
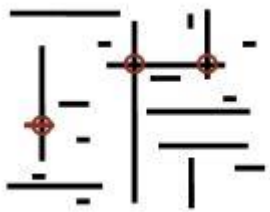
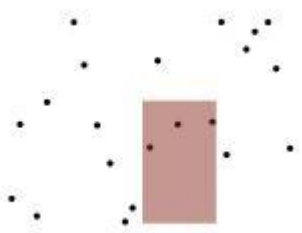
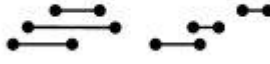
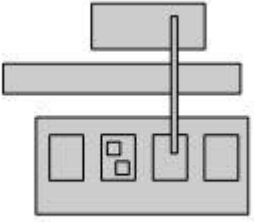


Interval search tree: analysis

Implementation. Use a red-black BST to guarantee performance
(easy to maintain auxiliary information using $\log N$ extra work per op).

operation	brute	interval search tree	best in theory
insert interval	1	$\log N$	$\log N$
find interval	N	$\log N$	$\log N$
delete interval	N	$\log N$	$\log N$
find any one interval that intersects (lo, hi)	N	$\log N$	$\log N$
find all intervals that intersects (lo, hi)	N	$R \log N$	$R + \log N$

order of growth of running time for N intervals.

problem	example	solution
1 d range search		BST
2d orthogonal line segment intersection search		sweep line reduces to 1 d range search
kd range search		kd tree
1d interval search		interval search tree
2d orthogonnl rectangle intersection search		sweep line reduces to 1d interval search