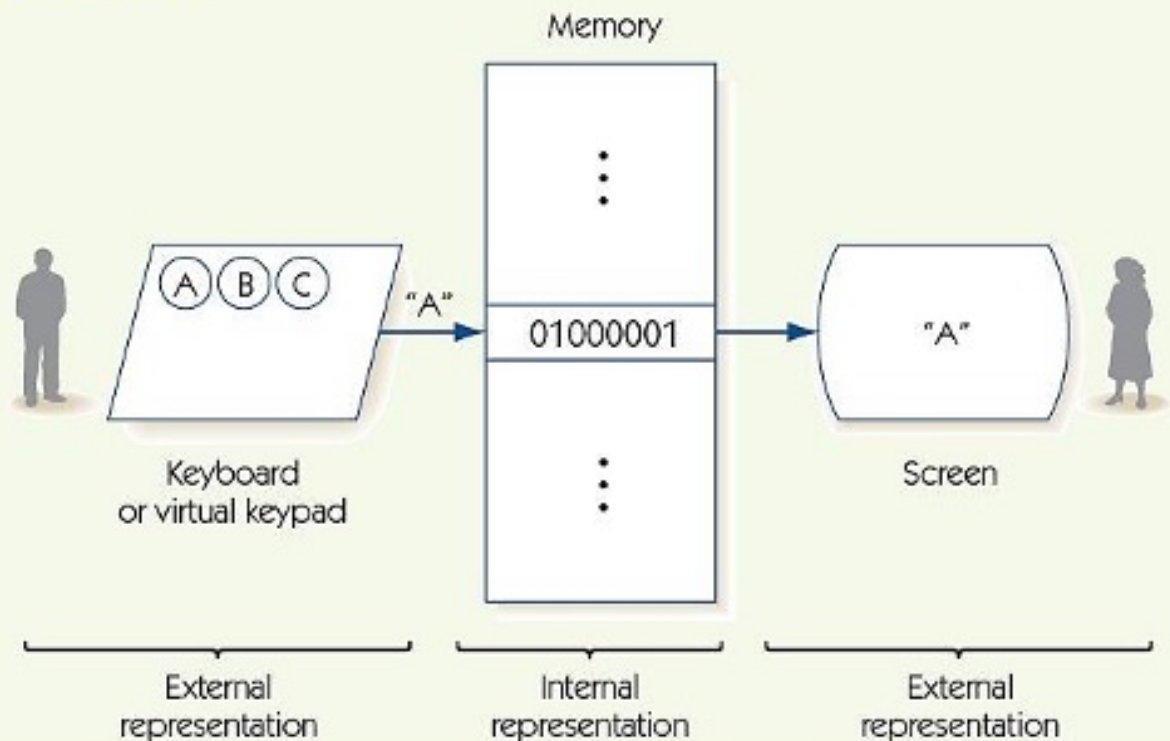## FIGURE 4.1

Distinction between external and internal representation of information

Manipulate binary, octal, hex numbers
See how they are stored/represented in the computer

00001001 base 2 = ?? base 10   9 base 10

$10 \wedge 3 \; 10 \wedge 2 \; 10 \wedge 1 \; 10 \wedge 0$

3001

$\dots 2\wedge3 \; 2\wedge2 \; 2\wedge1 \; 2\wedge0$

00011111 = 31 base 10

00010101 = 21

11 base 10 as base 2

11/2 = 5 remainder 1.   1
5/2 =2 remainder 1.   11
2/2 =1 remainder 0.   011
1/2 =0 remainder 1.   1011

00001011

1111 -> 15

14 + 2

1110
0010 +
10000 (overflowed)

unsigned int

11111111 -> 00000000
255 -> 0

no floating point and no negative numbers…

8-bit
16-bit
32-bit
64-bit
128-bit
256-bit
…