Name:- Ansh Sharma
Class:- CSE6

5/9/2020 Introduction to Computers and Programming in C

Assignment-1

Q1.) Convert the following

i) $(478A.BC)_{16}$ to $(\ )_{10}$

$= 4\times16^3 + 7\times16^2 + 8\times16^1 + 10\times16^0 + 11\times16^{-1} + 12\times16^{-2}$

$= (18314.734375)_{10}$

$(478ABC)_{16} = (18314.734375)_{10}$

ii) $(975.55)_{10}$ to $(\ )_2$

$=$

2	975	
2	487	1
2	243	1
2	121	1
2	60	1
2	30	0
2	15	0
2	7	1
2	3	1
2	1	1
	0	1

$.55 \times 2 = 1.1$

$0.10 \times 2 = 0.2$

$0.2 \times 2 = 0.4$

1
0
0

$(975.55)_{10} = (1111001111.100)_2$

iii) $(11001100.10)_2$ to $(\ )_{16}$

=

1100 | 1100 . 1000
C | C | 8

$(11001100.10)_2 = (CC.8)_{16}$

iv) $(15.235)_{10}$ to $(\ )_8$

8	15	
8	1	7 ↑
	0	1

$0.235 \times 8 = 1.88$ 1
$0.88 \times 8 = 7.04$ 7
$0.04 \times 8 = 0.32$ 0
$0.32 \times 8 = 2.56$ 2 ↓

$(15.235)_{10} = (17.1702)_8$

v.) $(251)_{10}$ to $(\quad)_2$ to $(\quad)_8$ to $(\quad)_{16}$

2	251	
2	125	1
2	62	1
2	31	0
2	15	0
2	7	1
2	3	1
2	1	1
	0	1

$(251)_{10} = (11111011)_2$

011, 111, 011
3 7 3

~~$(251)_{16}$~~ $(011\ 111\ 011)_8 = (373)_8$

~~373~~ 1111, 1011
F B

$(373)_8 = (FB)_{16}$

vi) $(141)_{10}$ to $(\quad)_2$ to $(\quad)_8$ to $(\quad)_{16}$ to $(\quad)_{BCD}$

2	141	
2	70	1
2	35	0
2	17	1
2	8	1
2	4	0
2	2	0
2	1	0
	0	1

$(141)_{10} = (10001101)_2$

010 001 101

2 1 5

$(10001101)_2 = (215)_8$

1000 1101

8 D

$(215)_8 = (8D)_{16} = (000101000001)_{BCD}$

vii) $(0\,1\,1\,0\,1\,0\,1\,1\,1\,1\,0\,1\,0\,0\,1\,1\,0\,0)_2$

$= 1\times2^2 + 1\times2^3 + 1\times2^6 + 1\times2^8 + 1\times2^9 + 1\times2^{10} + 1\times2^{11} + 1\times2^{13} + 1\times2^{15} + 1\times2^{16}$

$= (110412)_{10}$

$(0\,1\,1\,0\,1\,0\,1\,1\,1\,1\,0\,1\,0\,0\,1\,1\,0\,0)_2 = (110412)_{10}$

011	010	111	101	001	100
3	2	7	5	1	4

$(110412)_{10} = (327514)_8$

0001	1010	1111	0100	1100
1	A	F	4	C

$(327514)_8 = (1AF4C)_{16}$

viii) $(235.4)_8 = ()_{16}$

0000 | 1001 | 1101 . 1000

0 9 D 8

$(235.4)_8 = (90.8)_{16}$

ix) $(5214)_{10} = ()_{16}$

16 | 5214		
16 | 325	14	(E)
16 | 20	5	
16 | 1	4	
0	1	

$(5214)_{10} = (0145E)_{16}$

x) $(1011)_{10} = ()_2$

2 | 1011		
2 | 505	1	↑
2 | 252	1	
2 | 126	0	
2 | 63	0	
2 | 31	1	
2 | 15	1	
2 | 7	1	
2 | 3	1	
2 | 1	1	
0	1	

$(1011)_{10} = (1111110011)_2$

xi) $(5A8)_{16} = ()_8$

0101 1010 1000

2 6 5 0

$(5A8)_{16} = (2650)_8$

xii) $(1011)_{Gray} = (\quad)_{Binary}$

1 0 1 1
1 1 0 1 (ignoring all carries)

