

IBCM

“Itty Bitty Computing Machine” Part 1

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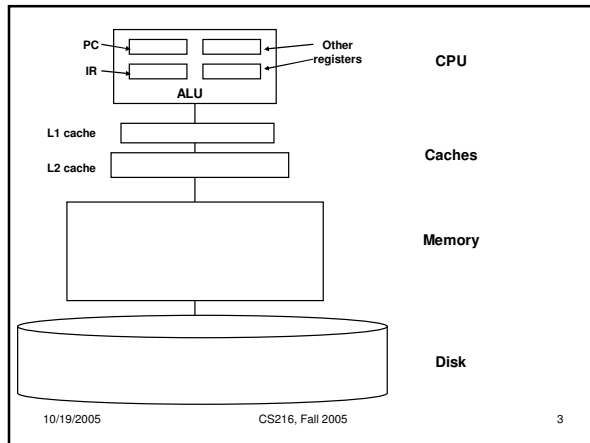
Why learn assembly language?

- Machine designers
- Compiler writers
- Programmers
- Assembly programmers

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Fetch Execute Cycle

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

Note: PC = program counter
IR = instruction register

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Instructions

X86 assembly:
`add eax, ebx`
`sub ecx, 1`

IBCM assembly:
`load 100`
`add 200`
`store 300`

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The IBCM “machine”

CPU:

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

Memory:

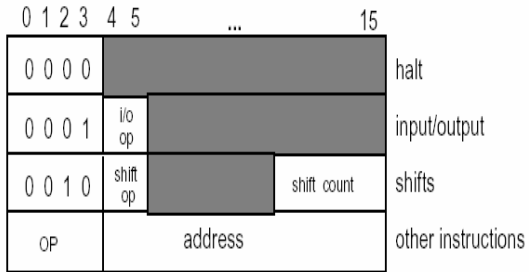
- 4096 16-bit words
- 16 bits = “chunk size” or addressable unit

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Instruction Format



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Memory

Address	
00	0000
01	000F
02	0005
03	3001
04	5002
05	0000

PC

IR

Accum

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Memory

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

PC

IR

Accum

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Memory

Address	
00	
01	
02	
03	
04	
05	
06	

PC

IR

Accum

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