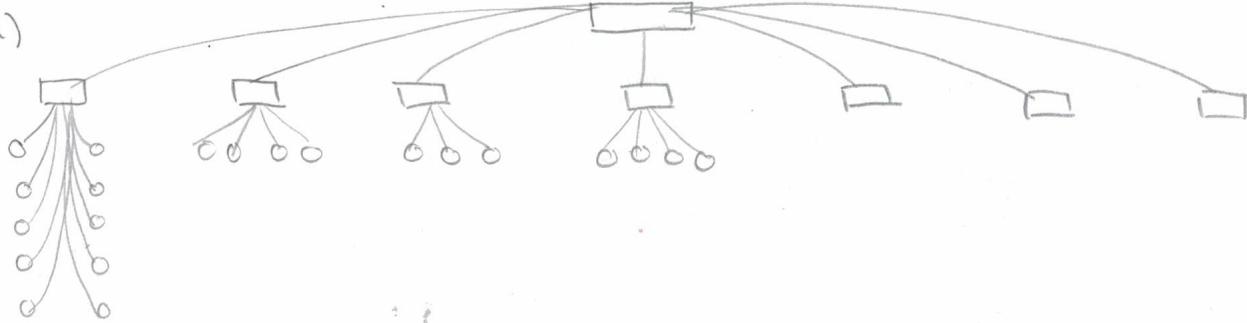


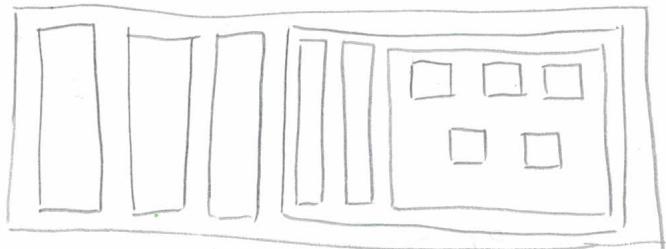
Assignment 1

chapter 1 #(1-13, 17-23)

1. a)



b)



2. a) 11,110 total (not counting Khan)

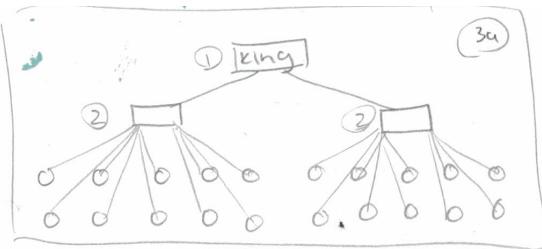
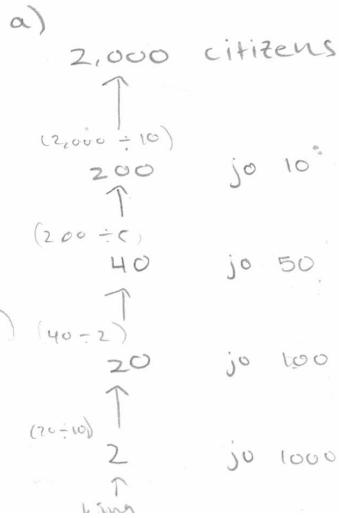
Reasoning:

$\frac{1000}{10} \overline{) 10,000}$	10,000	soldiers
$\frac{100}{10} \overline{) 1,000}$	1,000	leaders
$\frac{10}{10} \overline{) 100}$	100	leader of leader
+ 10		leader of leader of leader
11,110 people		

b) 6404 total

$\frac{5763}{10} \overline{) 5763}$	5763	soldiers
	577	le.
	58	le. of le.
+ 6		le. of le. of le.
6,404 people		

3.

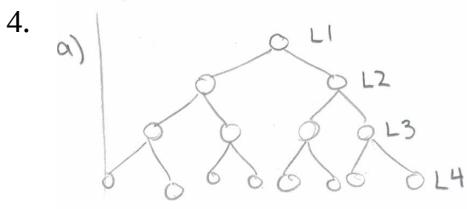
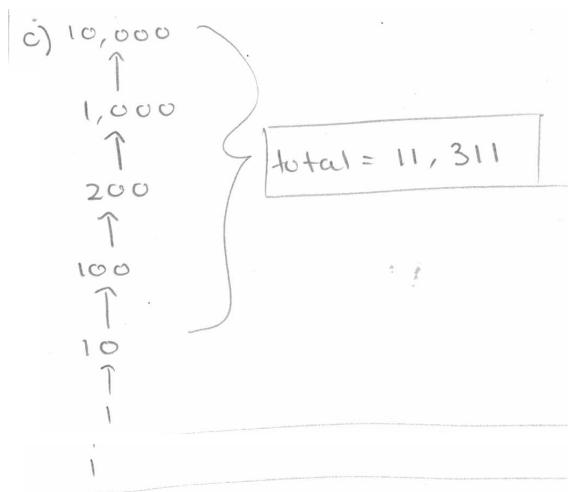


b)

2,000	200	40	20	2
+				
<u>2,262 + 1</u>				

2,263 total

3b



extend the  
4,3 level branches  
with 2 each to  
get 4th level.

b)  $2^n - 1$   
 $= 2^5 - 1 = 31$  nodes

c)  $2^6 - 1 = 63$  nodes

d)  $2^n - 1$  nodes

5. a) T b) F c) F d) T e) F f) T

6. a) An algorithm is a set of instructions that, when carried out in the proper sequence, solves a problem in a finite amount of time.  
 b) A program is an algorithm written for execution on a computer.

