COA

Chapter 05: | Internal Memory – W/R

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AGENDA

- Describe the write operation
- Describe the read operation
- Describe the addressing operation

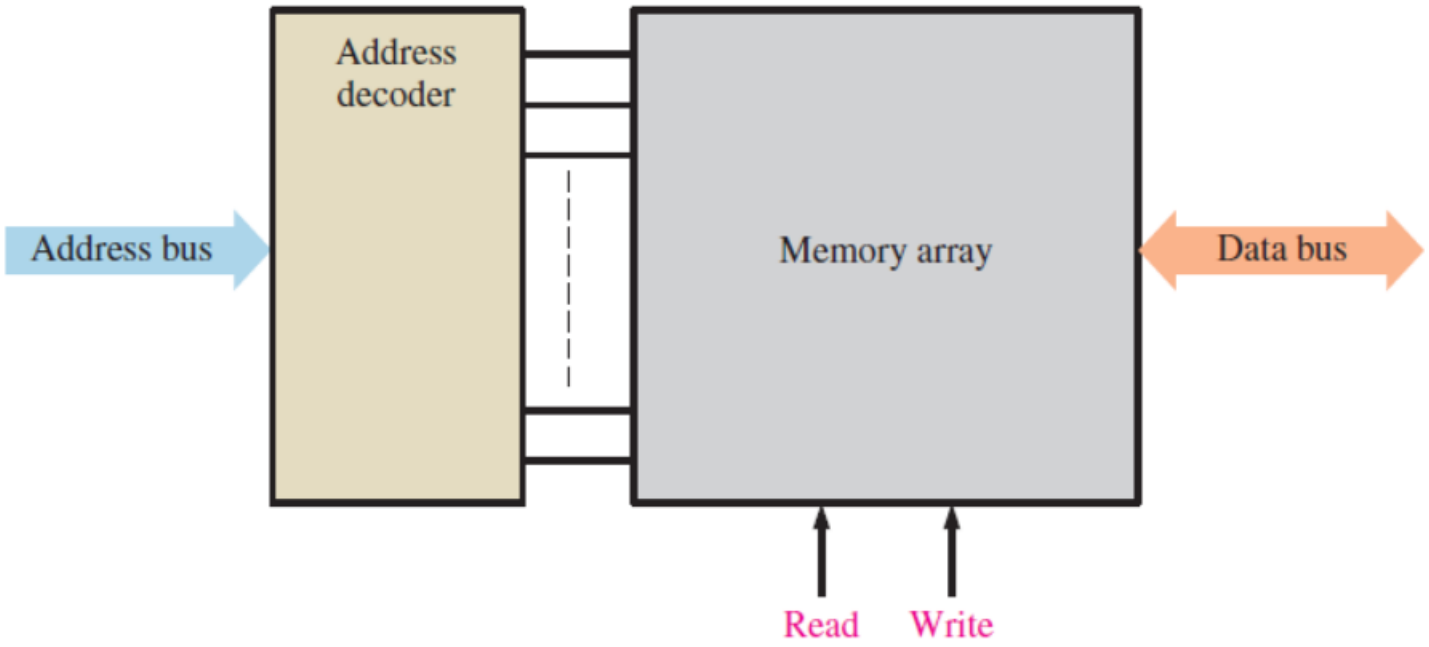
Basic Memory Operations

- **Addressing** is the process of accessing a specified location in memory
  - Write operation
  - Read operation
  - Address bus
  - Data bus

