

Priority Queue Example

item = (element, key, index/pointer to the locator array)

locator=index/pointer to the heap array

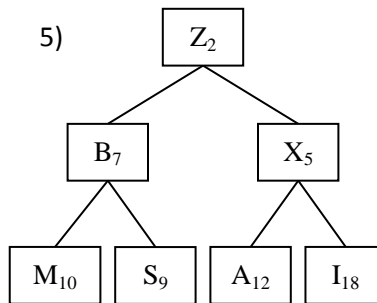
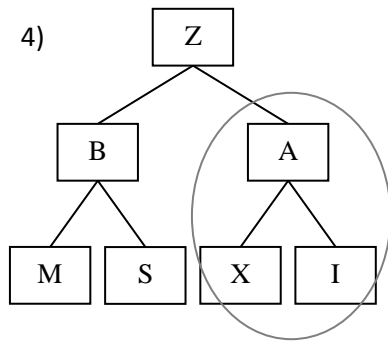
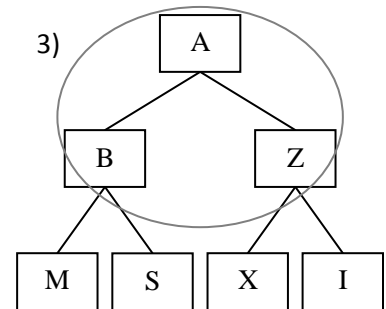
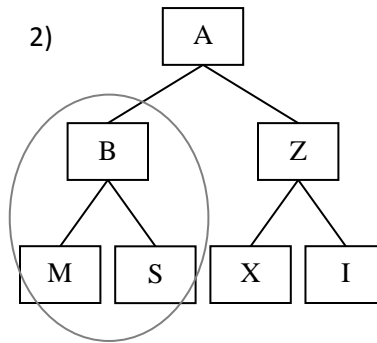
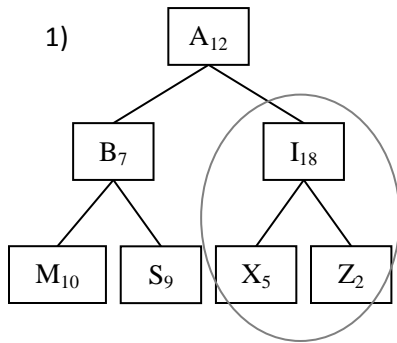
Bottom-up construction

heap of items:

0	1	2	3	4	5	6
A, 12, 0	B, 7, 1	I, 18, 8	M, 10, 12	S, 9, 18	X, 5, 23	Z, 2, 25

locator array:

0 (A)	1 (B)	...	8 (I)	...	12 (M)	...	18 (S)	...	23 (X)	24 (Y)	25 (Z)
0	1		2		3		4		5		6



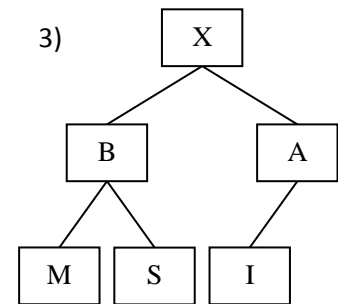
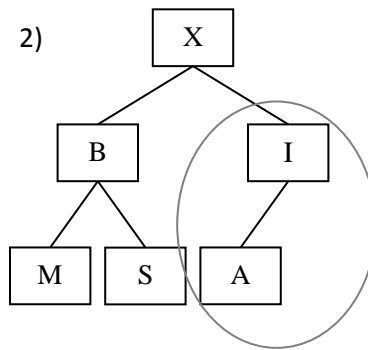
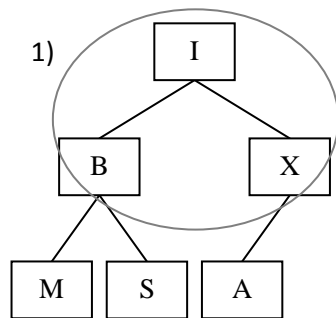
heap of items:

0	1	2	3	4	5	6
Z, 2, 25	B, 7, 1	X, 5, 23	M, 10, 12	S, 9, 18	A, 12, 0	I, 18, 8

locator array:

0 (A)	1 (B)	...	8 (I)	...	12 (M)	...	18 (S)	...	23 (X)	24 (Y)	25 (Z)
5	1		6		3		4		2		0

Remove min



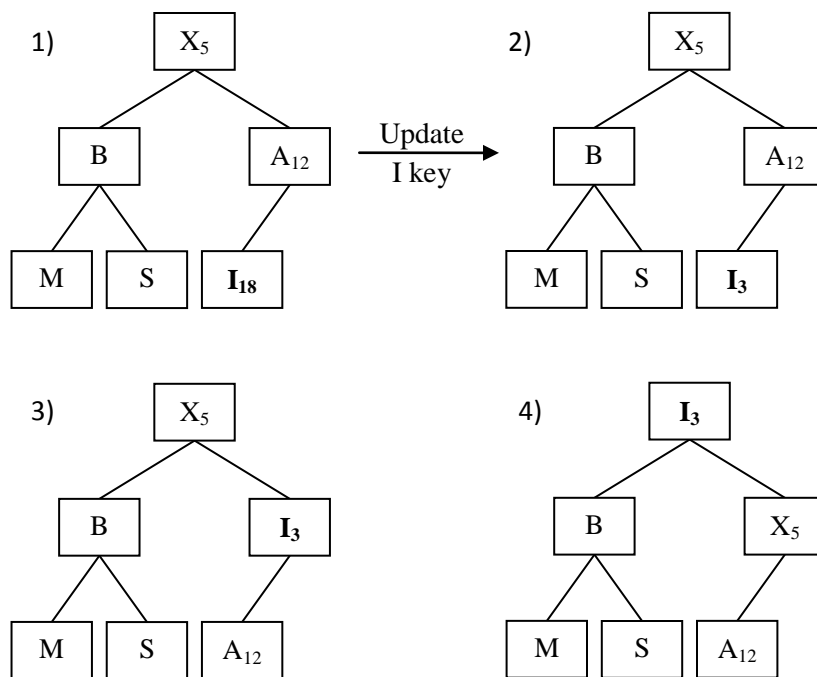
heap of items:

0	1	2	3	4	5	6
X, 5, 23	B, 7, 1	A, 12, 0	M, 10, 12	S, 9, 18	I, 18, 8	

locator array:

0 (A)	1 (B)	...	8 (I)	...	12 (M)	...	18 (S)	...	23 (X)	24 (Y)	25 (Z)
2	1		5		3		4		0		

Update I key from 18 to 3



heap of items:

0	1	2	3	4	5	6
I, 3, 8	B, 7, 1	X, 5, 23	M, 10, 12	S, 9, 18	A, 12, 0	

locator array:

0 (A)	1 (B)	...	8 (I)	...	12 (M)	...	18 (S)	...	23 (X)	24 (Y)	25 (Z)
5	1		0		3		4		2		