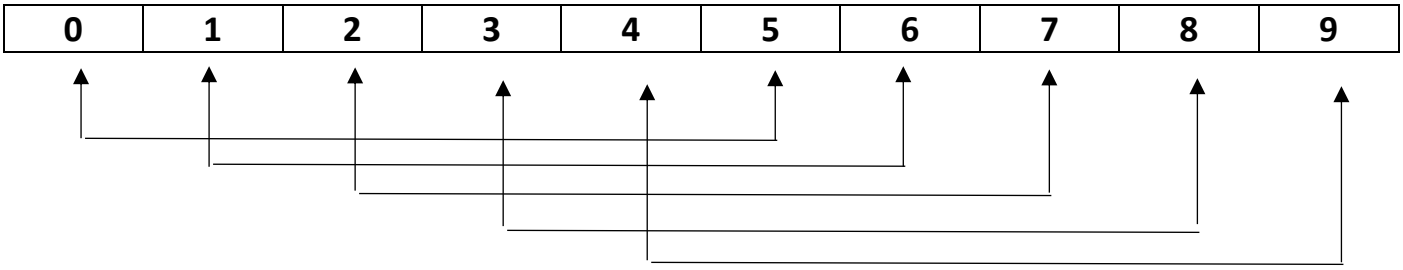
GIT Department of Computer Engineering
CSE 222/505 - Spring 2020
Harun Albayrak – 171044014 - Homework 6

Question 1)

1 - Shell Sort

Gap value = 10/2 = 5

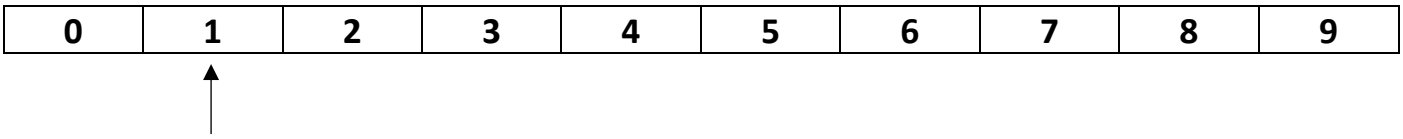


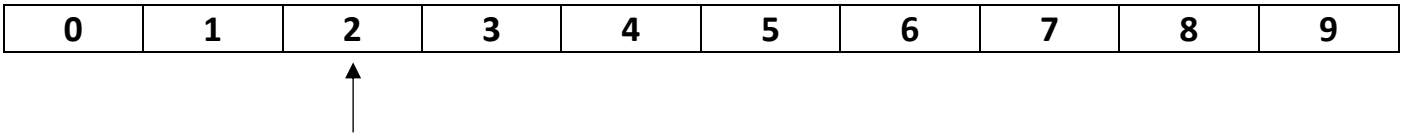
n/2 comparisons

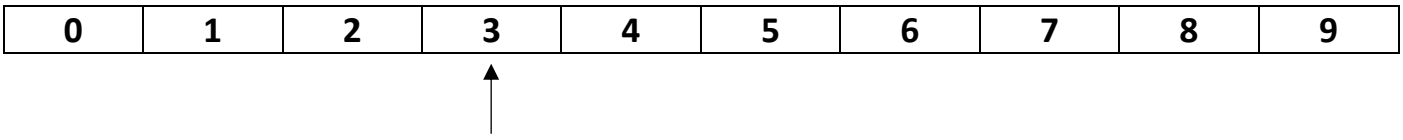
Subarrays is sorting… (5 Subarrays)

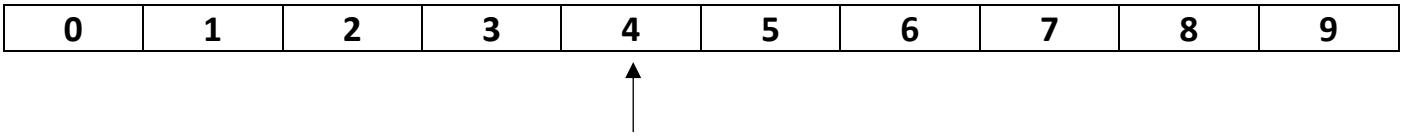
Subarrays is already sorted.

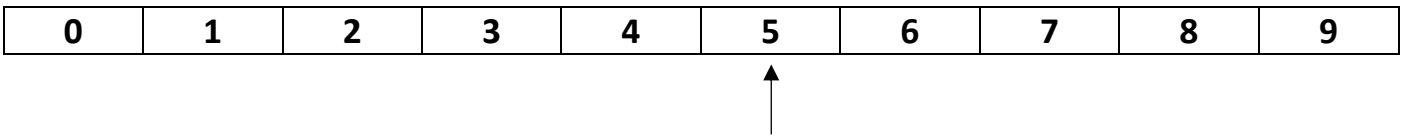
Gap value = 5/2 = 2 => 1 (If gap value is 2, automatically gap value sets to 1.) (n-1 comp.)

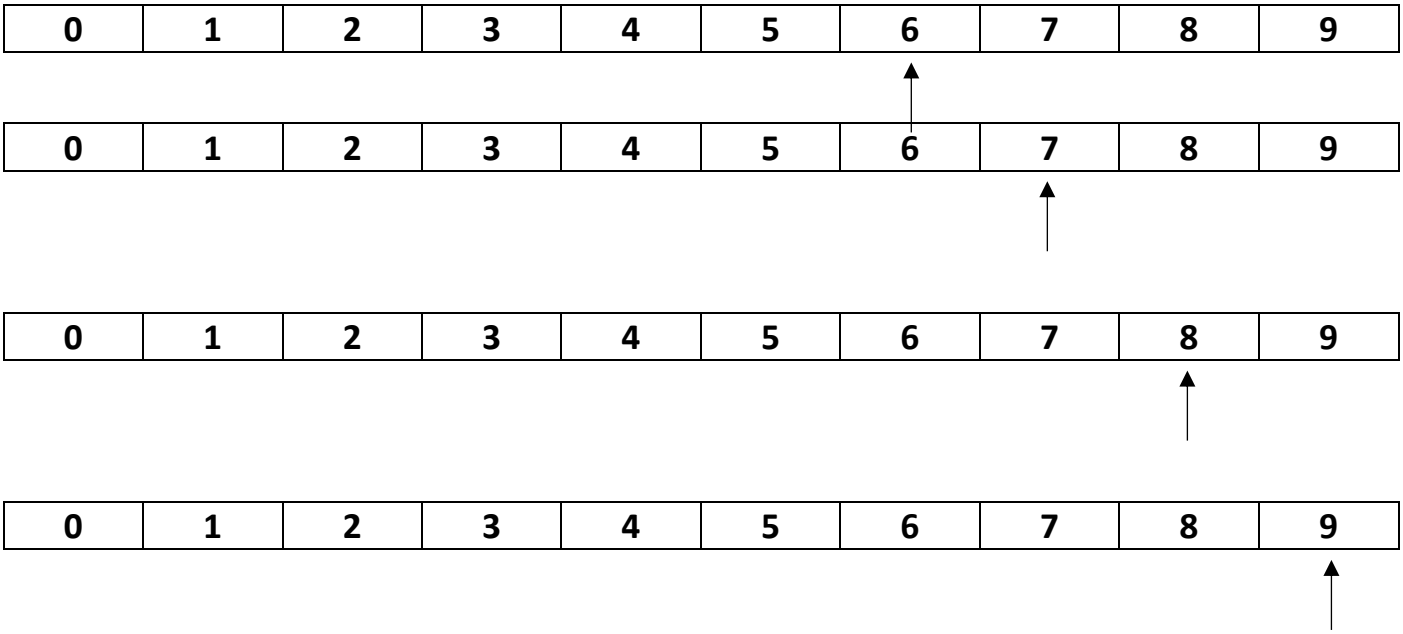








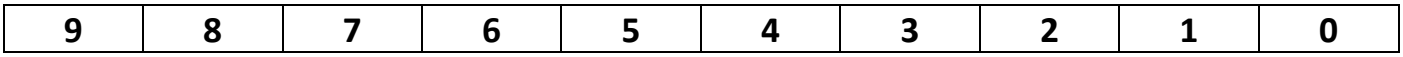




Insertion sort is performed.

----

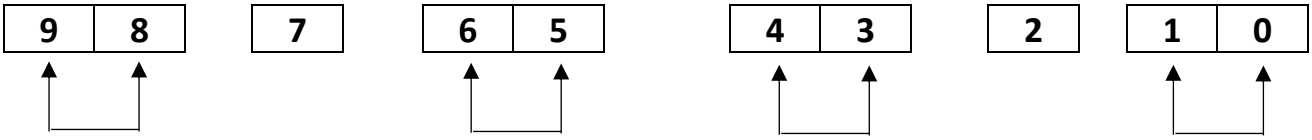
2 – Merge Sort



The tablo divides to 2 tables.

The tablo divides to 2 tables.

The tablo divides to 2 tables. (n/2 comparisons)



Two items are compared. And swap operations is performed.

Merges tables.

Merge tables.

5	6	7	8	9

0	1	2	3	4

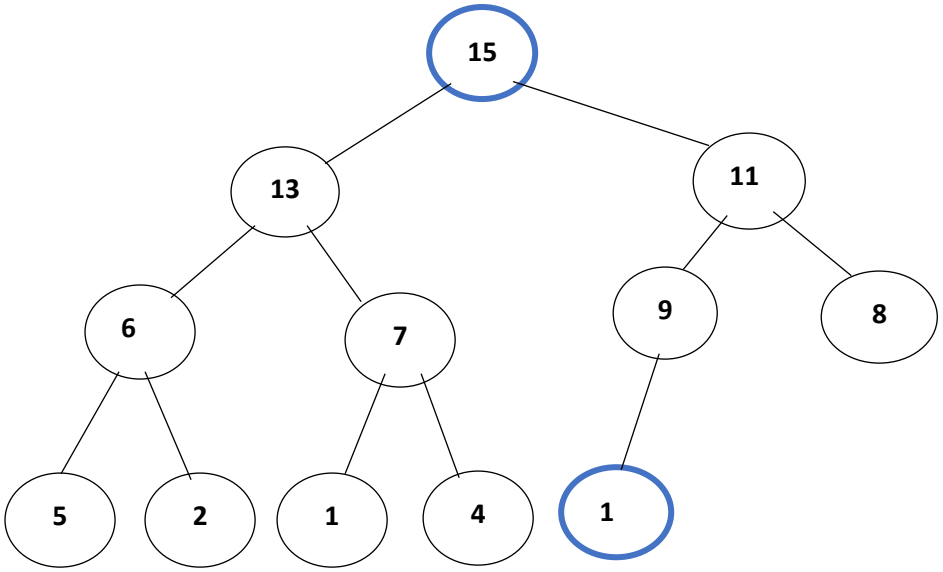
Merge tables.

