

مفاهیم آدرس دهی

- آدرس دهی بلافاصل **immediate**
- آدرس دهی مستقیم **direct**
- آدرس دهی غیر مستقیم **indirect**
- آدرس موثر **effective**

مد های آدرس دهی

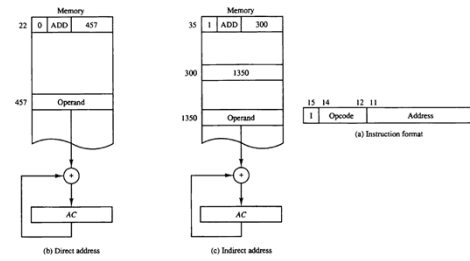


Figure 5-2 Demonstration of direct and indirect address.

ثبات ها Registers

TABLE 5-1 List of Registers for the Basic Computer

Register symbol	Number of bits	Register name	Function
<i>DR</i>	16	Data register	Holds memory operand
<i>AR</i>	12	Address register	Holds address for memory
<i>AC</i>	16	Accumulator	Processor register
<i>IR</i>	16	Instruction register	Holds instruction code
<i>PC</i>	12	Program counter	Holds address of instruction
<i>TR</i>	16	Temporary register	Holds temporary data
<i>INPR</i>	8	Input register	Holds input character
<i>OUTR</i>	8	Output register	Holds output character

ثبات ها Registers

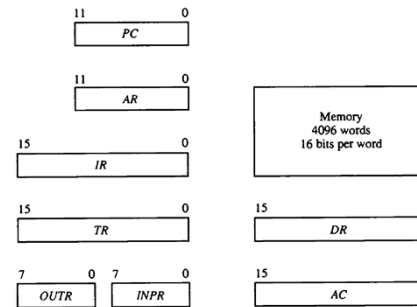
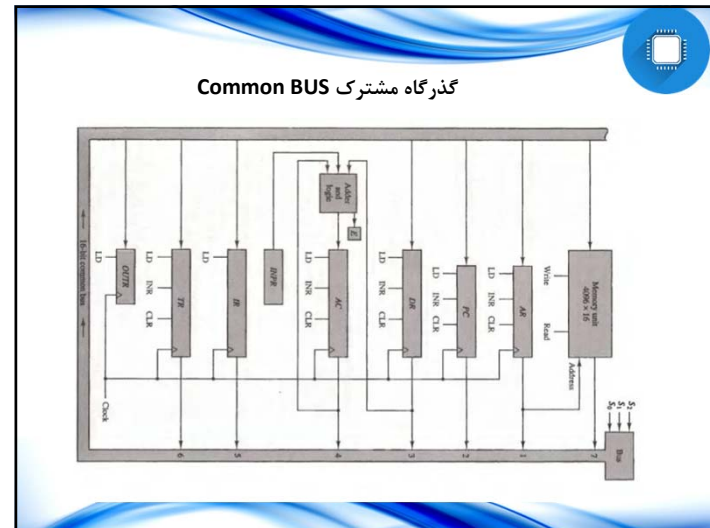
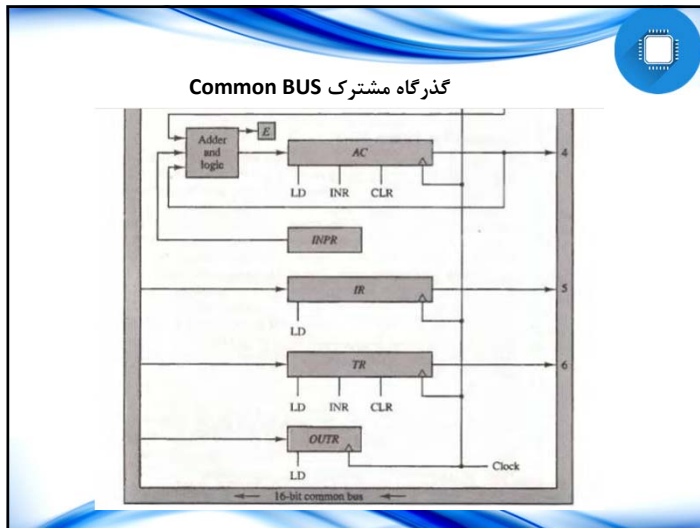
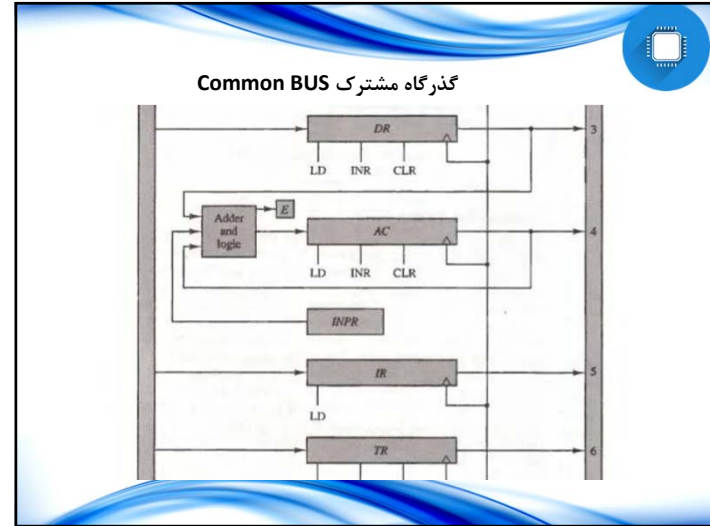
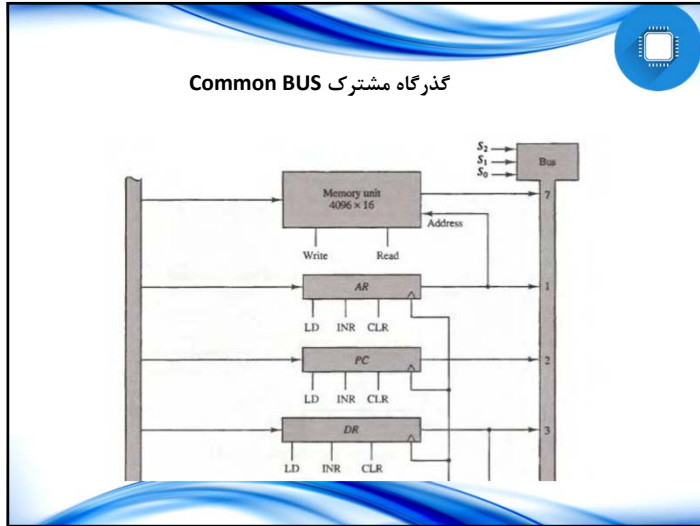
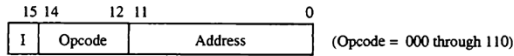


