logic gates

lecture 05

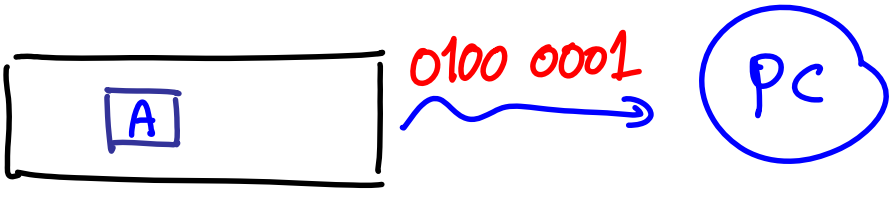
Alphanumeric Code

In addition to numbers, we have to represent other types of information

- 10 decimal digits
- 26 letters → upper
  → lower
- special characters

ASCII

- American standard code for information interchange
- use either → 7-bit ⇒ 128 Combinations
  → 8-bit ⇒ 256 Combinations
  → extended ASCII



ASCII

128

10 decimal

26 letter_ Caps

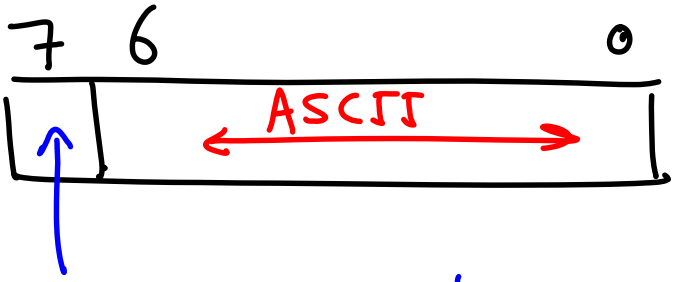
26 letter_ lower

32 Special printable character %, *, $

34 special control characters non printable BS, CR

Note

most computer manipulate 8-bit quantity as a single unit (byte)



- Greek alphabet
- italic type font
- error_ detection code

Note

Series of 1's and 0's in adigital system may Sometimes represent a binary number and at

other times represent some other discrete quantity of information

Error-detecting code

Environmental conditions can cause bit flips

- if one bit is flipped, the code becomes invalid
- Communication system can detect that and retransmit

Parity bit

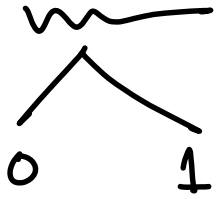
Even parity ⇒ add one bit to the code word so that number of 1s is even

