

Inf102-oblig1 – CGJ008

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[1] Quicksort

a)

	i	j	0	1	2	3	4	5	6	7	8	9
Initial values	0	10	11	12	4	13	2	5	11	5	16	14
Scan left, scan right	1	7	11	12	4	13	2	5	11	5	16	14
Exchange	1	7	11	5	4	13	2	5	11	12	16	14
Scan left, scan right	3	6	11	5	4	13	2	5	11	12	16	14
Exchange	3	6	11	5	4	11	2	5	13	12	16	14
Scan left, scan right	6	5	11	5	4	11	2	5	13	12	16	14
Final exchange	6	5	5	5	4	11	2	11	13	12	16	14
Result		5	5	5	4	11	2	11	13	12	16	14

b)

	lb	pivPos	ub	0	1	2	3	4	5	6	7	8	9
initial values →				11	12	4	13	2	5	11	5	16	14
	0	5	10	5	5	4	11	2	11	13	12	16	14
	0	2	5	4	2	5	11	5	11	13	12	16	14
	0	1	2	2	4	5	11	5	11	13	12	16	14
*	0		1	2	4	5	11	5	11	13	12	16	14
*	2		2	2	4	5	11	5	11	13	12	16	14
	3	4	5	2	4	5	5	11	11	13	12	16	14
*	3		4	2	4	5	5	11	11	13	12	16	14
*	5		5	2	4	5	5	11	11	13	12	16	14
	6	7	10	2	4	5	5	11	11	12	13	16	14
*	6		7	2	4	5	5	11	11	12	13	16	14
	8	9	10	2	4	5	5	11	11	12	13	14	16
*	8		9	2	4	5	5	11	11	12	13	14	16
*	10		10	2	4	5	5	11	11	12	13	14	16

* lb + 1 >= ub → no partition for subarrays of size < 2

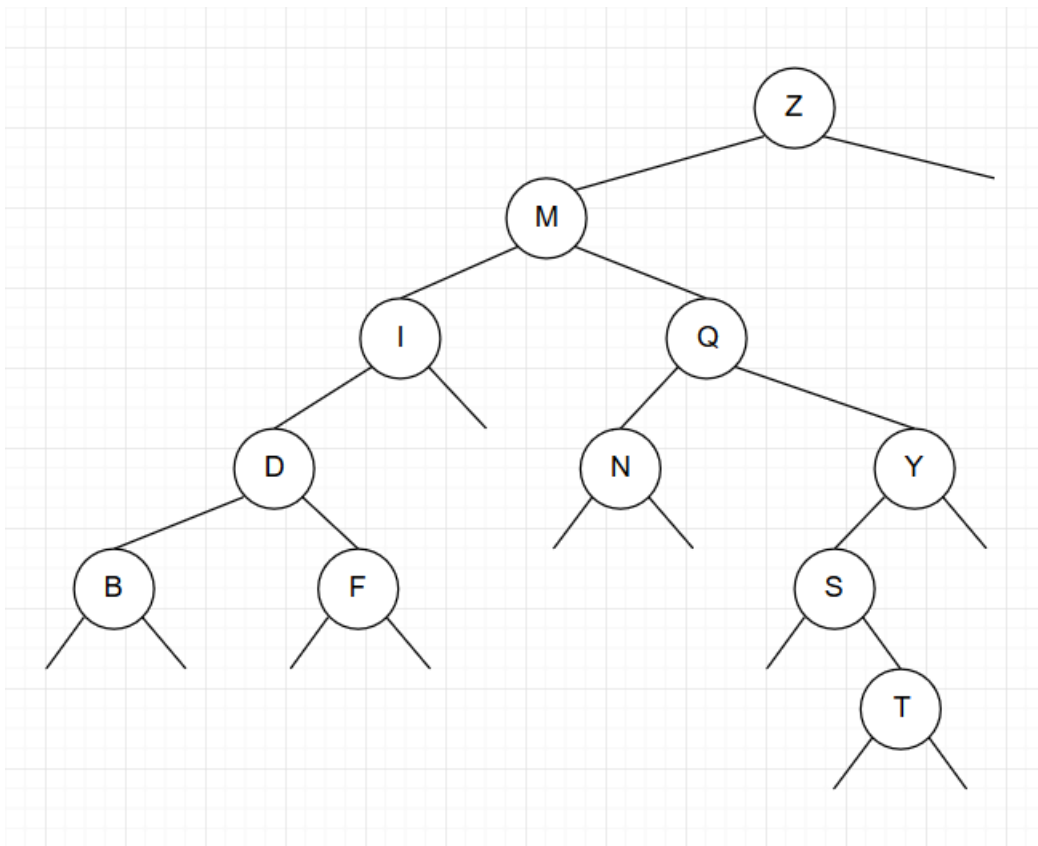
c)