Contents of a 1024×16 memory

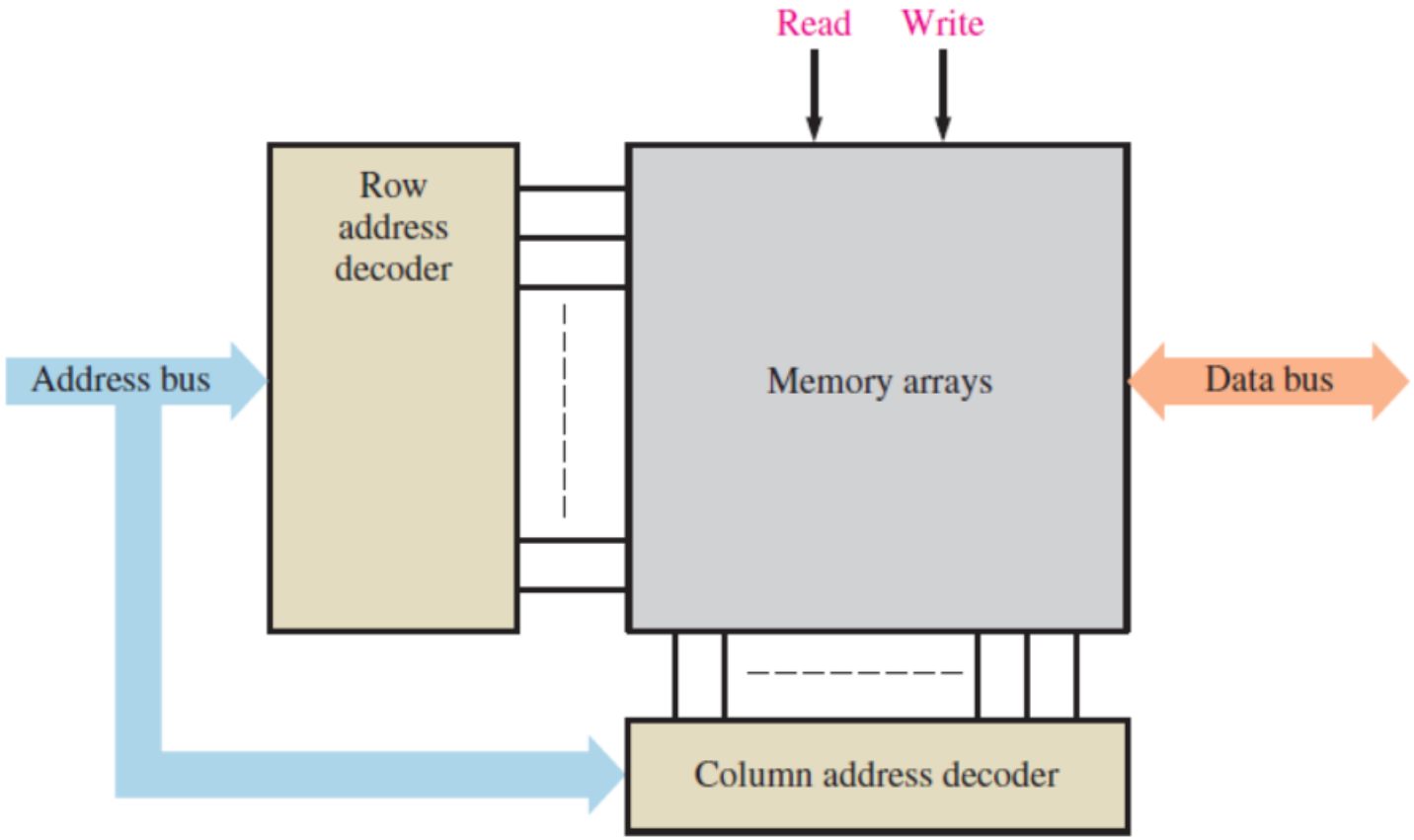
Memory address		Memory content
Binary	Decimal	
0000000000	0	1011010101011101
0000000001	1	1010101110001001
0000000010	2	0000110101000110
⋮	⋮	⋮
1111111101	1021	1001110100010100
1111111110	1022	0000110100011110
1111111111	1023	1101111000100101

