Hash Table Summary

Learning Objectives

1. Explain Hash Tables at a high level

Hash Tables

```
Dictionary<KeyType, ValueType> d;
d[k] = v;
```

Insert, Find, Remove

A **Hash Table** consists of three things:

1. A hash function
2. A data storage structure
3. A method of addressing *hash collisions*

Hash Tables Type

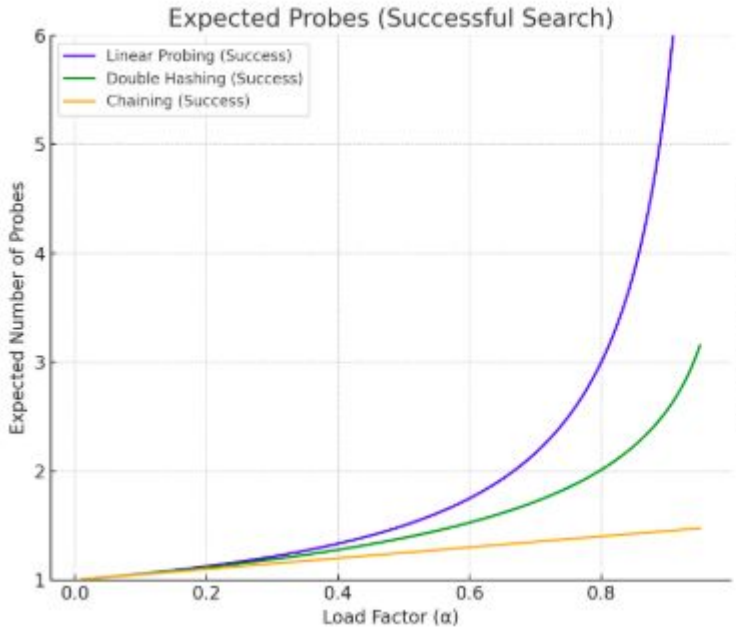
Open Hashing (Linked Lists)

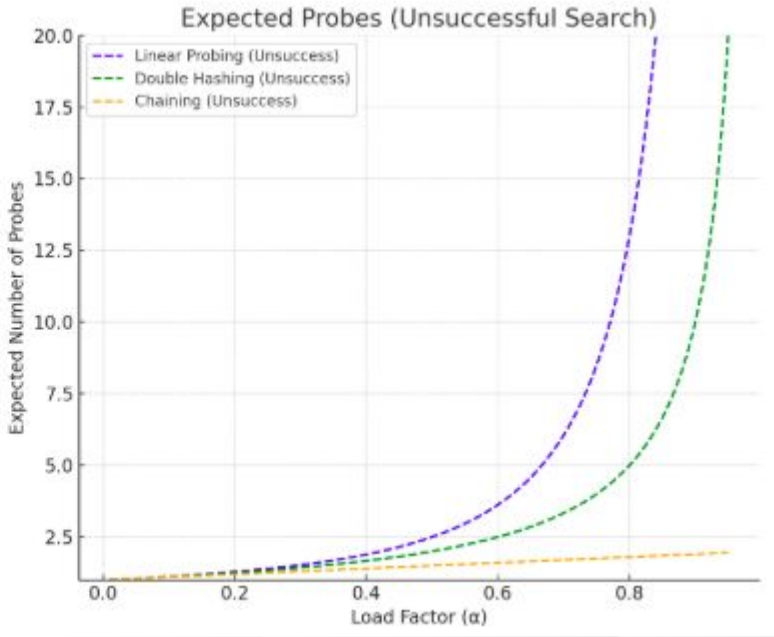
- Separate Chaining

Closed Hashing (Array)

- Linear Probing
- Double Hashing

Runtimes


Expected Probes (Successful Search)
Linear Probing (Success)
Double Hashing (Success)
Chaining (Success)
Expected Number of Probes
Load Factor (α)
1
2
3
4
5
6
0.0
0.2
0.4
0.6
0.8


Expected Probes (Unsuccessful Search)
Linear Probing (Unsuccess)
Double Hashing (Unsuccess)
Chaining (Unsuccess)
Expected Number of Probes
Load Factor (α)
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
0.0
0.2
0.4
0.6
0.8

Questions

Which collision resolution strategy is better?

- Big Records:

- Structure Speed:

What structure do hash tables implement?

What constraint exists on hashing that doesn’t exist with BBSTs?

Why talk about BBSTs at all?