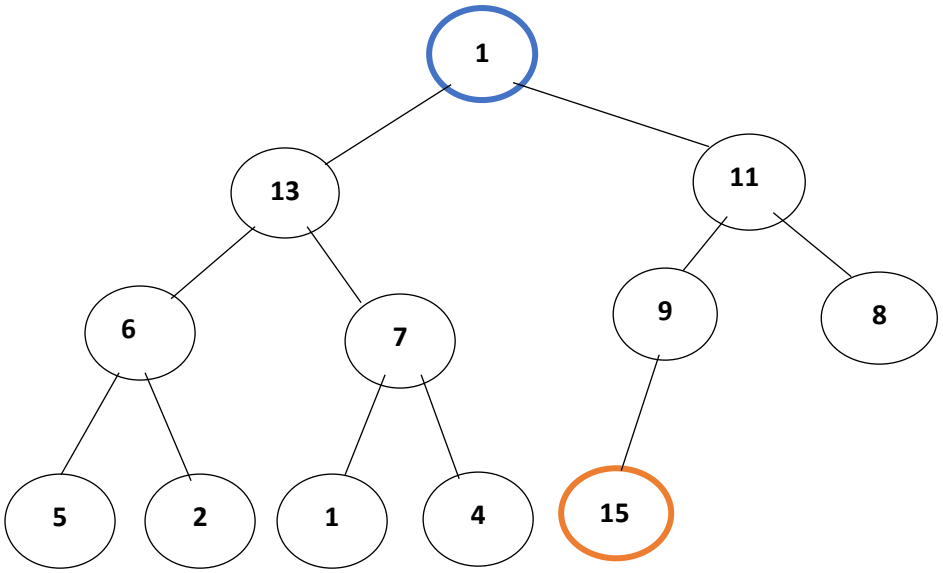
0	1	2	3	4	5	6	7	8	9

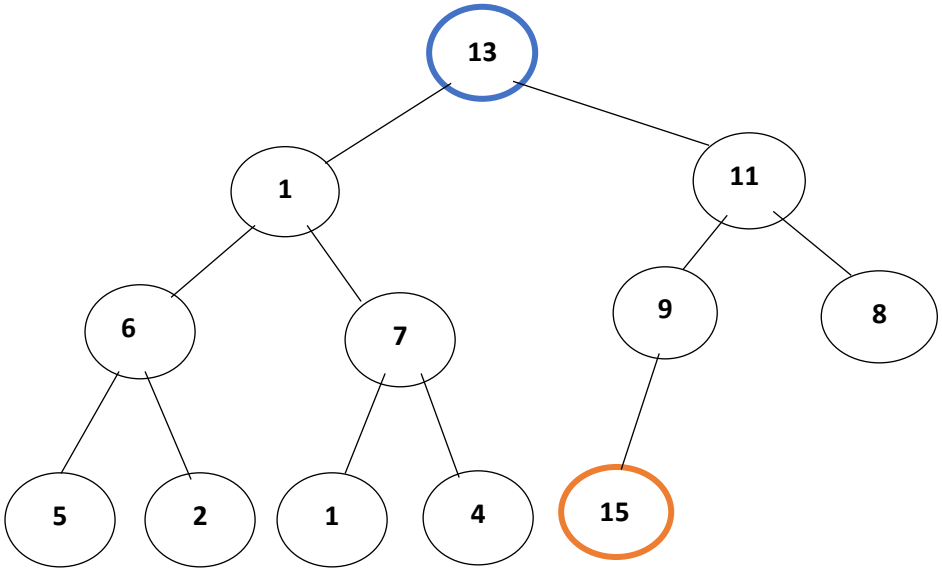
---

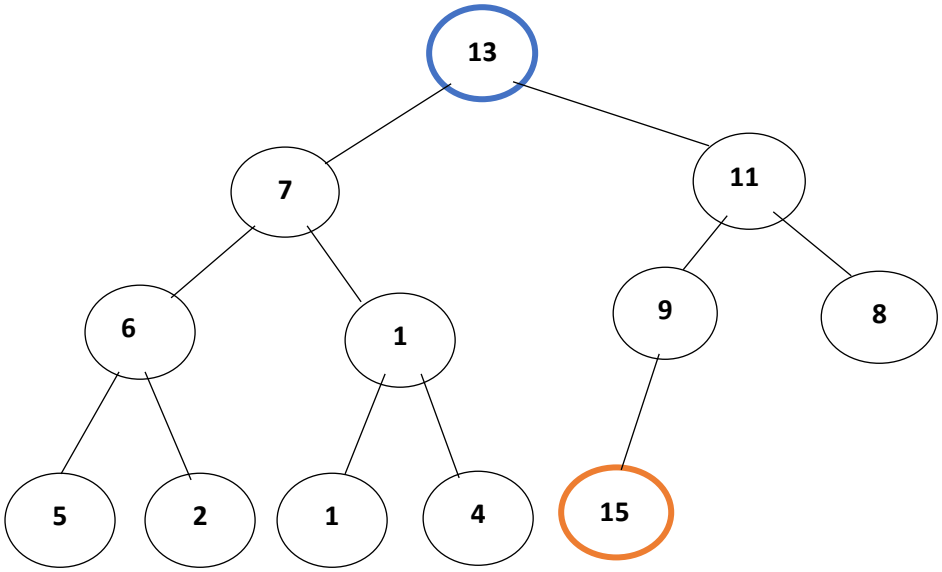
3 – Heap Sort

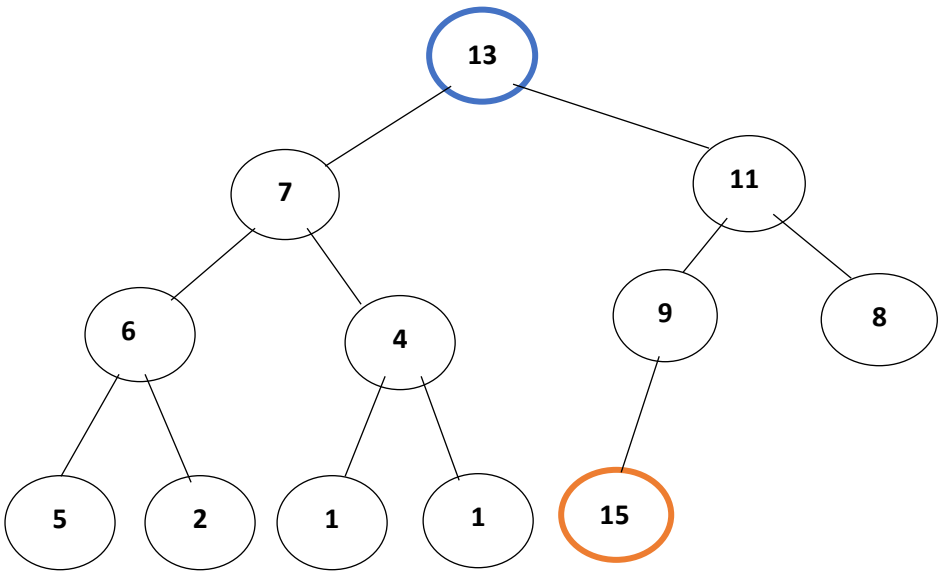
C = { 5,2,13,9,1,7,6,8,1,15,4,11 } (n/2 comparisons)