7. a) Linux Mint (Serena)  
 b) No, all characters are allowed.  
 c) Yes, it does distinguish them.

- 8.
- In settings, go to users, add new user.
  - Typing "ls" from root in the terminal lists all files and sub directories in the root directory.
  - Right click, delete.
  - Right click, rename.
  - I can copy and paste, as normal.
  - Clicking on the file displays the size on the bottom bar of the files window.
  - Right click, properties, under "Modified": " it will say time of last modification.

9.

$$\frac{42.9 \times 10^{-3} \text{ seconds}}{\frac{20 \times 10^6}{2.1 \times 10^9} \times 4.5} = 0.0429$$

10.

$$\frac{78.2 \times 10^{-3} \text{ seconds}}{\frac{30 \times 10^6 \times 7.3}{2.8 \times 10^9}} = 0.0782$$

11.

$$\frac{0.24 \text{ seconds}}{\frac{2.5 \text{ GB/s}}{600 \text{ MB}}} = \frac{600 \times 10^6}{2.5 \times 10^9} = 0.24$$

12.

$$\frac{32 \text{ bps}}{40 \text{ wpm} \times 8b \times 60} = 1920 \text{ bpm}$$

$$1920 \text{ bpm} / 60 = 32 \text{ bps}$$

13.

$$\frac{28 \text{ bps}}{30 \text{ wpm} \times 7 \text{ ch.} \times 8b} = 1680 \text{ bpm}$$

$$1680 \text{ bpm} / 60 = 28 \text{ bps}$$

17. a)  $3.5 \text{ MiB}$  (or 4 MiB totally)

$$300 \text{ dpi} \times 8.5 \times 11 / 8 = 23,506.25$$

b)  $14 \text{ MiB}$

$$3.5 \times 4 = 14$$

18.

$$\frac{925 \text{ kB}}{956 \times 1290 \text{ pixels} \times 6 \text{ bits} / 8 \text{ bits}} = 924,930 \text{ bytes}$$

$$35 \text{ shades} = 2^6 = 6 \text{ bits}$$

19. a)  $3.48 \times 1.96 \times 326 = 2,223.5 \text{ pixels}$

b)  $2.2 \text{ MiB}$

$$256 \times 2^8 = 8 \text{ bits}$$

$$2,223.5 \times 8 / 8 = 2,223.5 \text{ bytes}$$

20. a)  $7.5 \times 5.8 \times 326 = 14181 \text{ pixels}$

b)  $14.18 \text{ MiB}$

$$256 \times 2^8 = 8 \text{ bits}$$

$$14181 \times 8 / 8 = 14181 \text{ bytes}$$

21. For temp 5, I looked for a frat member with the name of Ron. For temp 6, I looked for sorority members with the class of "Soph."

TEMP 5

<u>F.Name</u>	<u>F.State</u>	<u>Major</u>
Ron	OR	Math

TEMP 6

<u>S.Name</u>	<u>S.State</u>	<u>S.Major</u>	<u>S.Class</u>
Beth	TX	Hist	Soph
Allison	AZ	Math	Soph

22. a) select Sor where S.Name = "Beth" giving temp  
project temp over S.State giving result1

Select member where the condition of S.Name is met, and then project "Beth's" row over F.State to reveal her state.

b) select Frat where F.Major = English giving result2

c) join Sor and Frat over Major giving temp

project temp over (S.Name, F.Name, Major) giving result3

23. a) project Sor over S.Name giving temp

select temp where S.Class = Soph giving Result2

b) project Sor over (S.Name, Major) giving temp1

project Frat over (F.Name, Major) giving temp2

join temp1 and temp2 over Major giving Result3

chp 3 #(36-39)

36. "Have a nice day!"

I converted from binary to decimal to ASCII:

72	69	118	65
32	97	32	110
105	99	101	32
100	97	121	33

37. "Meet at midnight."

38. 101 0000  
110 0001  
111 1001  
010 0000  
010 0100  
011 0000  
010 1110  
011 1001  
011 0010

Simply match the letter to the corresponding decimal number, then convert to binary.

ASCII: 80 97 121 32 36 48 46 57 50

39. 001 01000  
001 10011  
001 10010  
001 10001  
001 01001  
001 10100  
001 11001  
\ 001 10111  
001 01101  
001 10000  
001 10000  
001 10001  
001 10101