

Innovative Assignment 1

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I. INTRODUCTION

Aim of this assignment is to produce feature matrix for various multidimensional indexes.

II. FEATURE MATRIX

The merits and demerits of below listed indexes are compared:

- Hash Based
 - Grid File
 - Partitioned Hash
- Tree Based
 - Multi-key
 - kd-Tree
 - Quad Tree
 - R Tree

Table 1: Feature Matrix for Multidimensional Indexed

Query	Hash Based		Tree Based			
Type	Grid	Partitioned Hash	MultiKey	kd-Tree	Quad Tree	R Tree
Exact Match	✓	✓	✓	✓	✓	Reasonable
Partial Match	✓	✓	works only for first key	✓	✓	✓
Range	✓	✗	✗	✓	✓	✓
Nearest Neighbour	✓	✗	✗	Reasonable	✓	Reasonable
Where am I	N/A	N/A	N/A	N/A	N/A	✓
Balanced Tree	N/A	N/A	✓	✗	✗	✓
# of empty nodes or buckets	High (if large data file)	–	–	–	High [Sol: keep only Not-NULL pointer only]	N/A
Splitting	Easy	Hard	N/A	N/A	N/A	N/A
Splitting Point	Distribute Data	N/A	N/A	any point that distribute data	centre point always	N/A