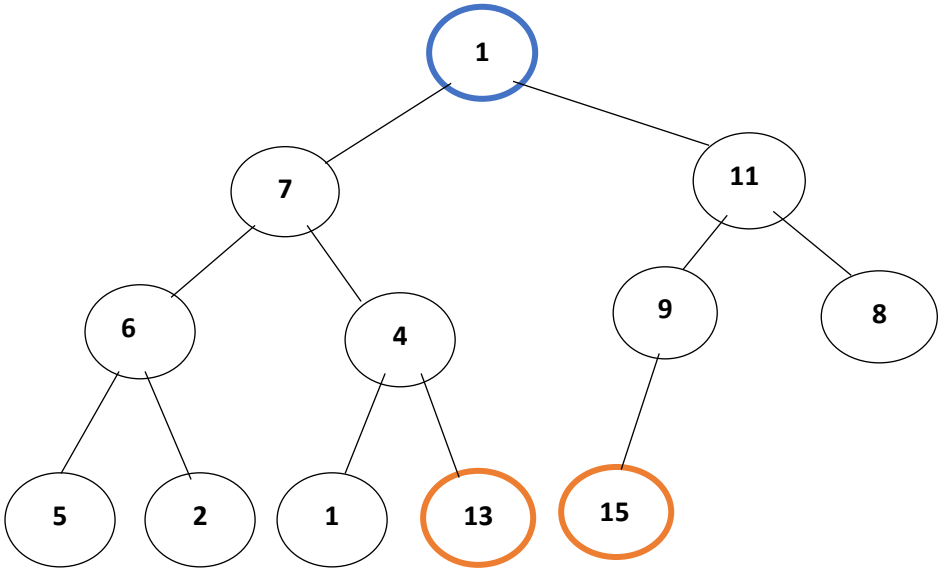


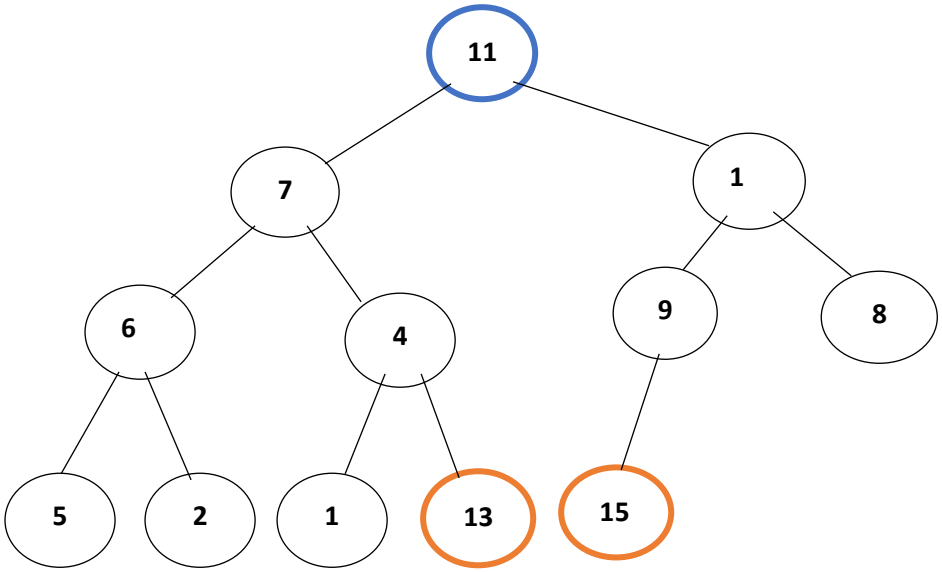


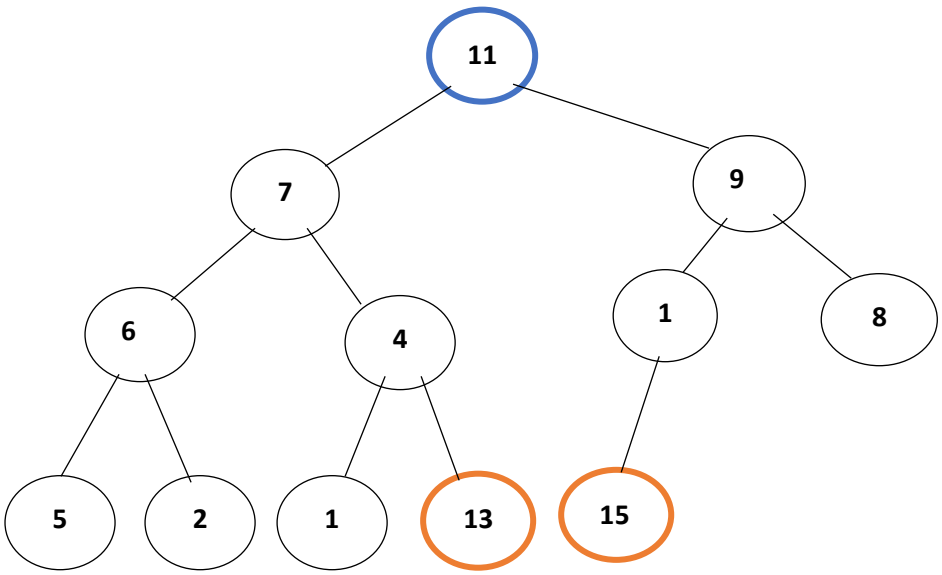

13
1
11
6
7
9
8
5
2
1
4
15

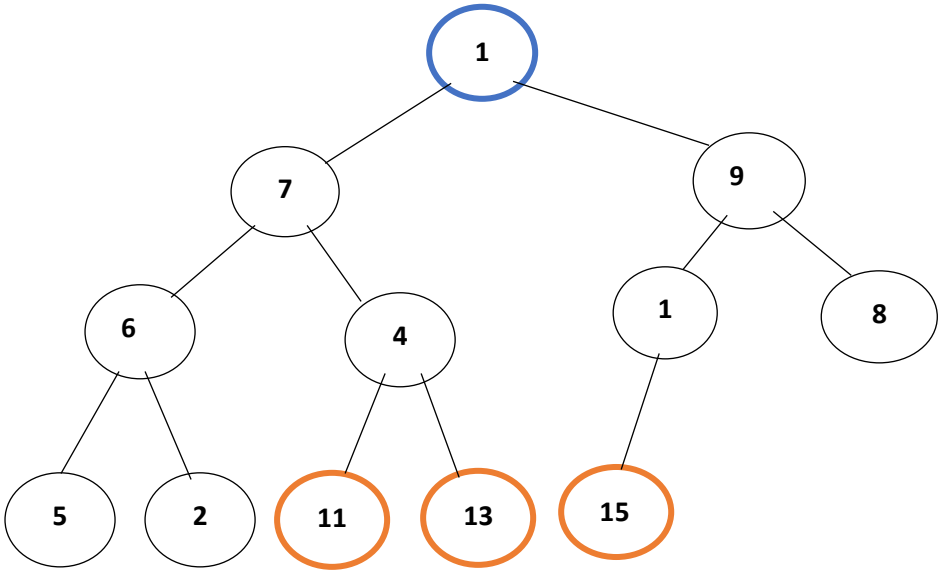

13
7
11
6
1
9
8
5
2
1
4
15

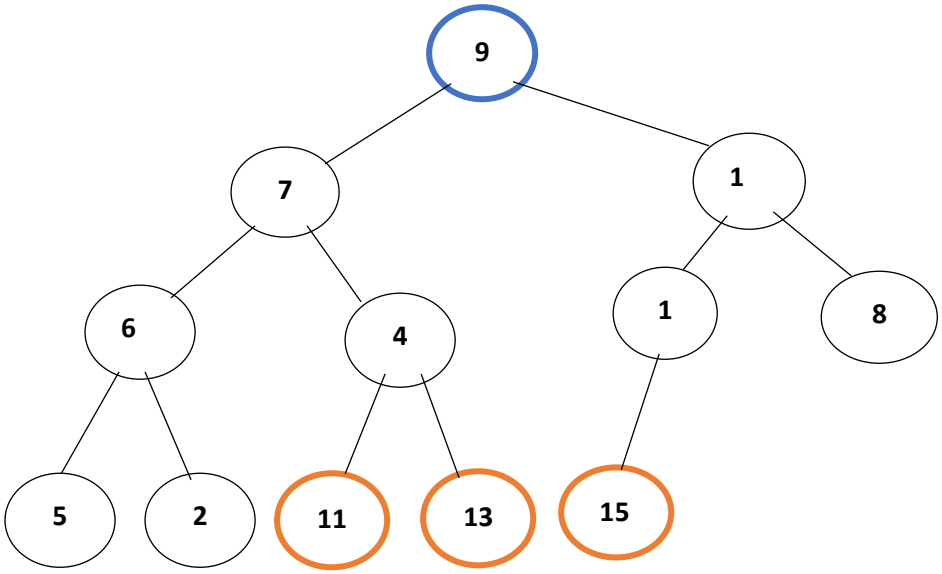

13
7
11
6
4
9
8
5
2
1
1
15

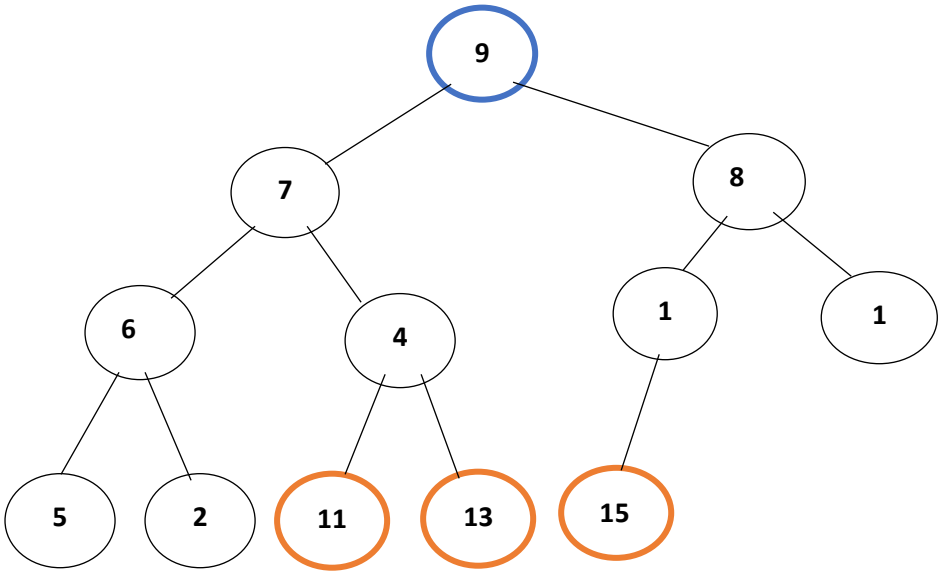

1
7
11
6
4
9
8
5
2
1
13
15

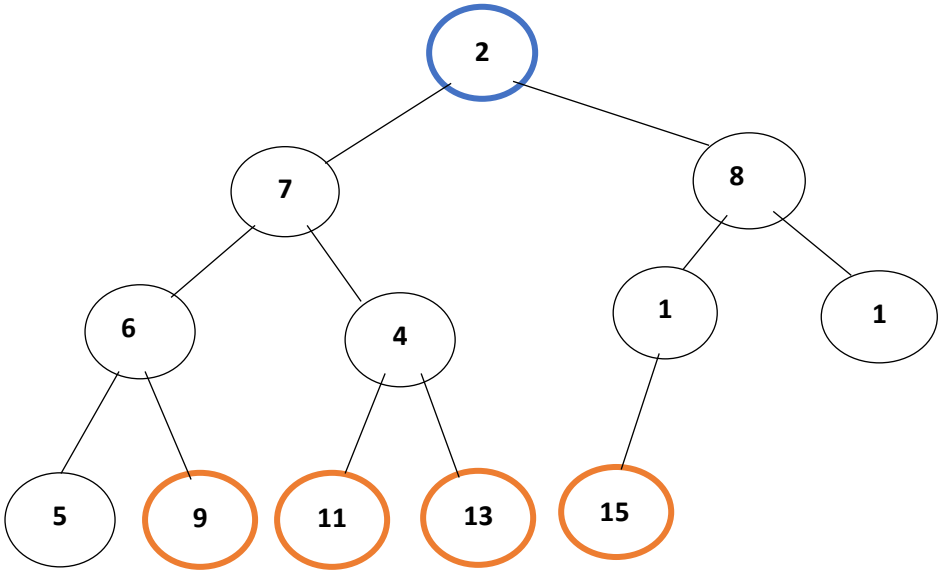

11
7
1
6
4
9
8
5
2
1
13
15

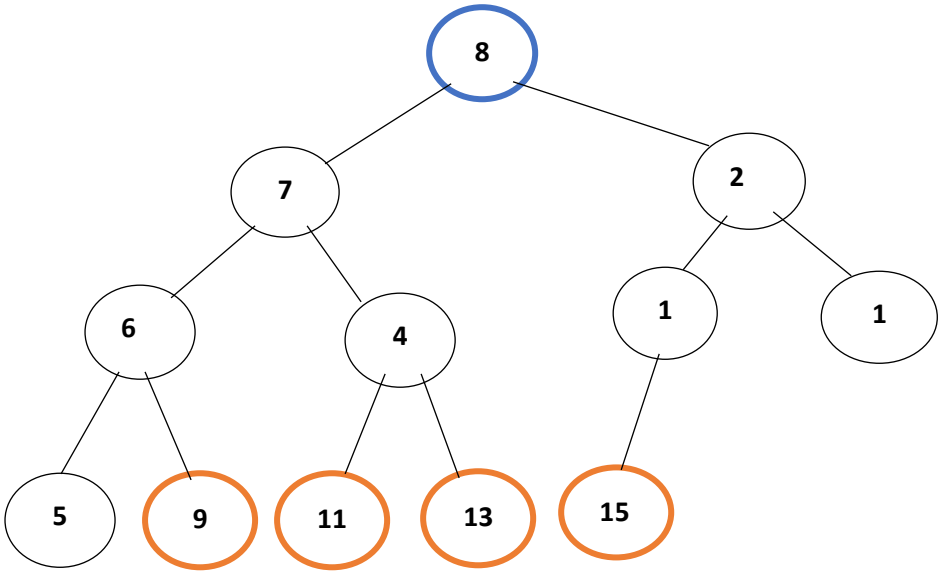

11
7
9
6
4
1
8
5
2
1
13
15

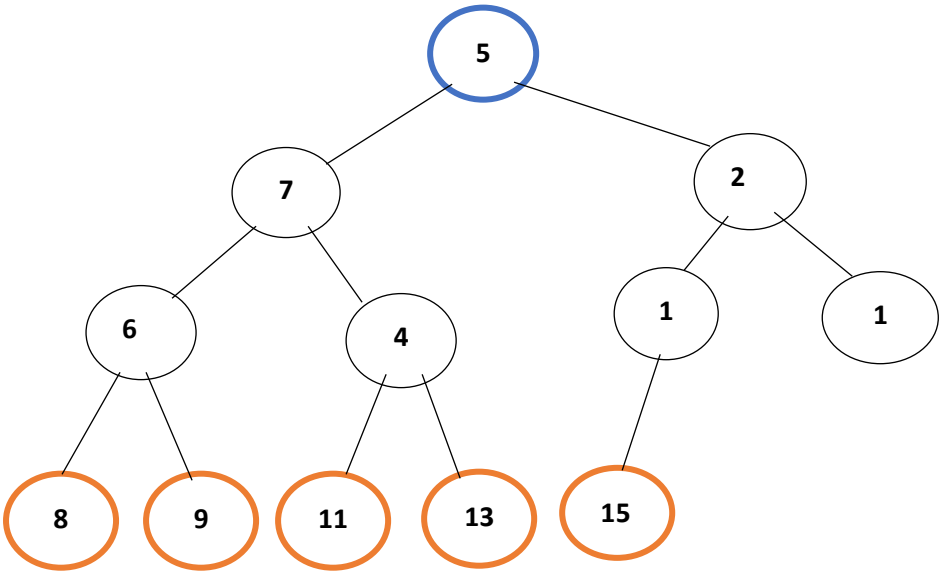