[2] Priority Queues

a) [null, T, S, R, N, P, O, A, E, I, G, H]

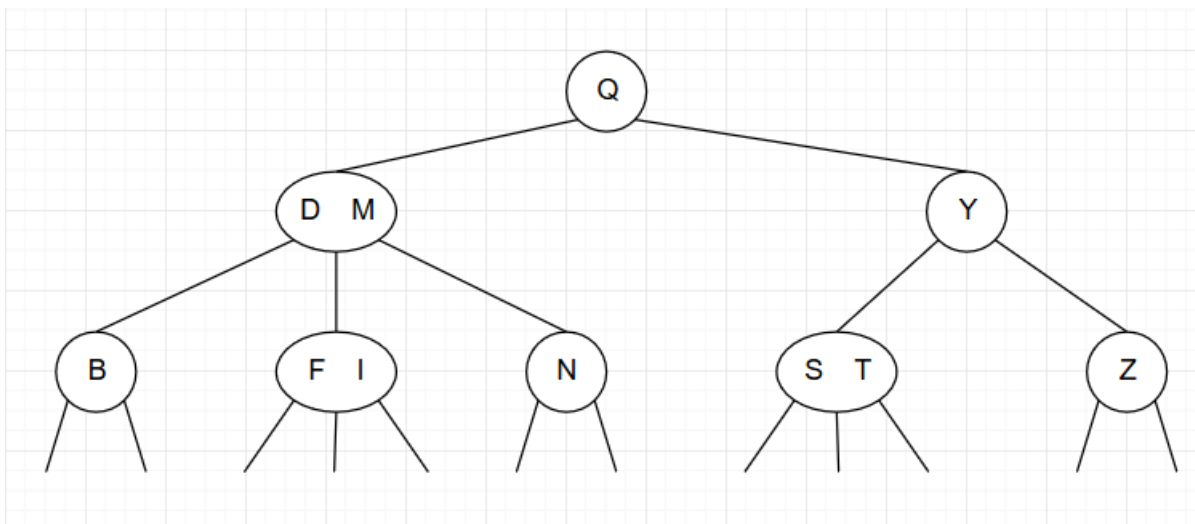
[3] Binary Search Tree

a)

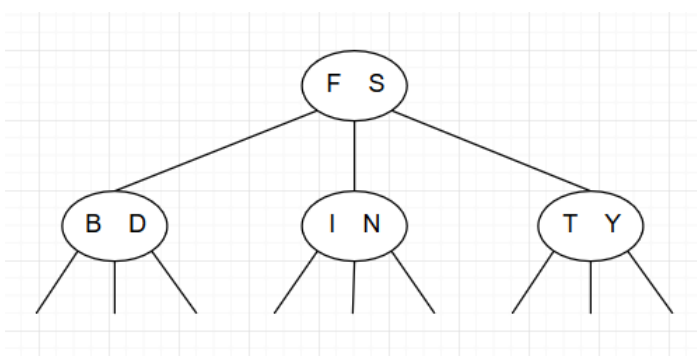


[4] Balanced Binary Search Trees

a)



