



Indian Institute of Information Technology

Sri City

Computer Programming

Tutorial-1

Instructor(UG-1/Sec-3)

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Core Course

12/11/2020

Computer Programming | IIITS
www.tiny.cc/bhh

Outline

- Computer hardware and software

- What is hardware? software? How are they related?

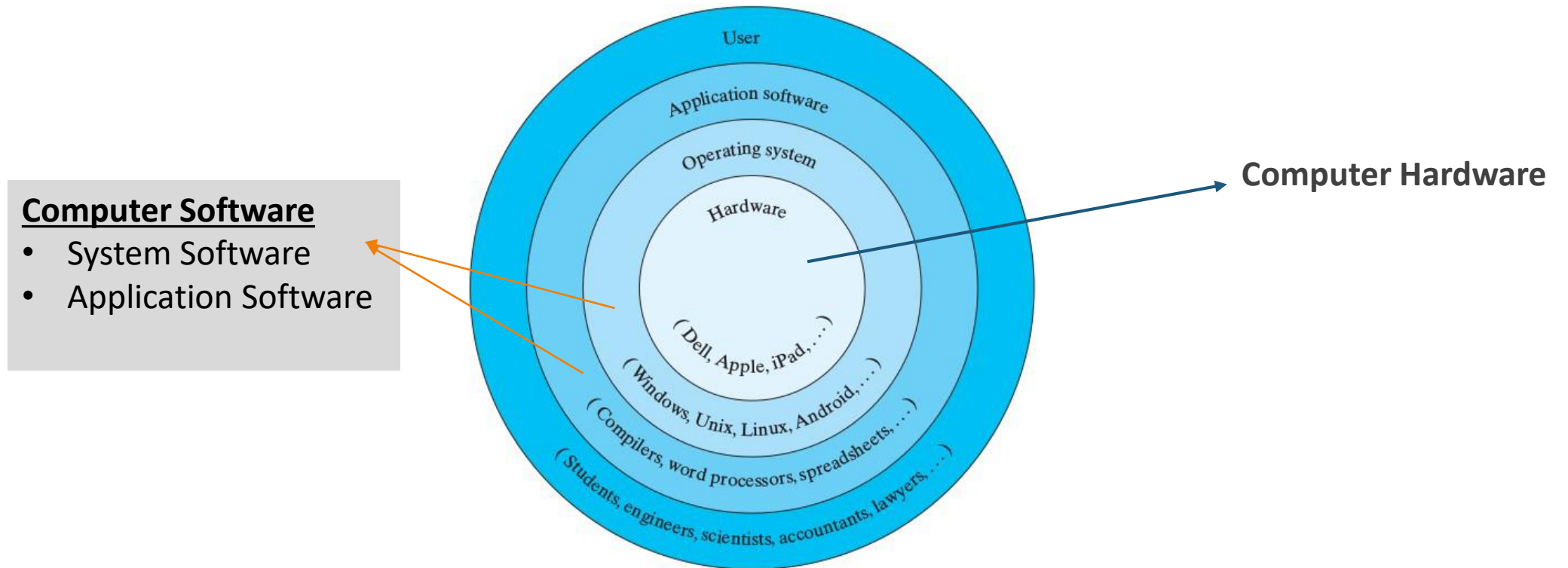
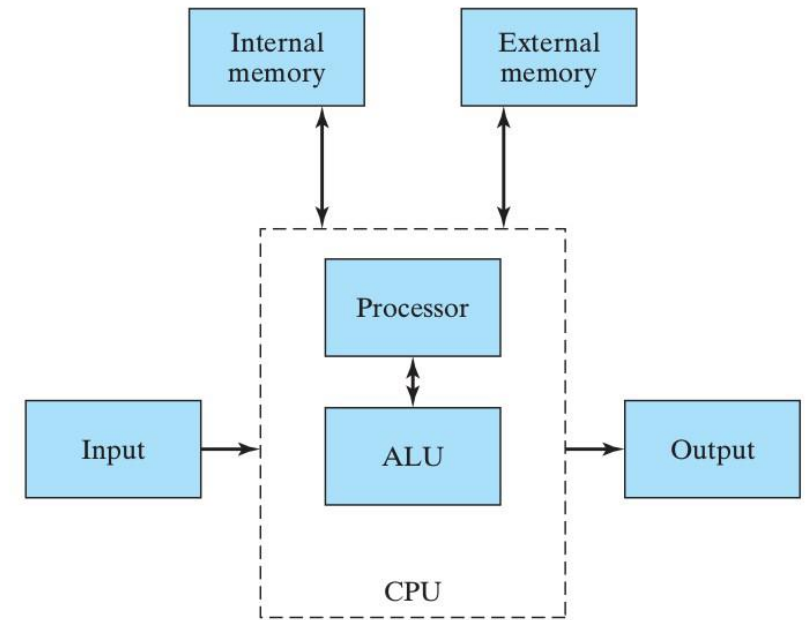


Figure 1.2 Software interface to the computer.