1
7
9
6
4
1
8
5
2
11
13
15

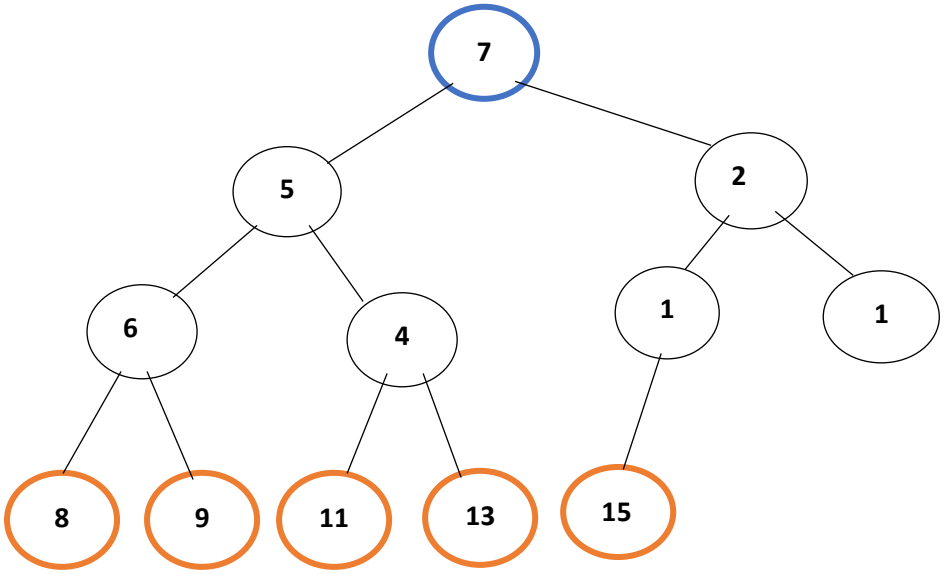

9
7
1
6
4
1
8
5
2
11
13
15

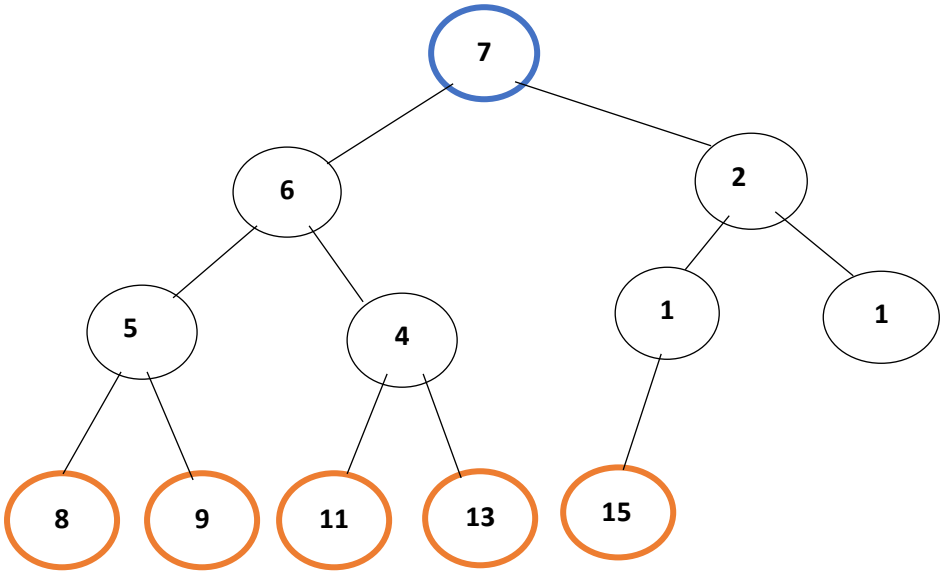

9
7
8
6
4
1
1
5
2
11
13
15

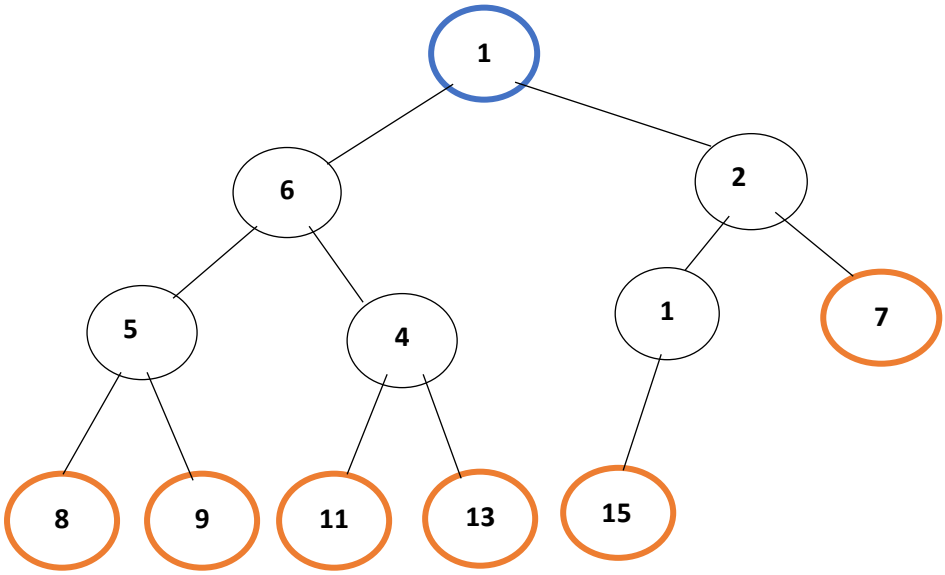

2
7
8
6
4
1
1
5
9
11
13
15

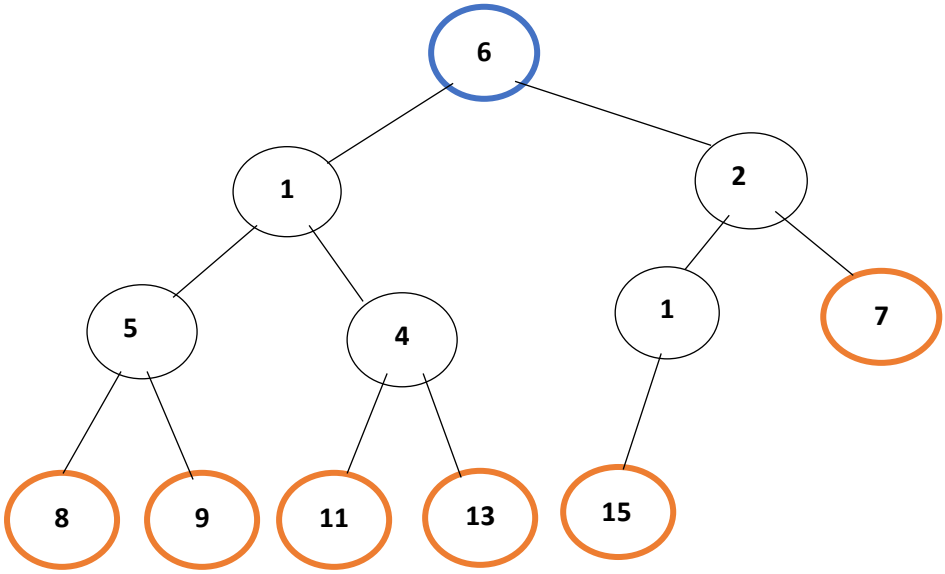

8
7
2
6
4
1
1
5
9
11
13
15

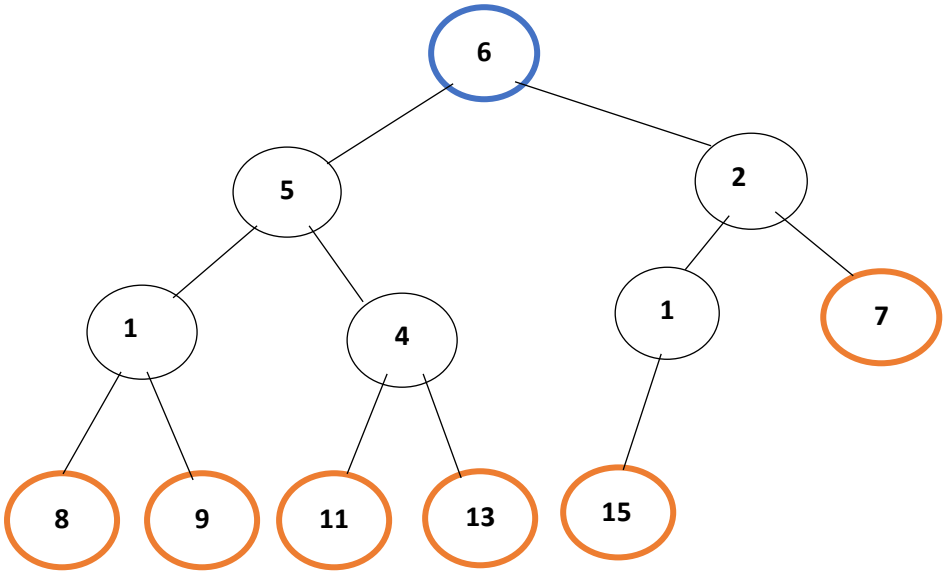

5
7
2
6
4
1
1
8
9
11
13
15

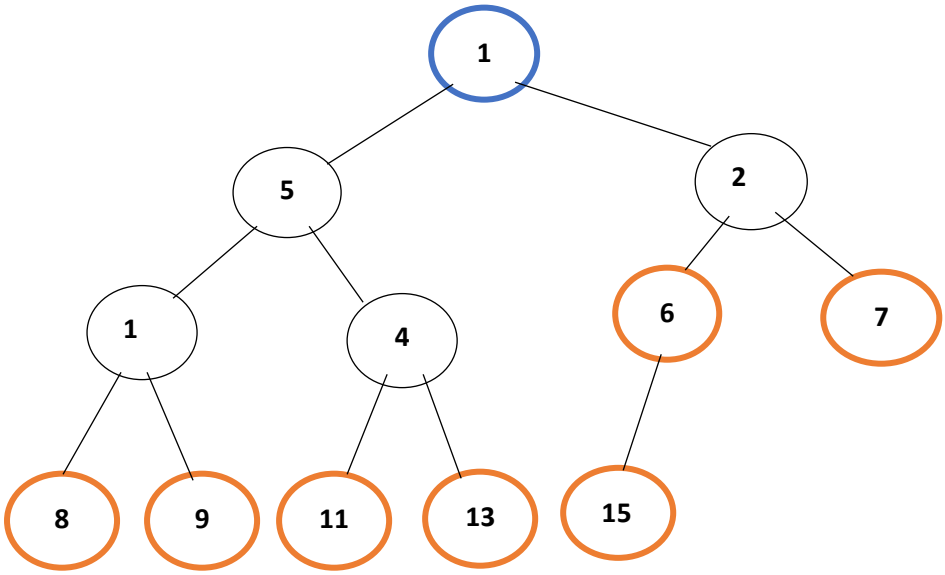

7
5
2
6
4
1
1
8
9
11
13
15

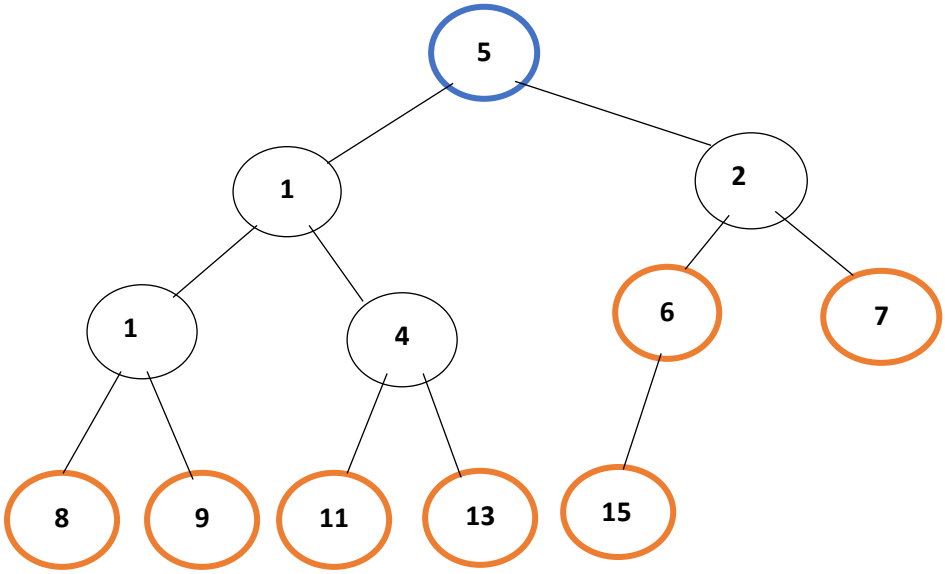

7
6
2
5
4
1
1
8
9
11
13
