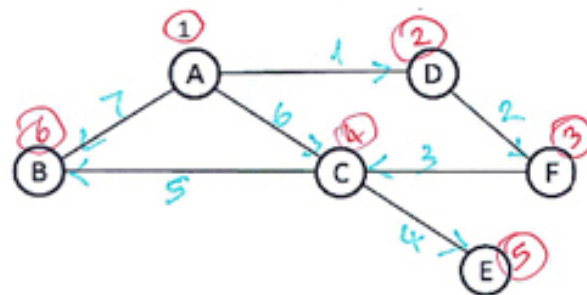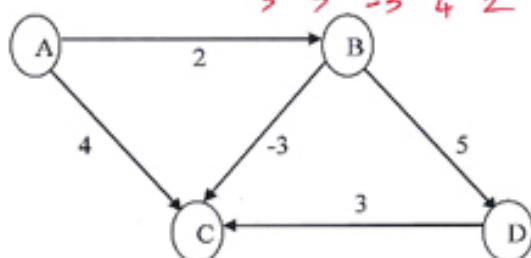## DFS

Interval Trees insert with the min as a key, and have a max that shows the max of the interval trees branches.

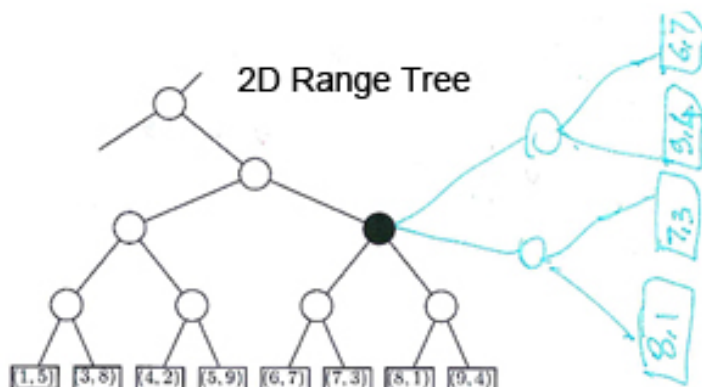**KD Tress** alternate on the X and Y as keys

BELLMAN
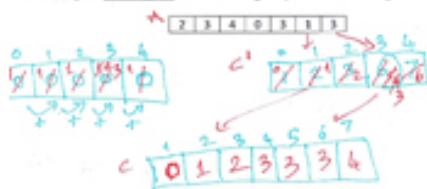
Edges = { (d,c), (b,d), (b,c), (a,c), (a,b) }
3   5   -3   4   2

2D Range Tree

[1,5] [3,8] [4,2] [5,9] [6,7] [7,3] [8,1] [9,4]

Counting Array Sort

Show the steps of Counting Sort on the following array. Note that the range of values is 0 to

Quick Sort: There can be as many as N-1 splits O(N*LogN), worst case is N^2

Heap sort:
Load into an arry that resembles a heap, remove top to back, - back index by 1, call heap down, and repeat until sorted.

	Order of Magnitude		
Sort	Best Case	Average Case	Worst Case
selectionSort	$O(N^2)$	$O(N^2)$	$O(N^2)$
bubbleSort	$O(N^2)$	$O(N^2)$	$O(N^2)$
shortBubble	$O(N)$ (*)	$O(N^2)$	$O(N^2)$
insertionSort	$O(N)$ (*)	$O(N^2)$	$O(N^2)$
mergeSort	$O(N\log_2 N)$	$O(N\log_2 N)$	$O(N\log_2 N)$
quickSort	$O(N\log_2 N)$	$O(N\log_2 N)$	$O(N^2)$ (depends on split)
heapSort	$O(N\log_2 N)$	$O(N\log_2 N)$	$O(N\log_2 N)$

*Data almost sorted