**Exploration of the Efficiency of data structures such as B-Tree, Hash Tables, and Index Files.**

Devon Upton  
 Bennett Hreherchuk

Summary

Using Berkeley DB (BDB) we wanted to determine the efficiency of various data structures that BDB has to offer, focusing on B-Trees, Hash Tables, and the added efficiency of using an index file with these structures. We measured three types of searches and the time it took for each data structure to execute them. The three searches were:

1. Key Search: Search for a given key’s point of data in the database.
2. Data Search: Search for the keys that have the matching data.
3. Range Search: Search for the data identified by a range of keys.

Purpose

To explore what the strengths of these databases are compared to these queries. s

Method

Result

|  |
| --- |
| **Table 1: Queries and their time taken with various data structures  (in microseconds)** |
| |  |  |  |  | | --- | --- | --- | --- | | Queries | BTree | Hash Table | Index File | | Key Search | 147.0 | 593537.0 | 1663.5 | | Data Search | 131.5 | 790365 | 825484.75 | | Range Search | 143.0 | 179.0 | 1826.0 | |

Discussion

Conclusion