15

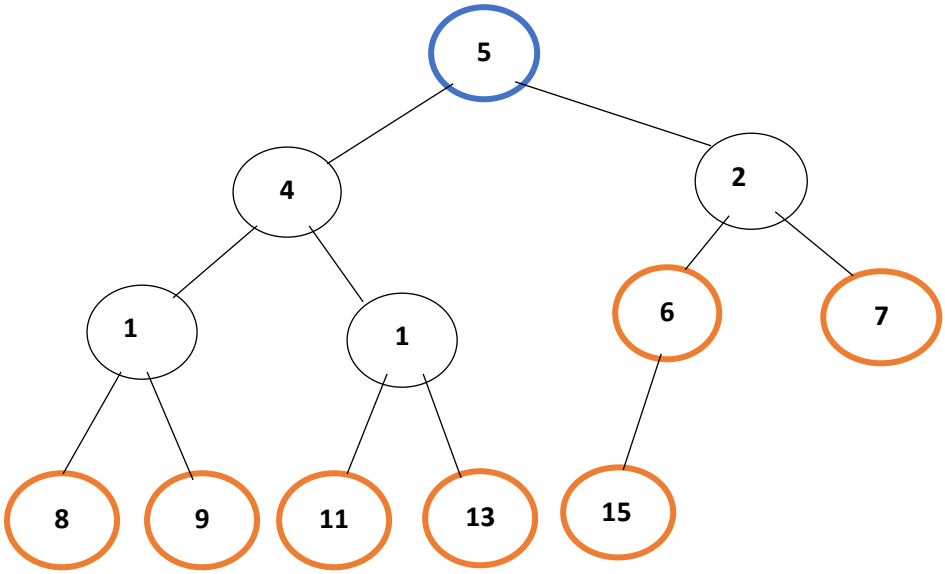

1
6
2
5
4
1
7
8
9
11
13
15

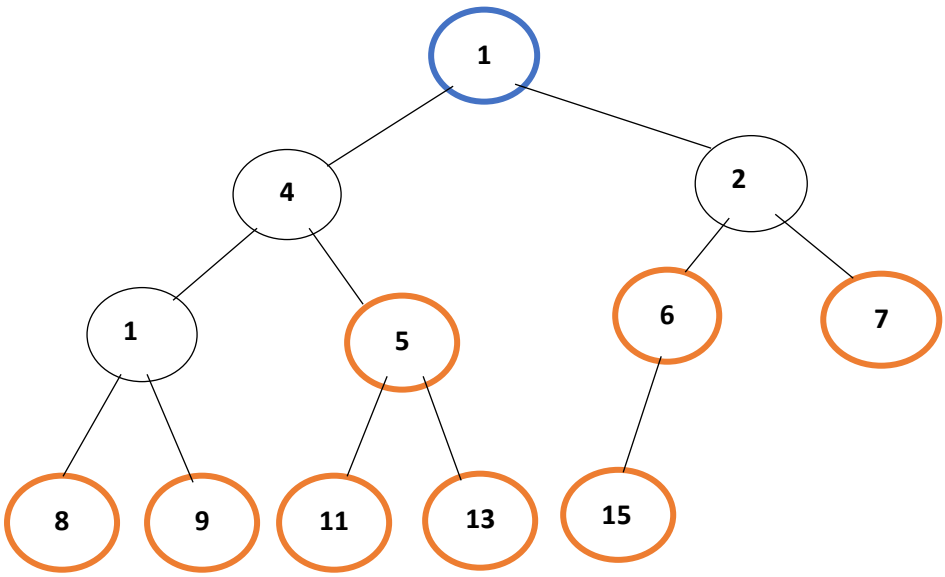

6
1
2
5
4
1
7
8
9
11
13
15

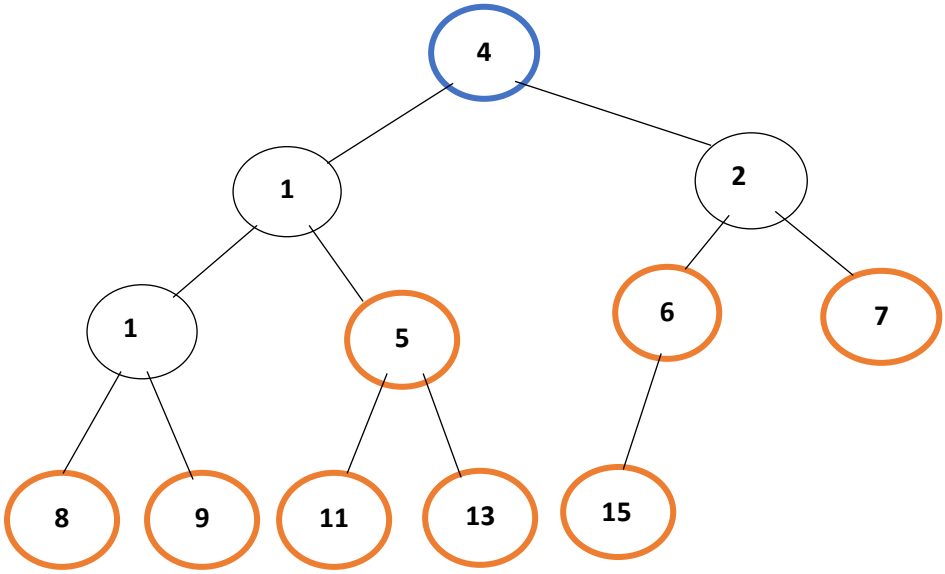

6
5
2
1
4
1
7
8
9
11
13
15

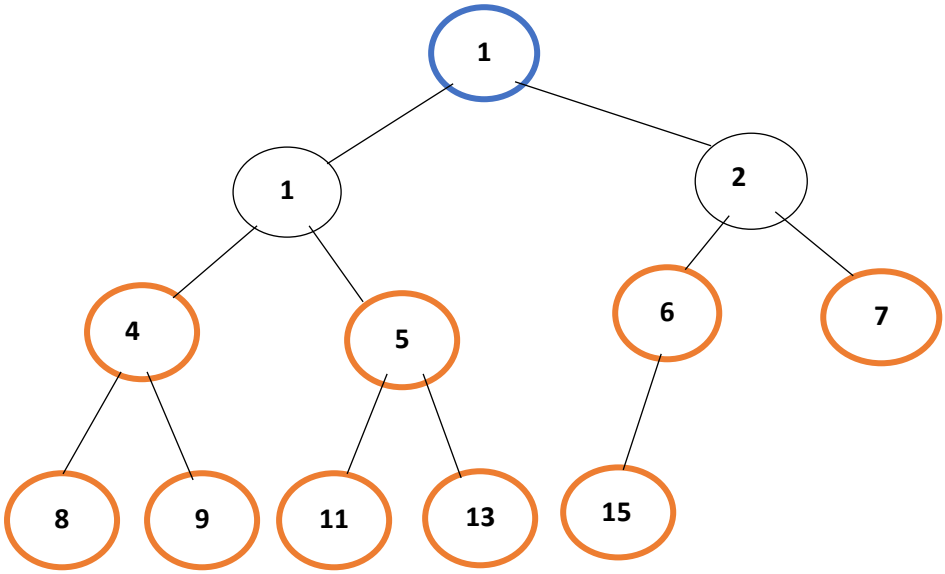

1
5
2
1
4
6
7
8
9
11
13
15

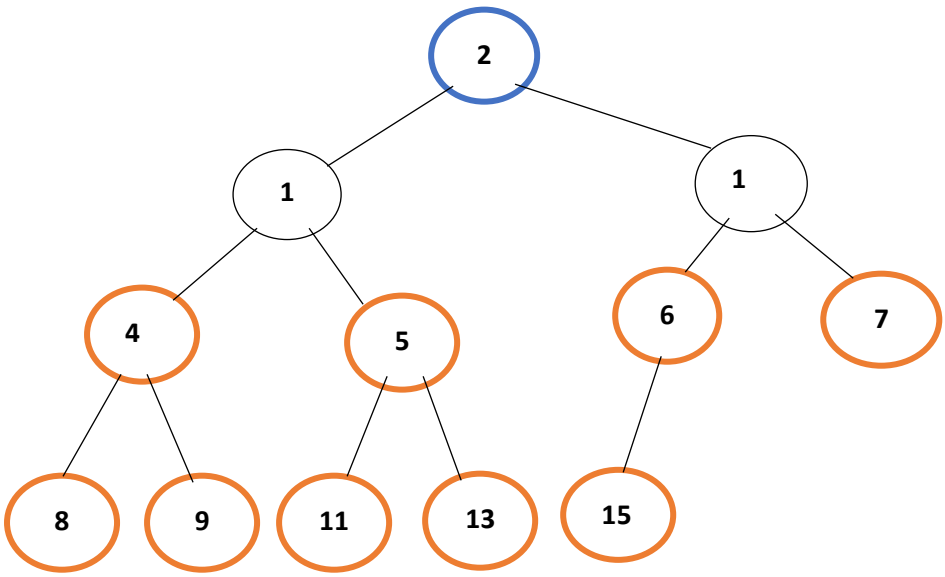

5
1
2
1
4
6
7
8
9
11
13
15

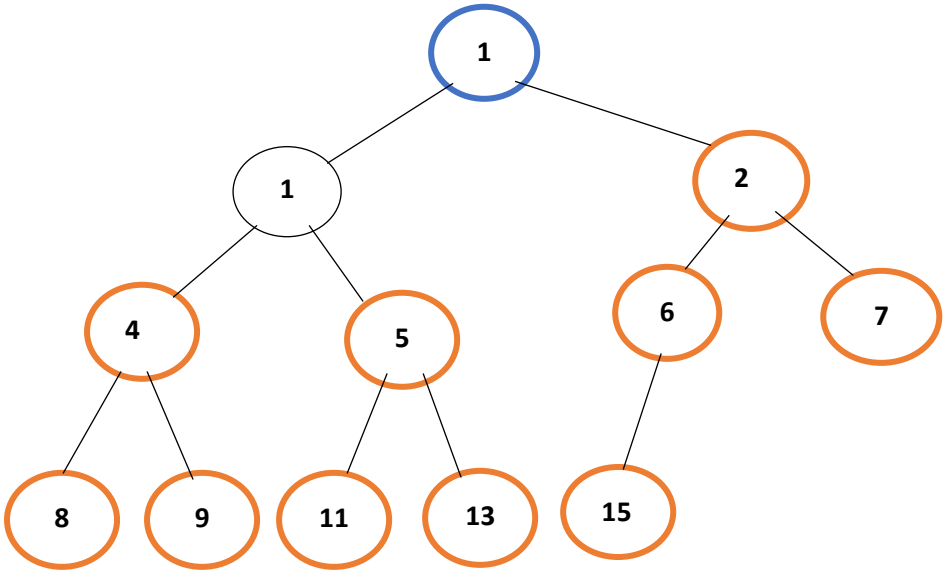

5
4
2
1
1
6
7
8
9
11
13
15

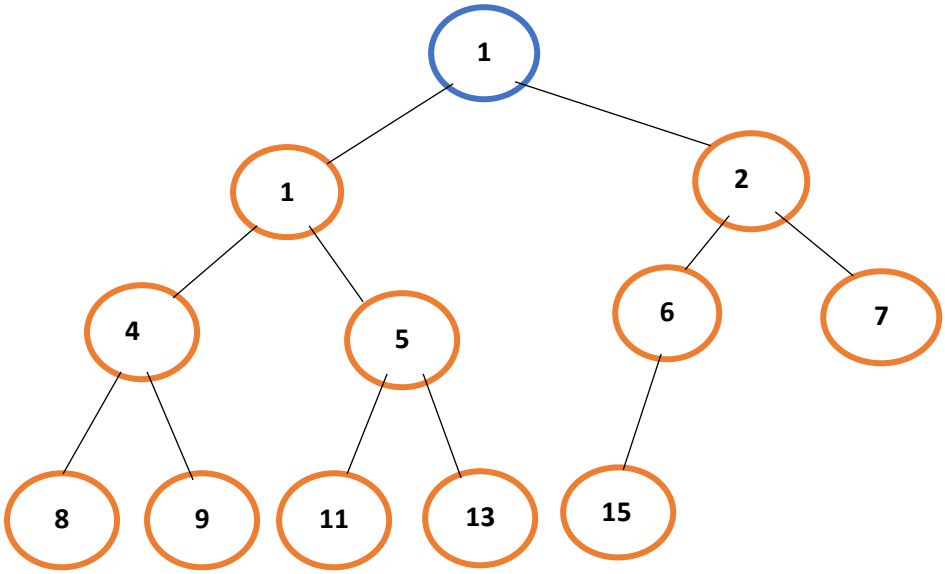

1
4
2
1
5
6
7
8
9
11
13
15

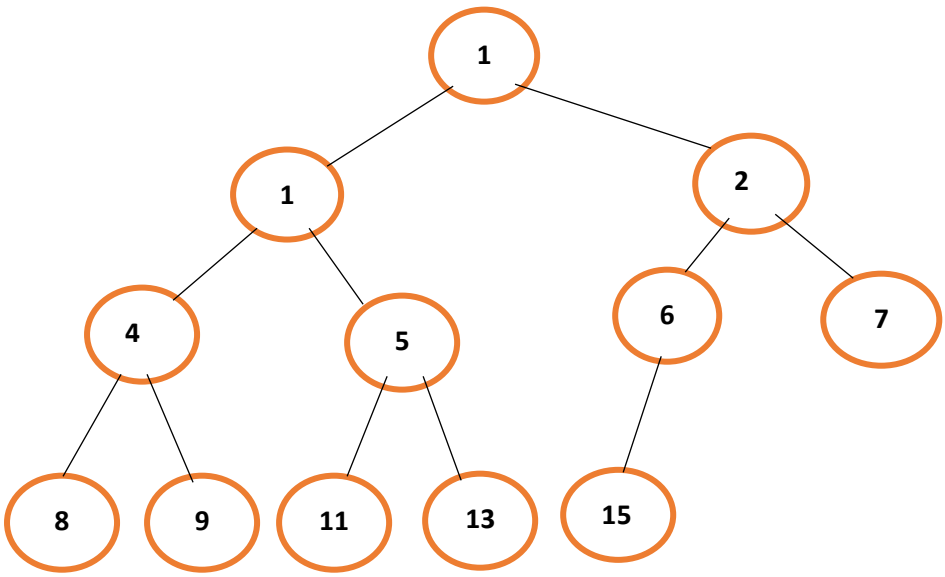