•– Computer Hardware

- It refers Computer equipment or devices (thumb drive, a keyboard, a flat-screen monitor, or a printer)

1. CPU (Central Processing Unit)
2. Memory
3. I/O (Input / Output) devices



- **Computer Software**

- System Software
- Application Software

- **System Software: –**

- software designed to provide a platform for other software.–
- **Operating Systems**
 - Desktop operating systems include

Windows, Mac OS, Unix, and Linux.

- **Application Software**

- Software tools are programs that have been written to perform common operations.
- Microsoft Excel, Database management tools.

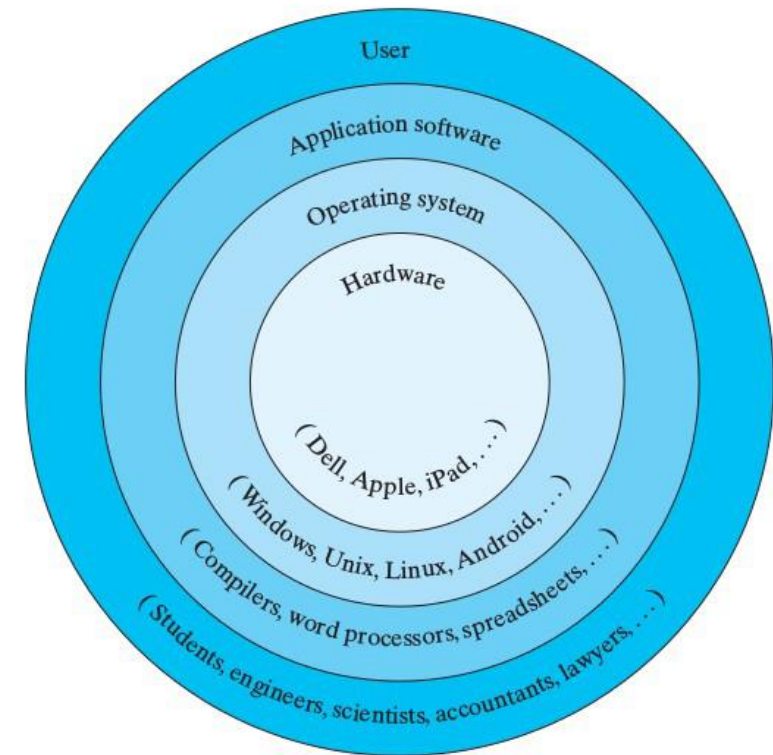


Figure 1.2 Software interface to the computer.

- **Memory**

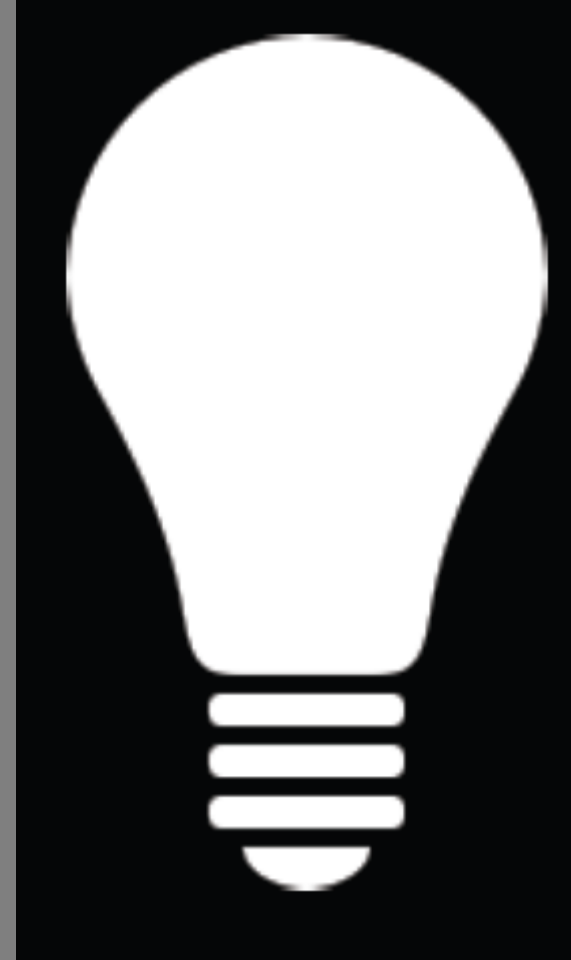
- Memory is measure in the following units:
 - 1 byte = 8 bits (Each 1 or 0 is called a *bit* (i.e. binary digit)).
 - 1 KB (kilobyte) = $1024 (2^{10})$ bytes
 - 1 MB (megabyte) = $1024 (2^{10})$ KB
 - 1 GB (gigabyte) = $1024 (2^{10})$ MB

- What do computers understand?

