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CSS 343

Program 5 Report

When examining the behavior of each separate chaining hash table that varies by size. When it comes to collisions within the table and using the data file as input, the smaller the table size the more collisions there are with each entry. This is because there are not many indexes that data can be hashed to. Another major observation is that the larger the table size the more likelihood of empty entries this is because of the increased amount of entries and the type of data being read in.

Being that the table size is used in the hash function an observation to be made is that the table sizes that are even are the sizes have more collisions than the table sizes that are odd. The table shortest maximum collision was a table with size 23. The table with the longest maximum collision was a table with size 10. Overall, what these results say is that an ideal hash table with a separate chain is one that has an odd table size and one that is decently filled up in terms of entries.

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| **Table 1 Size: 10** | **Table 2 Size: 11** | **Table 3 Size: 23** | **Table 4 Size: 40** |
| Min Collisions: 1  Max Collisions: 52  Empty Entries: 0 | Min Collisions: 11  Max Collisions: 23  Empty Entries: 0 | Min Collisions: 2  Max Collisions: 16  Empty Entries: 0 | Min Collisions: 0  Max Collisions: 21  Empty Entries: 5 |