Basic Memory Operations



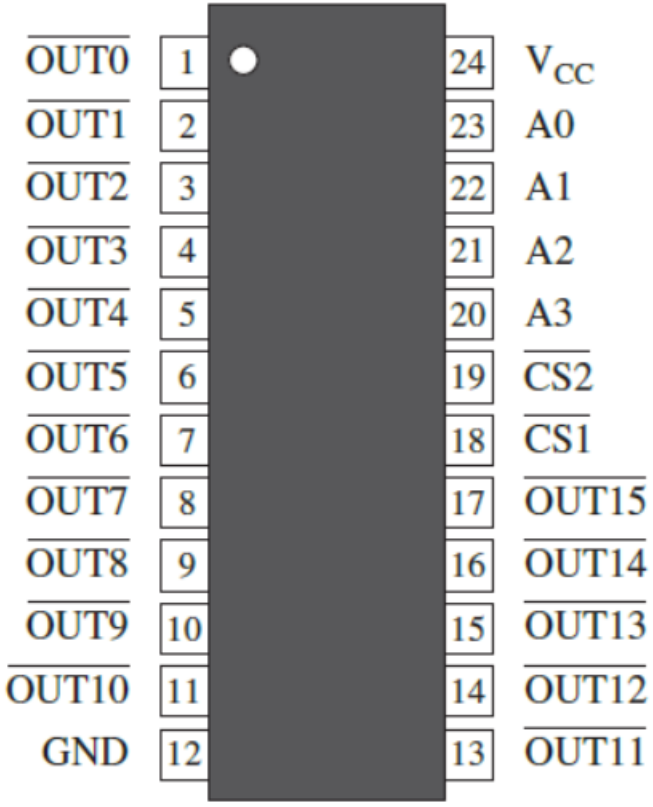
(a) Single-array memory

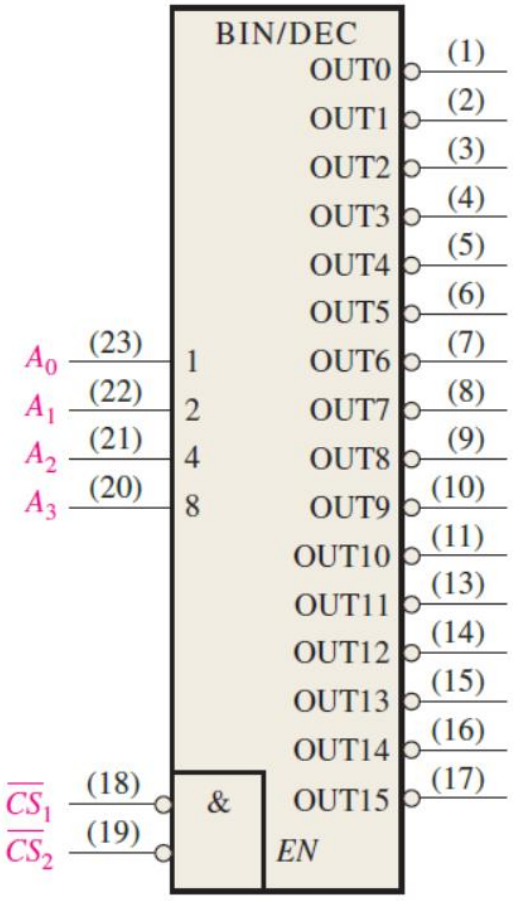
Basic Memory Operations



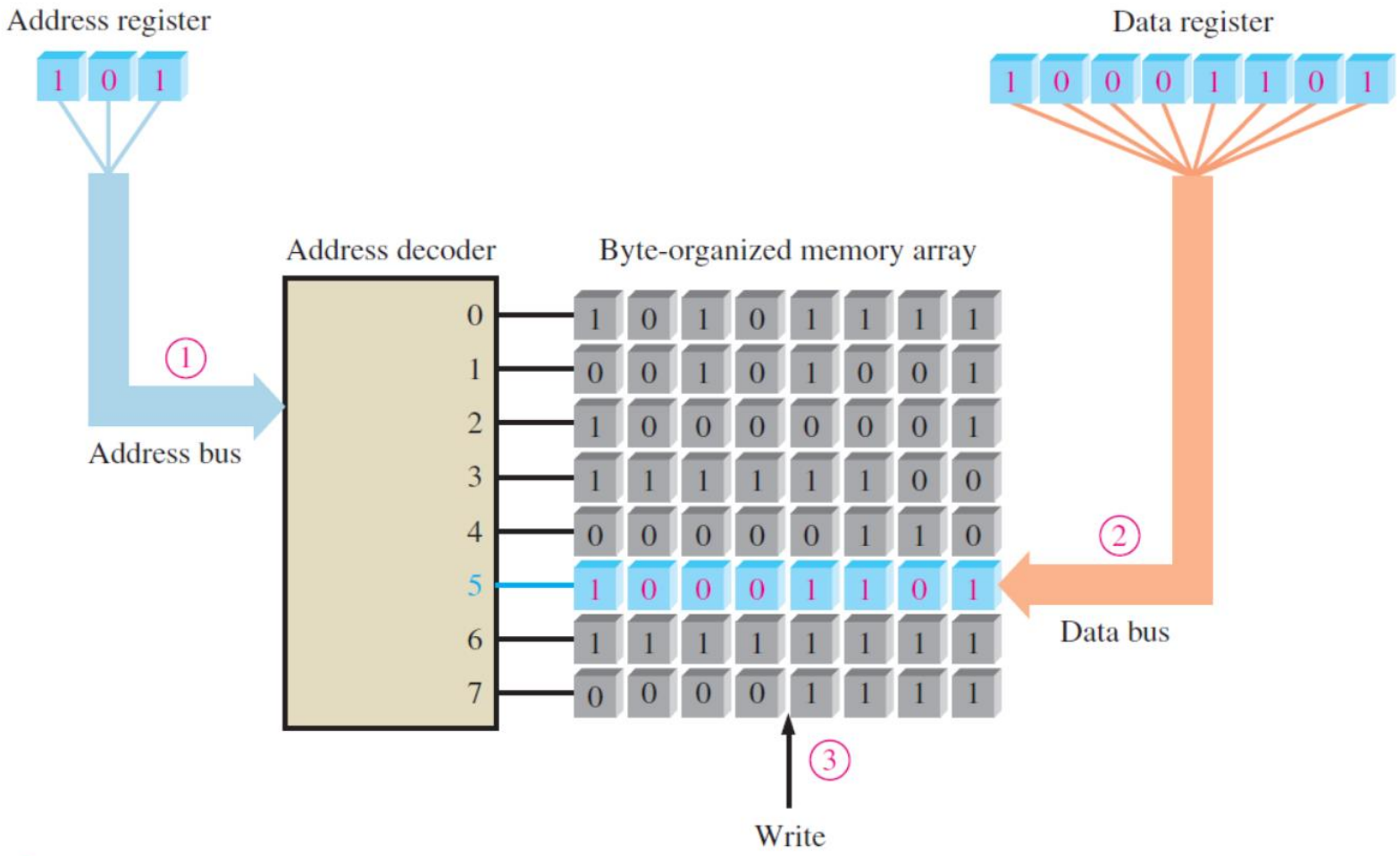
(b) Multiple-array memory

The 74HC154 1-of-16 decoder