01101000	01110100	01110100	01110000
01110011	00111010	00101111	00101111
01110111	01110111	01110111	00101110
01111001	01101111	01110101	01110100
01110101	01100010	01100101	00101110
01100011	01101111	01101101	00101111
01110111	01100001	01110100	01100011
01101000	00111111	01110110	00111101
01100100	01010001	01110111	00110100
01110111	00111001	01010111	01100111
01011000	01100011	01010001	11010101

What do computers understand?

- Binary
 - 0/1
 - True/False
 - On/Off



Decimal Notation

Decimal Notation

123

100

10

1

- Places

1

2

3

$$123 = 1 \times 100 + 2 \times 10 + 3 \times 1$$

Binary Notation

Binary Notation

01000011

Binary to Decimal

<u>Binary Number</u>	<u>Decimal Equivalent</u>
$11_2 \rightarrow$	
$1101_2 \rightarrow$	
$10011_2 \rightarrow$	
$100110_2 \rightarrow$	

Binary to Decimal

<u>Binary Number</u>	<u>Decimal Equivalent</u>
$11_2 \rightarrow$	$1*2 + 1*1 = 3$
$1101_2 \rightarrow$	$1*8 + 1*4 + 1*2 + 1*1 = 13$
$10011_2 \rightarrow$	$1*16 + 0*8 + 0*4 + 1*2 + 1*1 = 19$
$100110_2 \rightarrow$	$1*32 + 0*16 + 0*8 + 1*4 + 1*2 + 0*1 = 38$

What about letters?

ASCII:

American Standard Code for Information Interchange

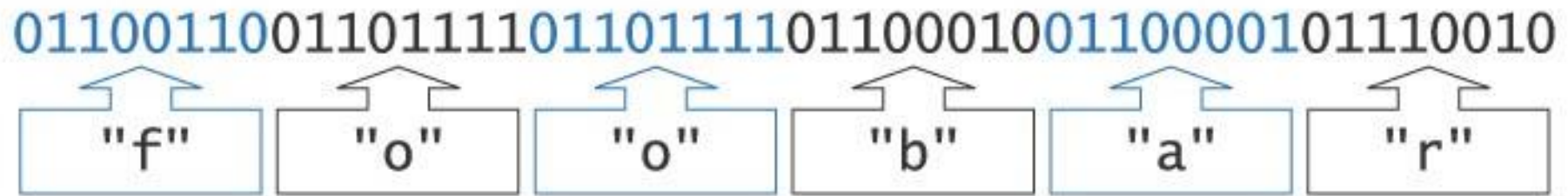
0	<i>NUL</i>	16	<i>DLE</i>	32	<i>SPC</i>	48	0	64	@	80	P	96	`	112	p
1	<i>SOH</i>	17	<i>DC1</i>	33	!	49	1	65	A	81	Q	97	a	113	q
2	<i>STX</i>	18	<i>DC2</i>	34	"	50	2	66	B	82	R	98	b	114	r
3	<i>ETX</i>	19	<i>DC3</i>	35	#	51	3	67	C	83	S	99	c	115	s
4	<i>EOT</i>	20	<i>DC4</i>	36	\$	52	4	68	D	84	T	100	d	116	t
5	<i>ENQ</i>	21	<i>NAK</i>	37	%	53	5	69	E	85	U	101	e	117	u
6	<i>ACK</i>	22	<i>SYN</i>	38	&	54	6	70	F	86	V	102	f	118	v
7	<i>BEL</i>	23	<i>ETB</i>	39	'	55	7	71	G	87	W	103	g	119	w
8	<i>BS</i>	24	<i>CAN</i>	40	(	56	8	72	H	88	X	104	h	120	x
9	<i>HT</i>	25	<i>EM</i>	41	)	57	9	73	I	89	Y	105	i	121	y
10	<i>LF</i>	26	<i>SUB</i>	42	*	58	:	74	J	90	Z	106	j	122	z
11	<i>VT</i>	27	<i>ESC</i>	43	+	59	;	75	K	91	[	107	k	123	{
12	<i>FF</i>	28	<i>FS</i>	44	,	60	<	76	L	92	\	108	l	124	|
13	<i>CR</i>	29	<i>GS</i>	45	-	61	=	77	M	93	]	109	m	125	}
14	<i>SO</i>	30	<i>RS</i>	46	.	62	>	78	N	94	^	110	n	126	~
15	<i>SI</i>	31	<i>US</i>	47	/	63	?	79	O	95	_	111	o	127	DEL

01001000 01001001

72 73

HI

Representing Text



Representing Text

- The size of a file = number of bytes stored in the file
- 1 KB = 1024 bytes = 2^{10} bytes

Representing Text

- The size of a file = number of bytes stored in the file
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- 1 MB = 1024 KB = 2^{20} bytes
- 1 GB = 1024 MB = 2^{30} bytes
- 1 TB = 1024 GB = 2^{40} bytes

Introduction to compiler