0	1110 11	⇒ even

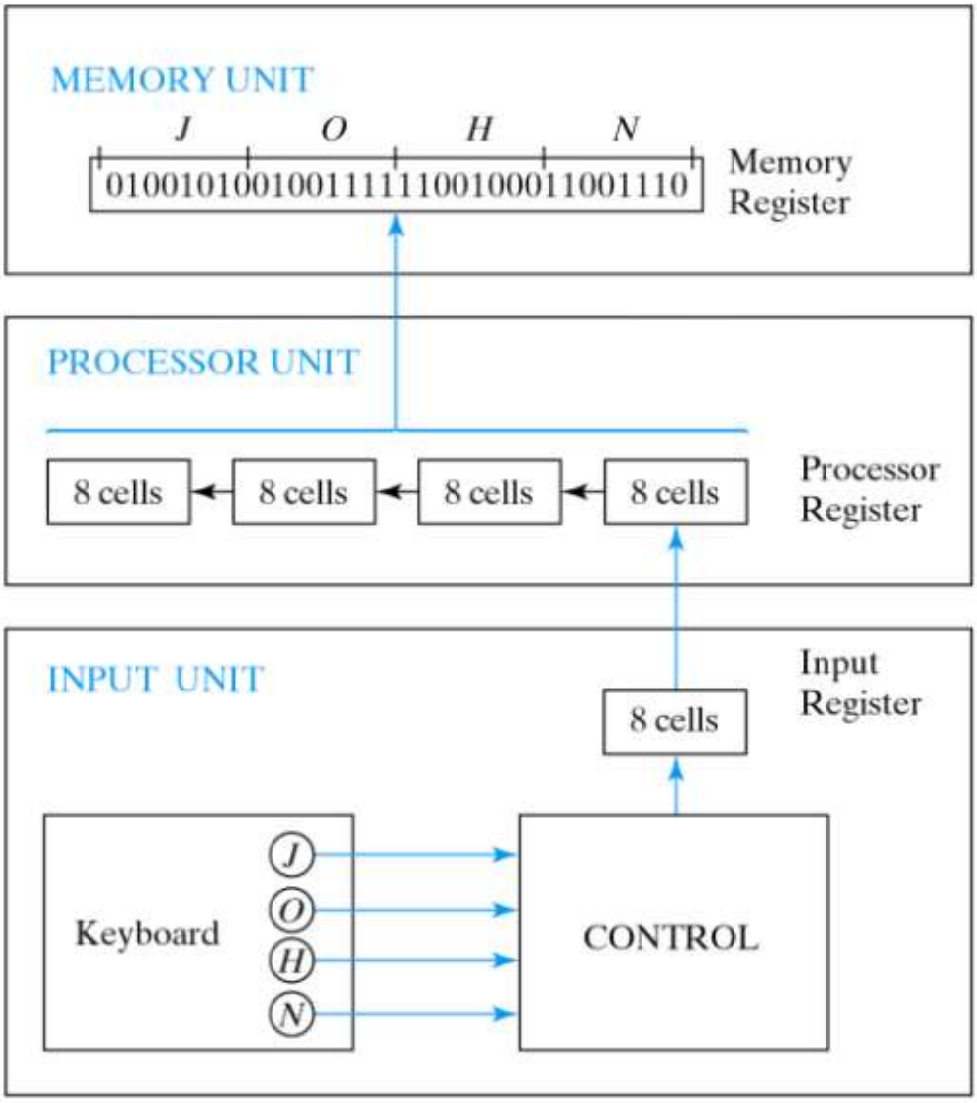
0	1010 10 0	⇒ odd

Binary storage and registers

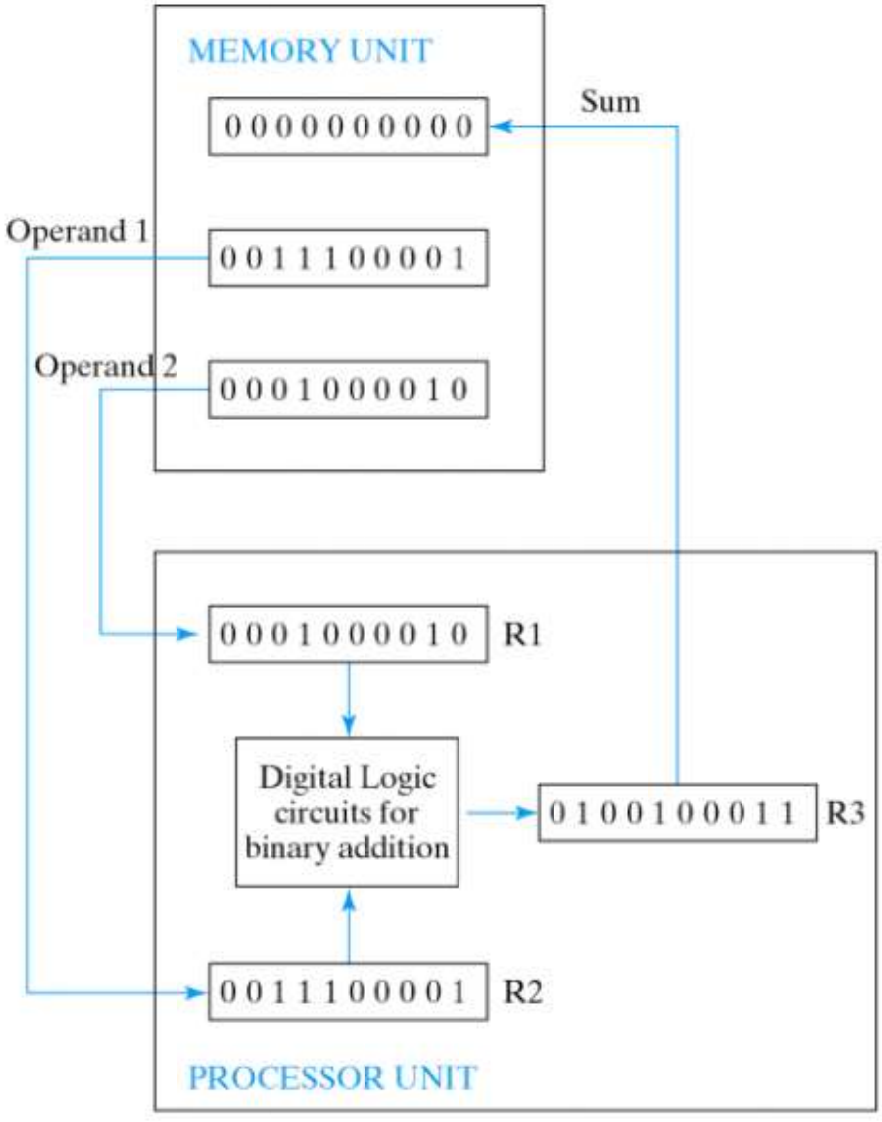
- Bits are stored in binary cells



- Binary cells are grouped into registers
- Size of registers is typically predefined
  - 8-bit
  - 16-bit
  - 32-bit
  - 64-bit



Transfer of information with registers



Example of binary information processing