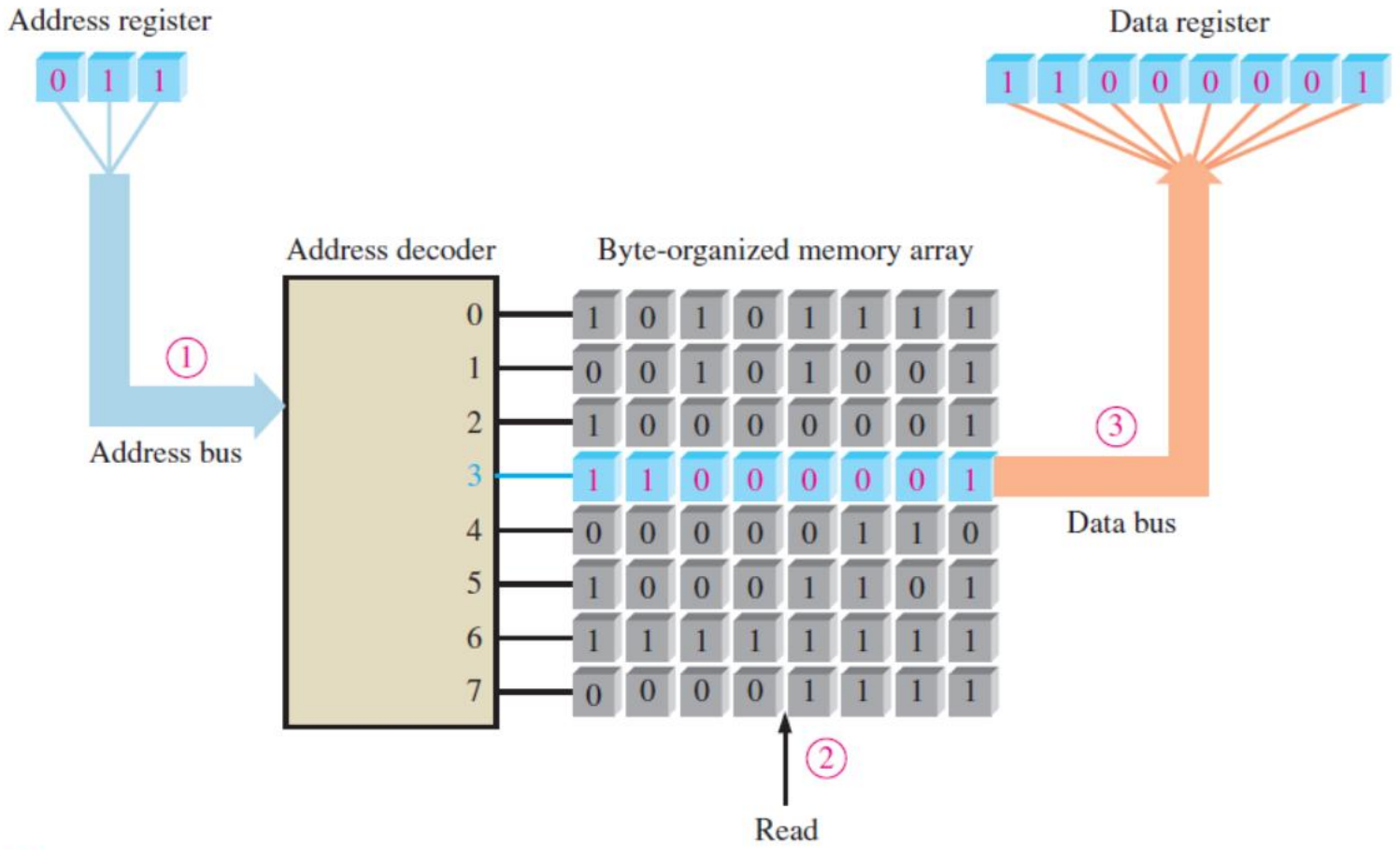


Write operation



1. Address code 101 is placed on the address bus and address 5 is selected.
2. Data byte is placed on the data bus.
3. Write command causes the data byte to be stored in address 5, replacing previous data.

Read operation



① Address code 011 is placed on the address bus and address 3 is selected.

② Read command is applied.

③ The contents of address 3 is placed on the data bus and shifted into data register. The contents of address 3 is not erased by the read operation.