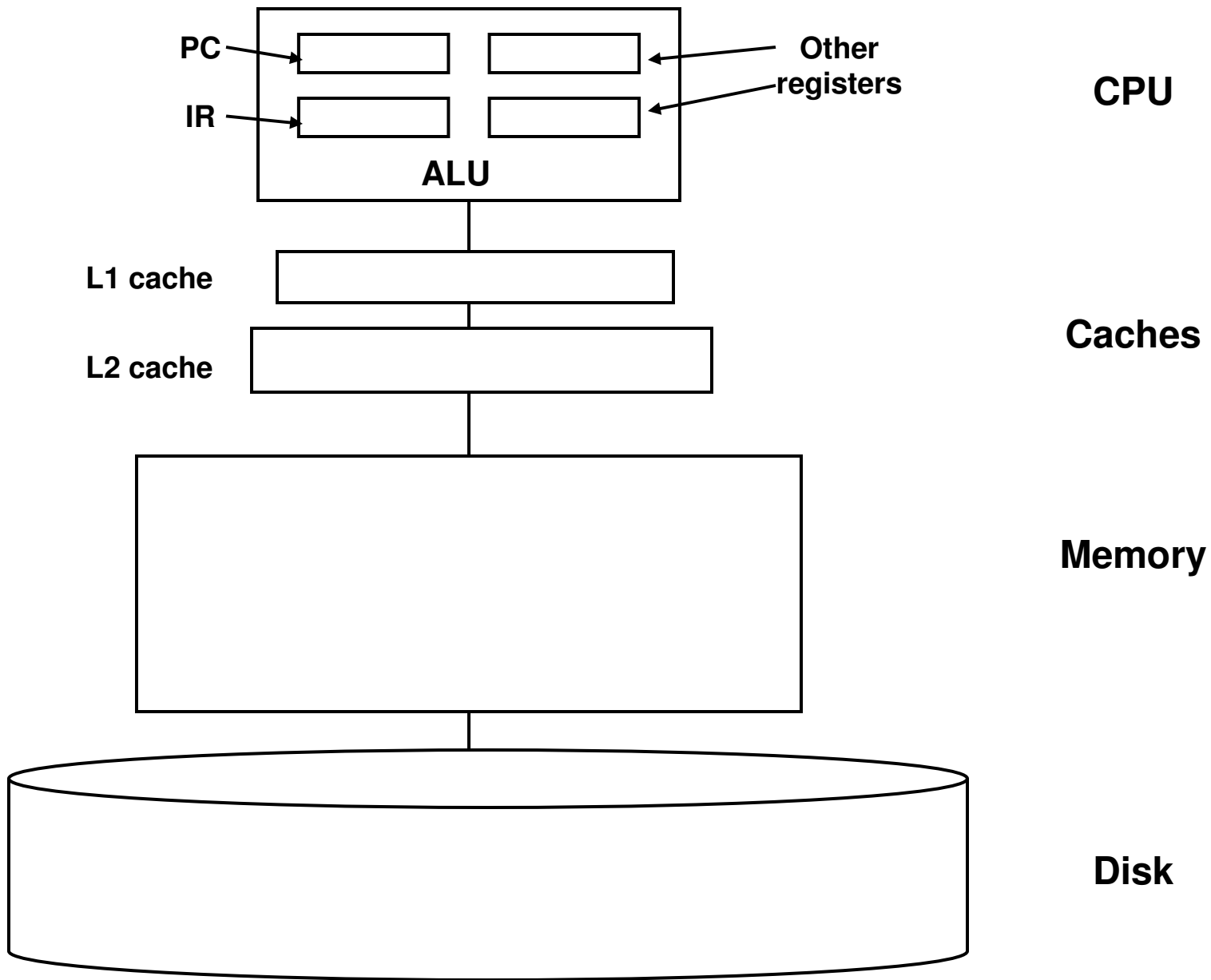


IBCM

“Itty Bitty Computing Machine” Part 1

Why learn assembly language?

