heap

max heap? @ node in level k greter than k+1

(b) left child smallest than right child

(c) none

(d) [redacted]

best case in heap (insert / remove) مثال؟

25 18 15 10 11 7

- insert 20
- insert 3 then 28
- delet one key
- delet two key

Sort

	worst (n^2)	Comparison	In Place	Stable
Insertion				
Quick				
bucket , Radix				

(4 , B)	(1 , F)	(2 , A)	(4 , A)	(7 , A)	(2 , E)

increasing by use Select sort and heap sort (if left and Right equal take Right)

Hash

2. You want to store at most ~~10~~ 9 keys in hash table using the % hash function. Choose the most appropriate table size:

4. Consider the following hash function: ~~select the two rightmost digits~~ sum of Right most and left most then apply % 11 on the corresponding number. Which of the following couples of keys cause a collision?

(a) 66 and 151 (b) 4301 and 733 (c) 1244 and 926 (d) all (e) none

b) (8 points) Use the hash function $H(key) = key\%5$ to store the sequence of keys ~~22, 15, 12, 27, 18~~ 7 35 1 12 5 in a hash table of size 5. Use the following collision resolution strategies:

1. Linear rehashing (c=1). Fill in the following table:

Key	22	15	12	27	18
Position					
Number of probes					

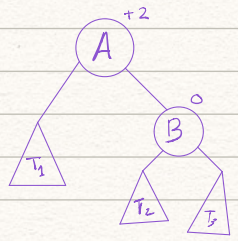
2. External chaining. Fill in the following table:

Key	22	15	12	27	18
Index of the list					

3. Coalesced chaining with cellar size 2 and address region size 5. Fill in the following table (put -1 if there is no next element):

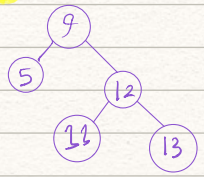
Key	22	15	12	27	18
Position					
Index of next element					

AVL

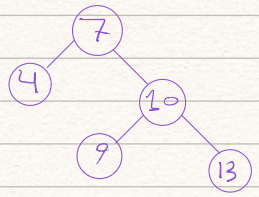


Rotations يسأل عن نوع واتجاه

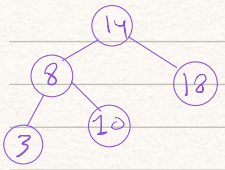
big O سؤال عن



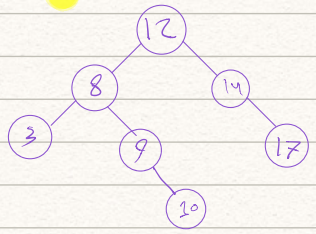
Insert 10



Insert 17



delet 14



delet 17

Graph

	a	b	c	d	e	f
a		1	1			
b	1		1	1		
c	1	1		1		
d		1	1			1
e						1
F				1	1	

space adj list ?

BFS وش نستخدم في

B+

minimum number of child Root إلا

ⓐ 0 ⓑ 2 ⓒ 2 ⓓ $\lceil \frac{m}{2} \rceil$

height if leaf Node 64 and m = L = 4 ?

ⓐ 4 ⓑ 16 ⓒ none

1. Which of the following sequences are ~~paths~~ Simple Path in this graph? Answer by T (true) or F (false).

True or False

(a) The graph is ~~if~~ connected. ___

(b) The number of edges in the graph is 8.

ⓒ Is Wighted Graph

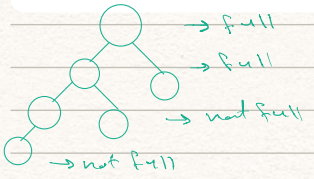
ⓔ (b, e, f, b) i a cycle. ___ غير

3. The BFS traversal of this graph starting from a is (insert neighbors in the data structure in increasing alphabetic order):

4. The DFS traversal of this graph starting from a is (insert neighbors in the data structure in increasing alphabetic order):

Sample سم زي

Write the method **private** ~~int~~ boolean `f(BTNode<T> t, T e, int k)`, member of `BT`.



تشيك إذا كان لفل k أول Full "Node 2^k يعني عشرة Full"

root at level Zero , $k \geq 0$