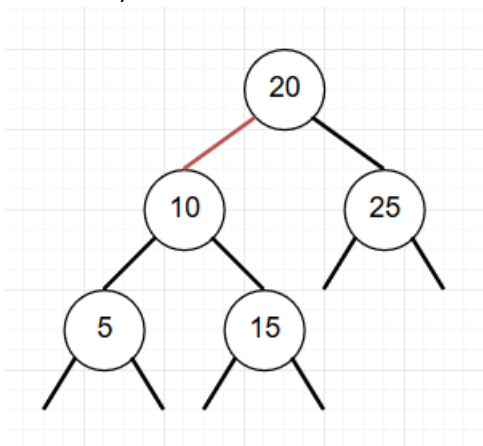
b) Insertion order: **B F Y I S D N T**



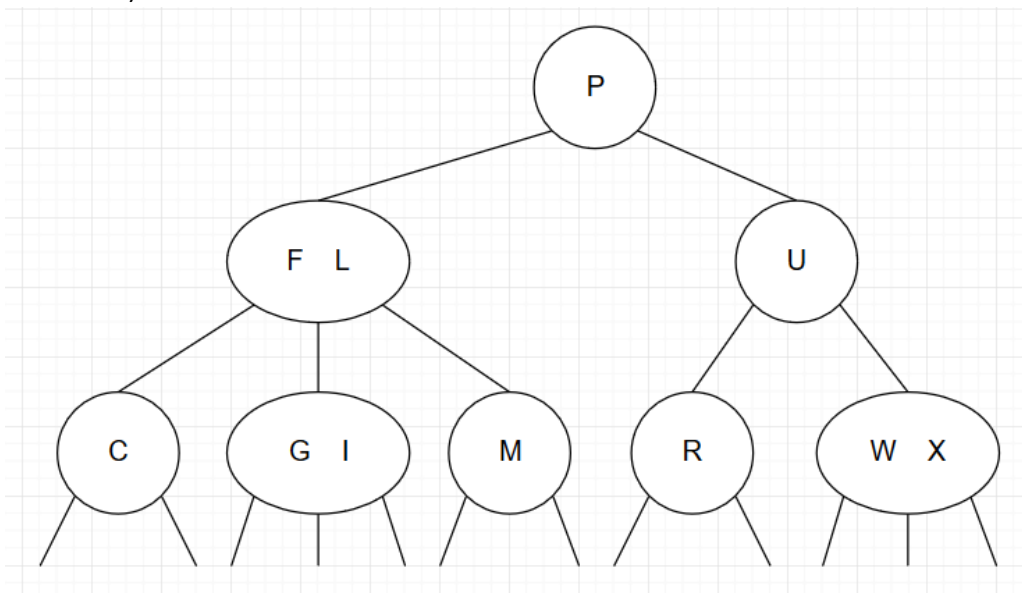
c) (iv) is a Red-Black BST

d)

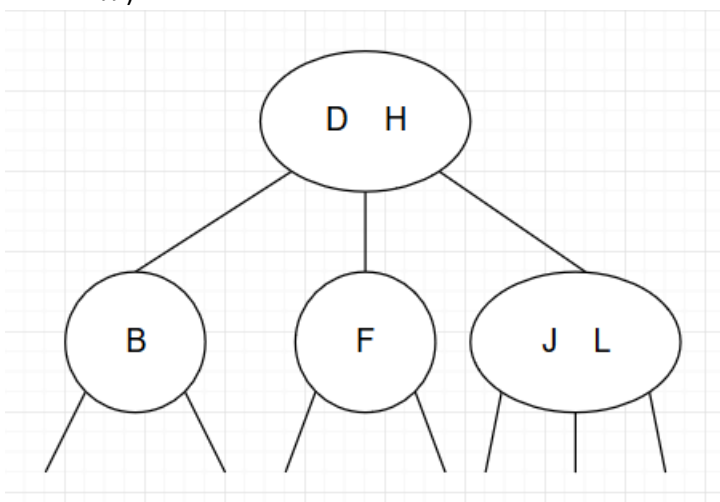
ii)



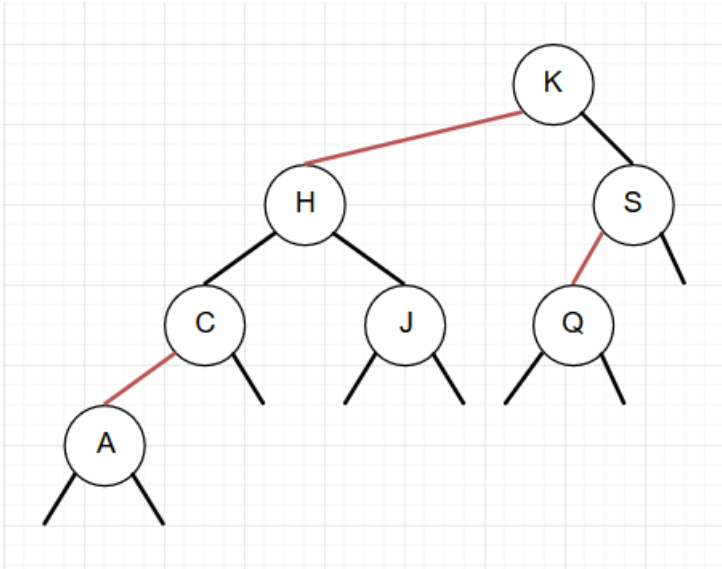
iii)



iv)



v)



e)

LRFFRFRFRFR