$(1011)_{Gray} = (1101)_{Binary}$

xiii) $(5214.254)_{10} = (\quad)_{16}$

16	5214		
16	325	14	(E)
16	20	5	
16	1	4	
	0	1	

$.254 \times 16 = 4.064$ 4
$.064 \times 16 = 1.024$ 1
$.024 \times 16 = 0.384$ 0

$(5214.254)_{10} = (145E.410)_{16}$

xiv) $(7F2.97)_{16} = (\quad)_8$

011 111 10 010 . 100 101 110

3 7 6 2 . 4 5 6

$(7F2.97)_{16} = (3762.456)_8$

xv) $(13)_{10} = (\quad)_{BCD}$

$(13)_{10} = (00010011)_{BCD}$

xvi) $(24.25)_{10} = (\quad)_2 = (\quad)_{16}$

2	24	
2	12	0
2	6	0
2	3	0
2	1	1
	0	1

$.25 \times 2 = 0.50 \quad 0$

$.50 \times 2 = 1.00 \quad 1$

$(24.25)_{10} = (11000.01)_2$

0001 1000 . 0100

1 8 . 4

$(11000.01)_2 = (18.4)_{16}$

xvii) $(56)_{10} = (\quad)_2 = (\quad)_{16}$

2	56	
2	28	0
2	14	0
2	7	0
2	3	1
2	1	1
	0	1

$(56)_{10} = (111000)_2$

0011 1000

3 8

$(56)_{10} = (38)_{16}$

xviii) $(133.15)_{10} = ()_2 = ()_{16}$

2	133	
2	66	1
2	33	0
2	16	1
2	8	0
2	4	0
2	2	0
2	1	0
	0	1

$.15 \times 2 = 0.30 \quad 0$

$.30 \times 2 = 0.60 \quad 0$

$.60 \times 2 = 1.20 \quad 1$

$.20 \times 2 = 0.40 \quad 0$

$(133.15)_{10} = (10000101.0100)_2$

10000101 . 0100

8 5 . 2

$(133.15)_{10} = (85.2)_{16}$

xix) $(752)_8 = (\quad)_{16}$

000 111 101 010

1 E A

$(752)_8 = (1EA)_{16}$

xx) $(678)_{10} = (\quad)_8$

8 | 678		
8 | 84	6	
8 | 10	4	
8 | 1	2	
0	1	

$(678)_{10} = (1246)_8$

Q2.) What are the peripherals? Explain the different types of printers.

Answer2.) A peripheral or a peripheral device is an ancillary device which is used to put information into and get information out of the computer. Input and Output devices are peripherals.

The different types of printers are:-

1) Inkjet Printers :- These printers use Inkjet technology to spray ink and print high quality pictures.

