

k-d Tree for points in a plane

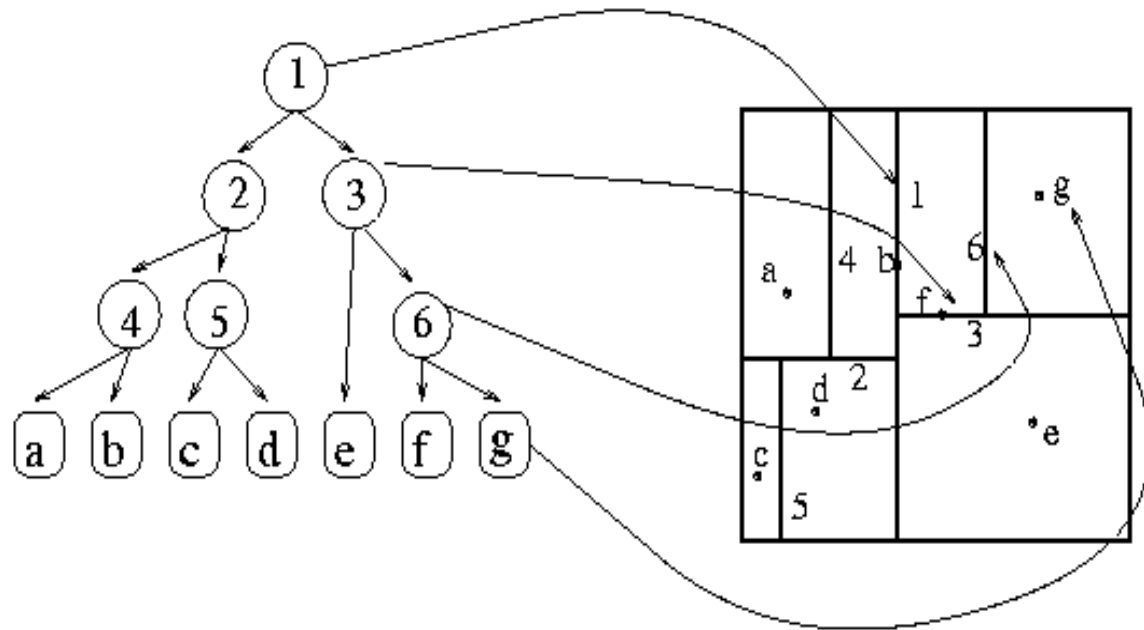
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Features Provided

- Support upto 2D.
- Data structure called DataPoint.
 - Equality, Compare, Show
- KDTree data structure
 - Exists, countRectangle, reportRectangle, countCircle, reportCircle
 - countPoint, countLine

Design

Insert(Once) - Delete(Once) - Query(Any)



```
KDTree k(int dim, vector<DataPoint> arr)
```

Continued...

`doesExist(DataPoint d)`

`countRectangle(DataPoint d1, DataPoint d2)`

`reportRectangle(DataPoint d1, DataPoint d2)`

`countCircle(DataPoint d, double radius)`

`reportCircle(DataPoint d, double radius)`

Experimental Results

Query	Brute Force Approach	KDTree Approach
Existence	0m0.450s	0m0.081s
Count Rectangle	0m0.683s	0m0.655s
Report Rectangle	0m6.107s	0m5.368s
Count Circle	0m0.812s	0m1.394s
Report Circle	0m21.745s	0m22.744s

No of data points	Tree build+Input read time
1000	0m0.015s
10000	0m0.068s
100000	0m0.744s

How to use it ?

- The class library can be found on bitbucket at <https://bitbucket.org/csurfer/kdtree>
- Everyone is welcome to use it and add to it :)



DEMO
Time