4
1
2
1
5
6
7
8
9
11
13
15


1
1
2
4
5
6
7
8
9
11
13
15


2
1
1
4
5
6
7
8
9
11
13
15


1
1
2
4
5
6
7
8
9
11
13
15


1
1
2
4
5
6
7
8
9
11
13
15

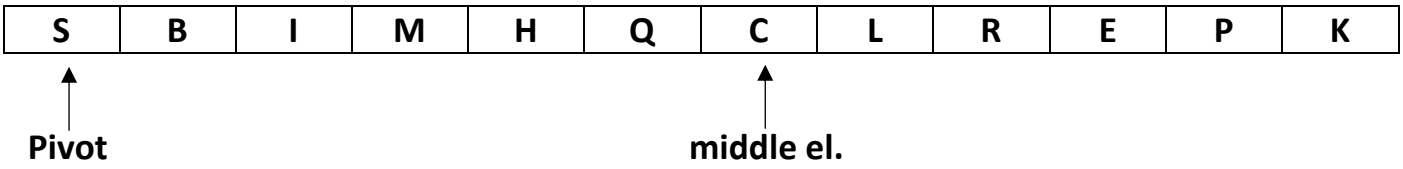

1
1
2
4
5
6
7
8
9
11
13
15

---

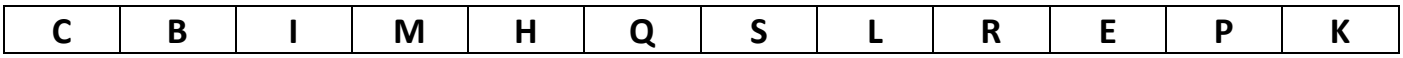
4 – Quick Sort

D = { ‘S’, ‘B’, ‘I’, ‘M’, ‘H’, ‘Q’, ‘C’, ‘L’, ‘R’, ‘E’, ‘P’, ‘K’ }

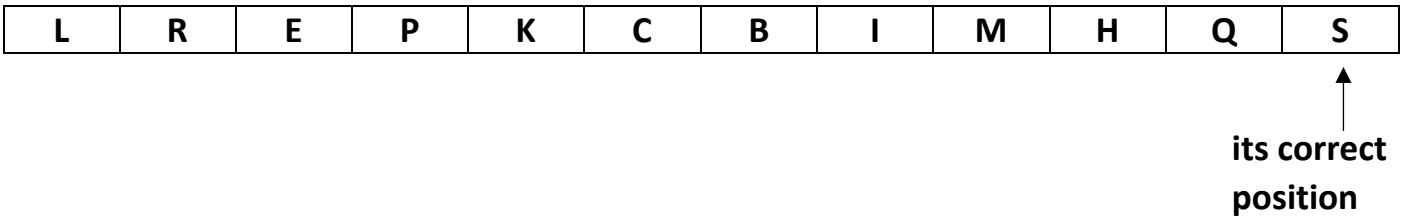
n/2 comparisons

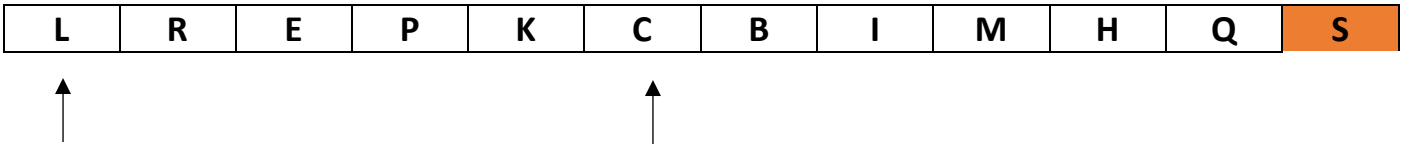


Swap pivot and middle element.

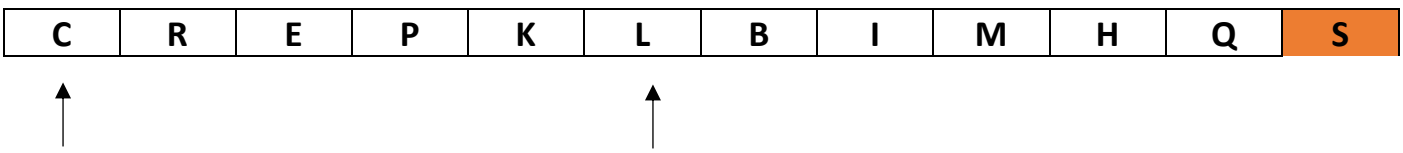


Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.(No element is greater than the pivot.)

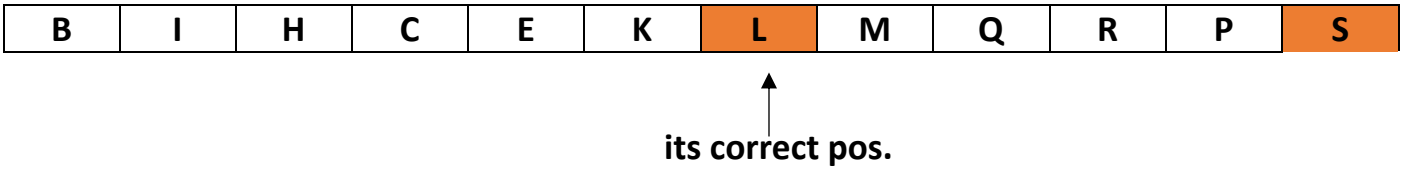


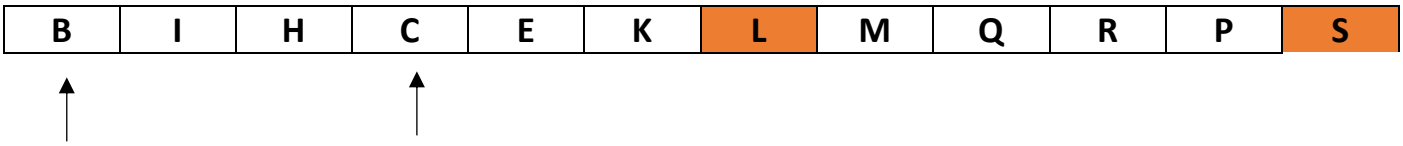


Swap pivot and middle element.

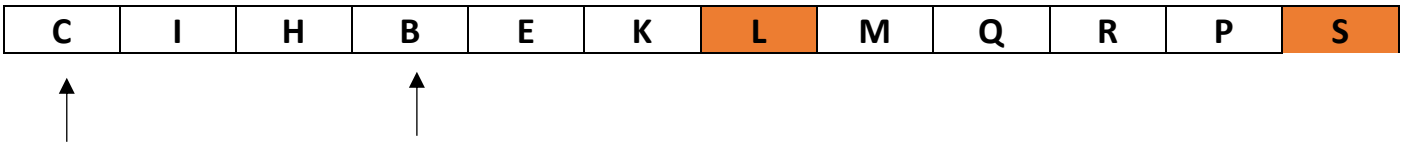


Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.

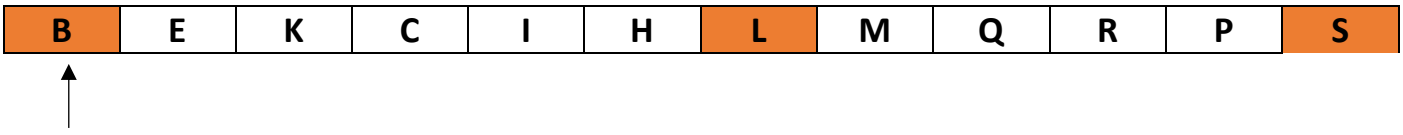


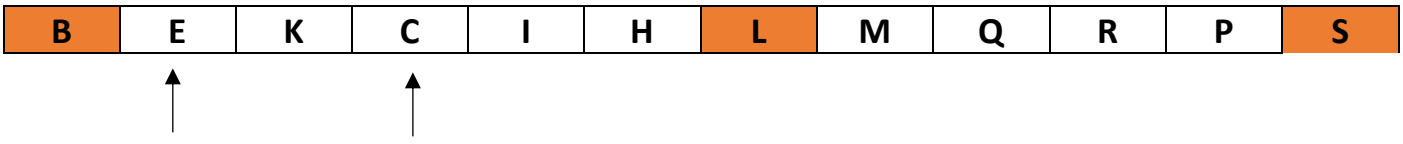


Swap.

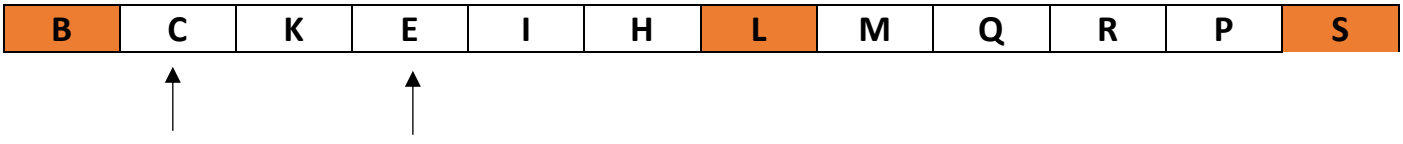


Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.(No element is less than the pivot.)

