

09-B3

BST Application

kd-Tree: Construction

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God found himself by creating.

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buildKdTree(P,d)

```
// construct a 2d-(sub)tree for point (sub)set P at depth d

if ( P == {p} ) return CreateLeaf( p ) //base

root = CreateKdNode()

root->splitDirection = Even(d) ? VERTICAL : HORIZONTAL

root->splitLine = FindMedian( root->splitDirection, P ) //O(n)!

( P1, P2 ) = Divide( P, root->splitDirection, root->splitLine ) //DAC

root->lChild = buildKdTree( P1, d + 1 ) //recurse

root->rChild = buildKdTree( P2, d + 1 ) //recurse

return( root )
```

Example