- Machine designers
- Compiler writers
- Programmers
- Assembly programmers



Fetch Execute Cycle

```
while (power is on) {  
    IR := mem[PC]  
    PC := PC + 1  
    execute instruction in IR  
}
```

Note: PC = program counter
 IR = instruction register

Instructions

X86 assembly:

```
add eax, ebx  
sub ecx, 1
```

IBCM assembly:

```
load 100  
add 200  
store 300
```

The IBCM “machine”

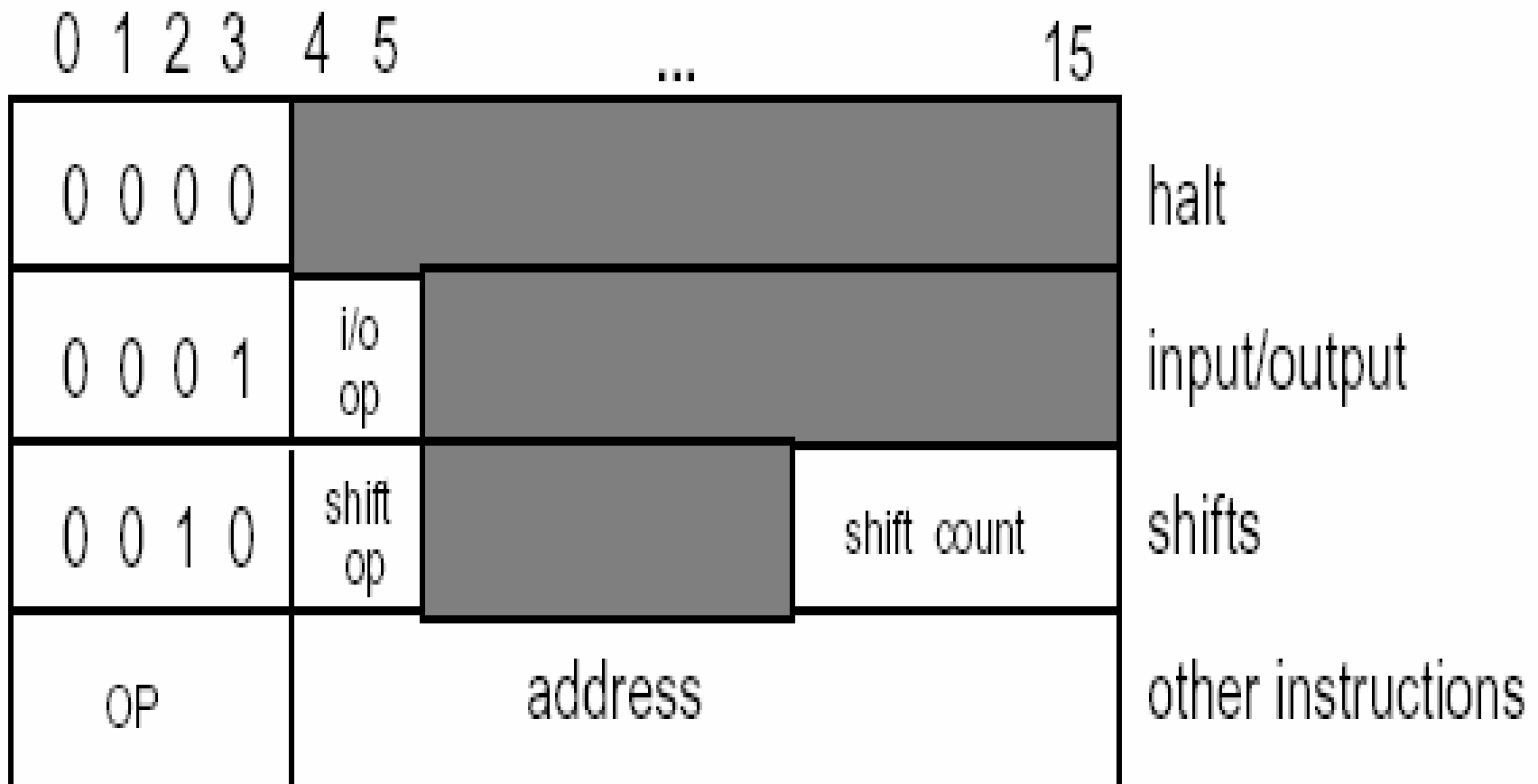
CPU:

- Single accumulator - (size = 16 bits)
- Special purpose registers: IR, PC

Memory:

- 4096 16-bit words
- 16 bits = “chunk size” or addressable unit

Instruction Format



Memory

Address

00

0000

01

000F

02

0005

03

3001

04

5002

05

0000

PC

IR

Accum

Memory

Address

00	3000
01	5000
02	6006
03	8003
04	A000
05	4000
06	F000

PC

IR

Accum

Memory

Address

00

01

02

03

04

05

06



PC



IR



Accum