Figure 5-3 Basic computer registers and memory.

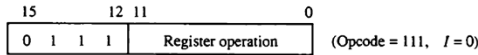


فرمت دستورات کامپیوتر پایه

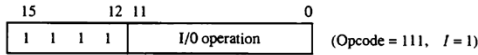
Figure 5-5 Basic computer instruction formats.



(a) Memory – reference instruction



(b) Register – reference instruction



(c) Input – output instruction

جدول دستورات کامپیوتر پایه

TABLE 5-2 Basic Computer Instructions

Symbol	Hexadecimal code		Description
	I = 0	I = 1	
AND	0xxx	8xxx	AND memory word to AC
ADD	1xxx	9xxx	Add memory word to AC
LDA	2xxx	Axxx	Load memory word to AC
STA	3xxx	Bxxx	Store content of AC in memory
BUN	4xxx	Cxxx	Branch unconditionally
BSA	5xxx	Dxxx	Branch and save return address
ISZ	6xxx	Exxx	Increment and skip if zero

جدول دستورات کامپیوتر پایه

CLA	7800	Clear AC
CLE	7400	Clear E
CMA	7200	Complement AC
CME	7100	Complement E
CIR	7080	Circulate right AC and E
CIL	7040	Circulate left AC and E
INC	7020	Increment AC
SPA	7010	Skip next instruction if AC positive
SNA	7008	Skip next instruction if AC negative
SZA	7004	Skip next instruction if AC zero
SZE	7002	Skip next instruction if E is 0
HLT	7001	Halt computer

جدول دستورات کامپیوتر پایه

INP	F800	Input character to AC
OUT	F400	Output character from AC
SKI	F200	Skip on input flag
SKO	F100	Skip on output flag
ION	F080	Interrupt on
IOF	F040	Interrupt off

کامل بودن دستورات کامپیوتر پایه

Instruction Set Completeness

1. Arithmetic, logical, and shift instructions
2. Instructions for moving information to and from memory and processor registers
3. Program control instructions together with instructions that check status conditions
4. Input and output instructions

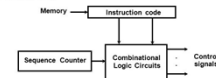


انواع کنترل

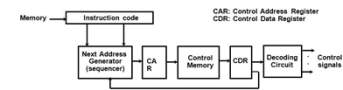
- کنترل سیم بندی شده **Hardwired control**
- کنترل میکرو پروگرام **micro-programmed control**

Control Unit Implementation

• **Hardwired**



• **Microprogrammed**



cpe 252: Computer Organization 2