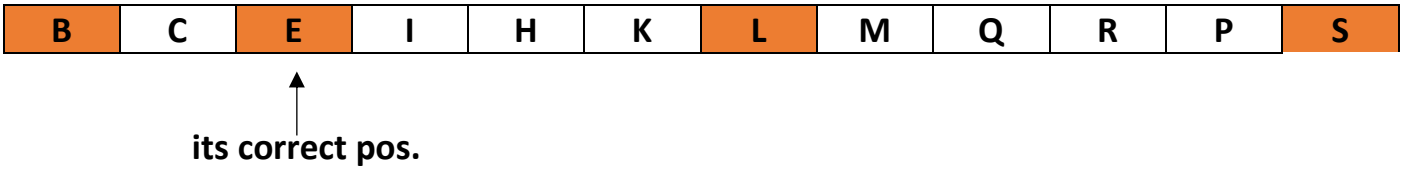


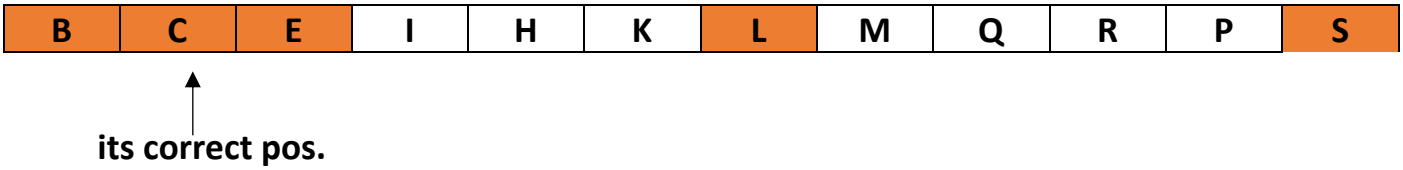


Swap.



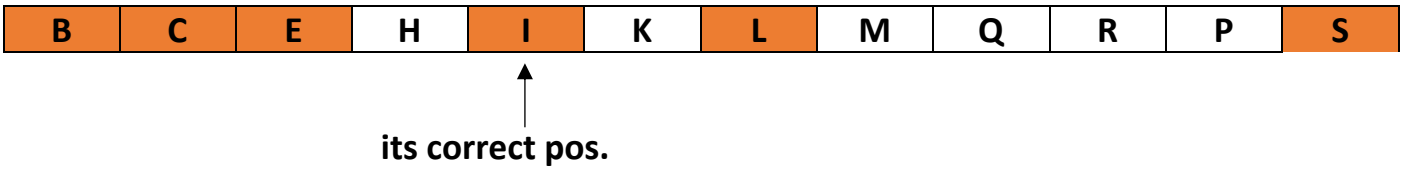
Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.

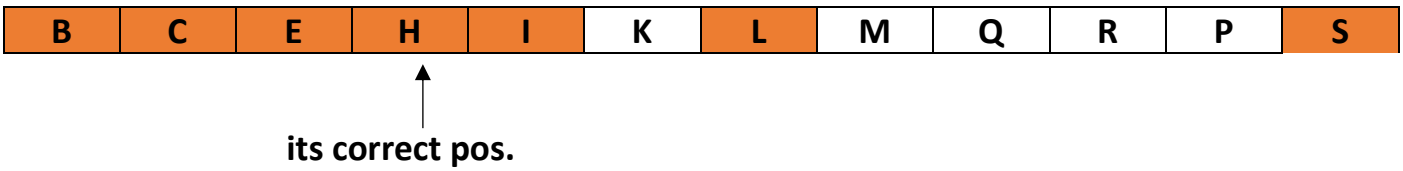


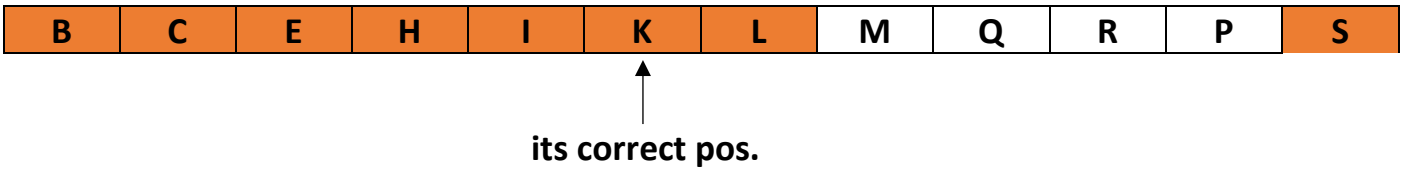


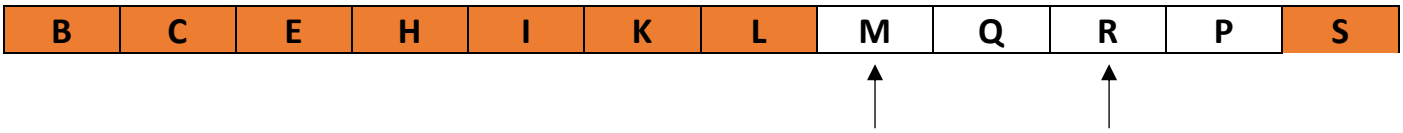
Swap.

Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.

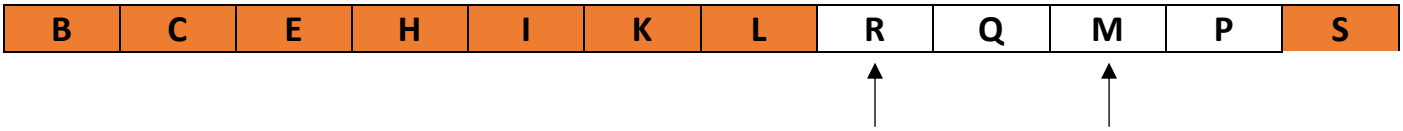




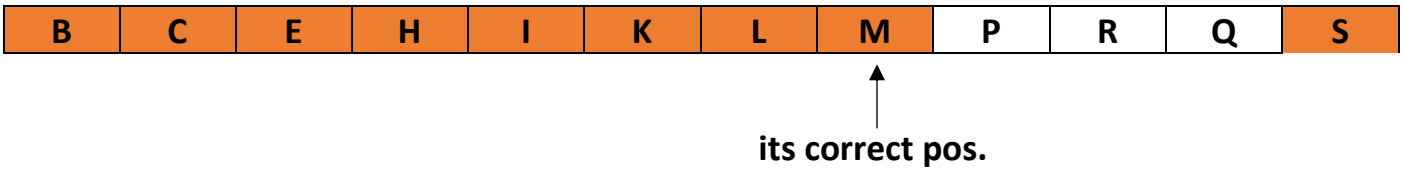


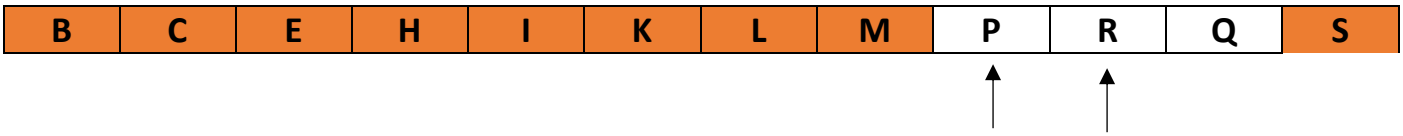


Swap.

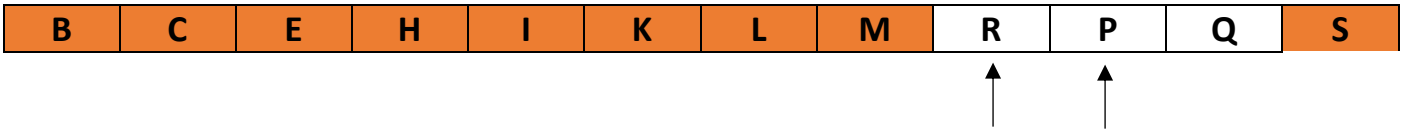


Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.(No element is less than the pivot.)

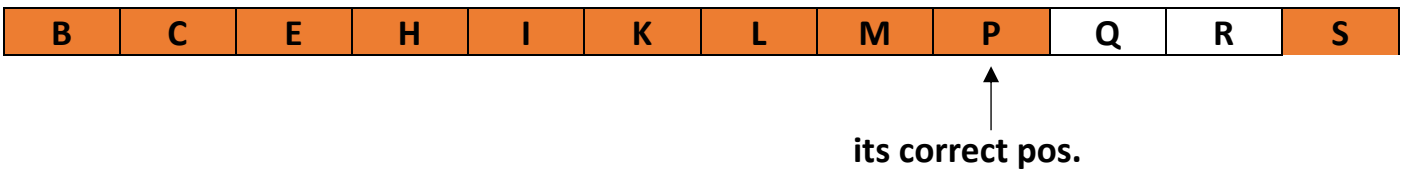


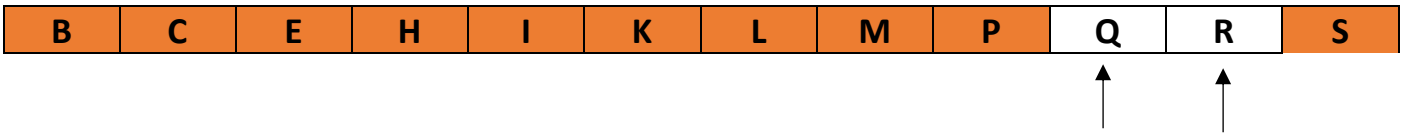


Swap.

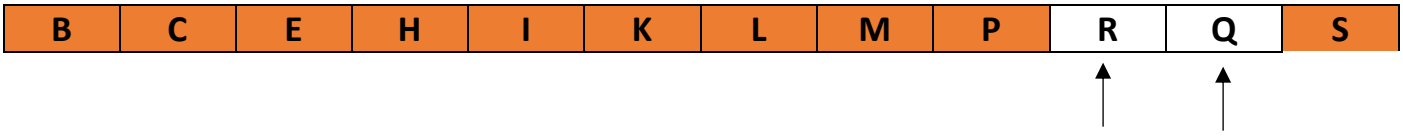


Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.





Swap.



Partition the elements so that all values less than or equal to the pivot are to the left, and all values greater than the pivot are to the right.(No element is less than the pivot.)