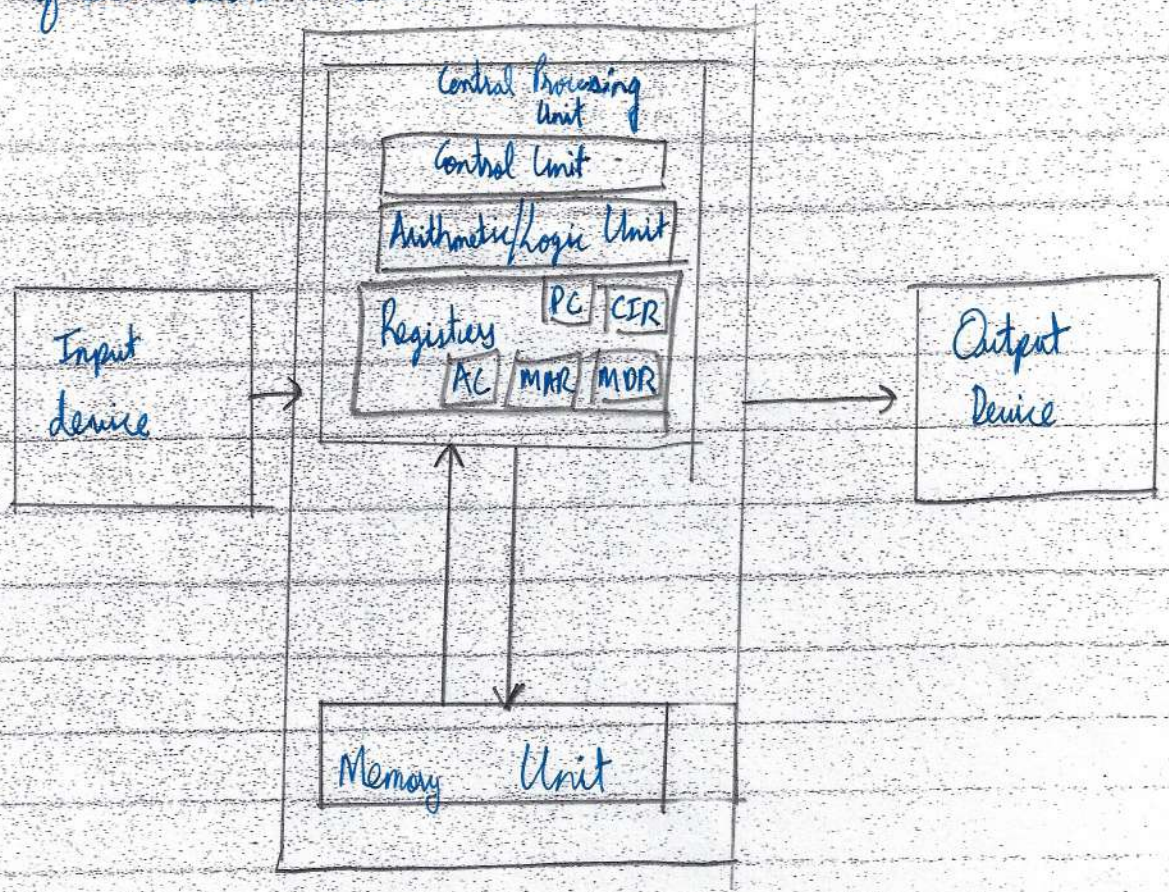
2.) Laser Printers:- These printers use laser to draw images onto a copier drum.

3.) Dot matrix Printers:- These printers, now obselete, use Pins to print images

4.) Solidink Printers:- These printers use a type of ink technology which provides solids and vibrant tones.

Q 3) Draw the block diagrams of a digital computer. Explain the function of each block in detail.

Answer 3)



Central Processing Unit (CPU) → It is an electronic hardware device which performs all types of operations. A CPU is one of the most important hardware devices.

Control Unit - It controls all the activities or operations which are performed by the computer.

Arithmatic logic Unit - It is the unit of the CPU which performs all the arithmatic and logical operations.

Memory Unit:- It is the unit which stores all the data of a computer.

Q4.) Differentiate between Assembly language, High level language and Machine language.

Answer:)

Assembly language	High level language	Machine Language
→ Understood by humans to operate machines.	→ It is very close to English and is understood by humans.	→ Understood only by machines
→ Errors can be fixed	→ Errors can be fixed by analysis	→ Errors can not be fixed
→ Machine dependent	→ Almost completely portable	→ Hardware dependent.

Q5) What is the difference between multi-tasking and time sharing system? Explain

Answer 5)

Multi-tasking system	Time-sharing system
→ In this system several programs are loaded at the same time to execute.	→ In this system several users use various terminals to use a particular system at the same time.
→ Its one user, several tasks	→ If several users, several tasks.

Q6) Differentiate between optical storage and magnetic storage. Also explain the significance of the terms track and sector in these media.

Answer 6)

Magnetic Storage	Optical Storage
→ Multiple fixed disks	→ Single removable disk
→ Intermediate signal to noise ratio.	→ Excellent signal to noise ratio.
→ Has low sample rate	→ Has high sample rate

Tracks:- The area on a disk platter which can be accessed without the moving of the access area.

Sector:- A fixed size physical data block on a disk drive. A track usually contains a large amount of information which is divided into smaller sectors.

Q7.) What is an Operating System? Explain its responsibilities? Give few names of Operating Systems?

Answer?) An operating system (O.S.) is a system software that provides an interface between the user and machine. The Operating system is used for Memory - Management, Device Management, File Management, Security, Processor Management etc.
Examples of operating systems are:- Mac OS, Linux, Windows etc

Q8) Differentiate between compiler and interpretes.

Answer 8)

Compiles	Interpretes
→ Compiles the program as a whole.	→ Translates program line by line.
→ Errors are shown at the end.	→ Errors are shown line by line.
→ ~~It converts the program into~~	
→ It is faster than Interpreter.	→ It is slower than Compiler.