



## Sheet 4 - Sol

I

- **1.10**  
Image size in pixels =  $1024 \times 1024 = 1 \text{ Mega Pixel}$   
Image size in bytes =  $1 \times 3 = 3 \text{ MB}$   
Storage capacity in images =  $256/3 \approx 85 \text{ Image}$
- **1.12**
  - a) Data retrieval from main memory is much faster than from disk storage.  
Data in main memory can be referenced in byte-sized units rather than in large blocks.
  - b) Disk storage systems have a larger capacity than main memory.  
The data stored on disk is less volatile than that stored in main memory.
- **1.15**  
Novel size in characters =  $400 \times 3500 = 1400000 \text{ Character}$   
Novel size in bytes (ASCII) =  $1400000 \times 1 = 1400000 \text{ Byte} \approx 1.4 \text{ Mega Byte}$   
Novel size in bytes (Unicode) =  $1400000 \times 2 = 2800000 \text{ Byte} \approx 2.8 \text{ Mega Byte}$
- **1.26**  
a) 15 b) 1 c) 21 d) 8 e) 19 f) 0  
g) 9 h) 17 i) 33 j) 25 k) 26 l) 27
- **1.27**  
a) 111 b) 1011 c) 10000 d) 10001 e) 11111
- **1.34**  
a)  $3^{3/4}$  b)  $4^{5/16}$  c)  $13^{1/16}$  d) 1 e)  $2^{1/4}$
- **1.35**  
a) 101.11 b) 1111.1111 c) 101.011 d) 1.01 e) 110.101
- **1.46**  
Four-byte capacity cells:  
Number of cells =  $4 / 4 = 1 \text{ Mega Cell} = 2^{20} \text{ Cell}$   
Then the addresses range is  $(0000\ 0000\ 0000\ 0000\ 0000)_2 : (1111\ 1111\ 1111\ 1111\ 1111)_2$   
In hexadecimal  $(000000)_{16}$  to  $(FFFFFF)_{16}$   
Then the last memory address is  $(FFFFFF)_{16}$   
One-byte capacity cells:  
Number of cells =  $4 / 1 = 4 \text{ Mega Cell} = 2^2 \times 2^{20} \text{ Cell} = 2^{22} \text{ Cell}$   
Then the addresses range is  $(00\ 0000\ 0000\ 0000\ 0000\ 0000)_2 : (11\ 1111\ 1111\ 1111\ 1111\ 1111)_2$   
In hexadecimal  $(000000)_{16}$  to  $(3FFFFFF)_{16}$   
Then the last memory address is  $(3FFFFFF)_{16}$
- **1.52**  

11001	11011	10110	00000	11111	10001	10101	00100	01110
-------	-------	-------	-------	-------	-------	-------	-------	-------
- **1.54**  

a) HE b) FED c) DEAD d) CABBAGE e) CAFE
---



# Computer ECE 001



Benha University

Computer Systems Engineering  
Electrical Engineering Department

Faculty of Engineering  
(at Shoubra)

**II Answer the following questions:**

1.

10+10.5+8-11.6-9%

2.

	111		11		111		11		
a)	1100	b)	0111	c)	1011	d)	1010	e)	1100
	+		+		+		+		+
	0010		0111		0011		0110		0100
	-----		-----		-----		-----		-----
	1110		1110		1110		<b>10000</b>		<b>10000</b>

3.

- a) *RAM*  
Random Access Memory  
{Computer's Main Memory}
- b) *Mass Storage*  
Mass Storage (or Secondary Storage) refers to larger capacity and less volatile storage media based on different technologies like:
  - *Magnetic*  
Electric current is used to write/read to/from this disk or tap covered with magnetic coating.  
{Magnetic Disk, Magnetic Tape}
  - *Optical*  
Laser is used to write/read to/from reflective material covered with a clear protective coating.  
{CD, DVD}
  - *Flash Technology*  
Electronic signals are used to write/read to/from array of floating gate transistors.  
{Flash Disk, SD Card}
- c) *Buffer*  
It is a storage area used to hold data on a temporary basis, usually during the process of being transferred from one device to another.  
{Printer Buffer, Hard Disk Drive (HDD) Buffer}
- d) *ASCII*  
American Standard Code for Information Interchange  
It is a 7-bit binary code for representing 128 character of the English alphabet including a-z, A-Z, and 0-9.

```

...
010 0100 $
...
011 0100 4
011 0101 5
...
100 1101 M
100 1110 N
...
110 1101 m
110 1110 n
...
    
```