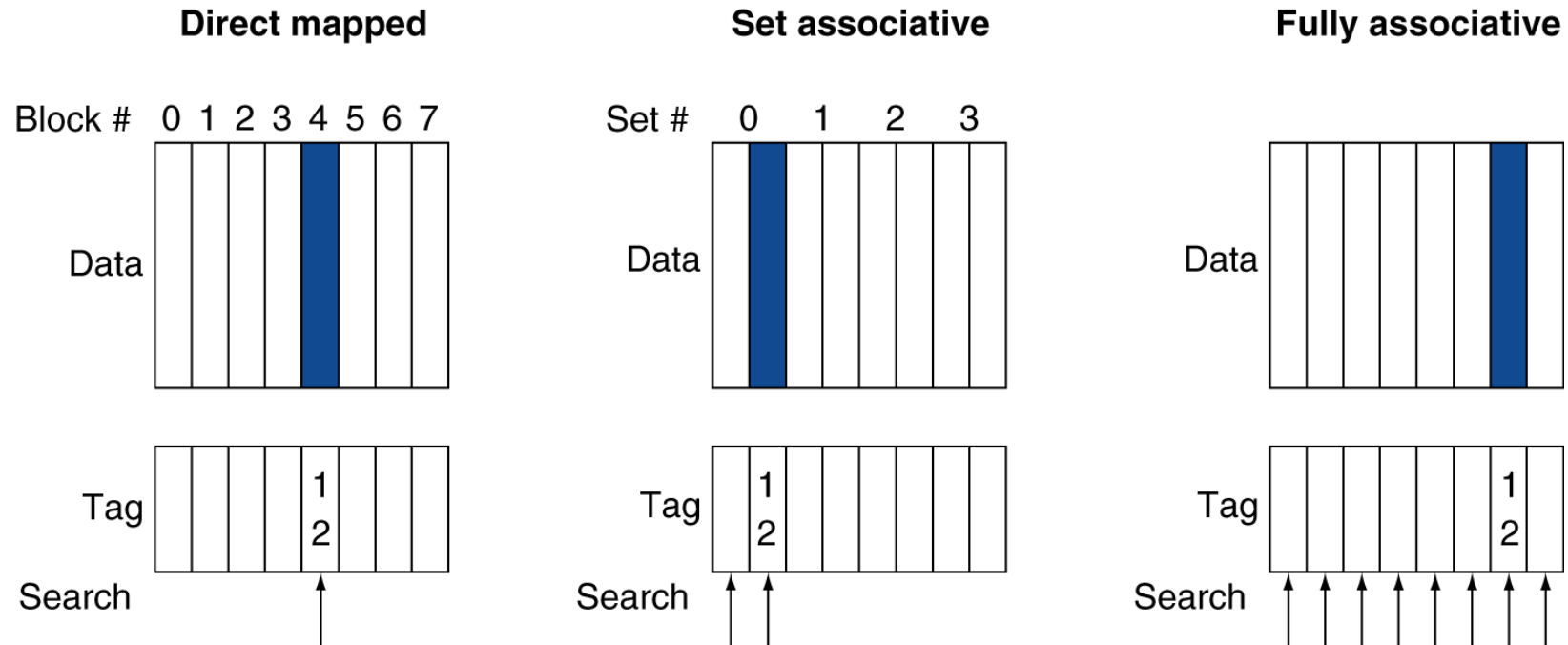# Actually the ALU

Actually Memory

Actually Caches

Actually LOTS of Caches

But wait, what about?

- Negative Numbers
- Floating Point
- All that other stuff . . .

Computers are Complicated

- But now, you know how they work. Kinda.

- I appreciate all the work you've done for this class.

- Have a great break!

- …and fill out course evals!