Practice Exercises
Fall 2022

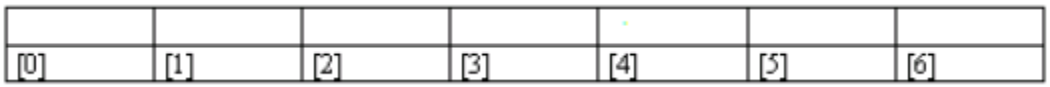
Knowledge Check:

- Two or more keys that produce the same hash location are called _____.
- True or False? In implementation of maps, calling PutItem with a key that is already in the map updates the value associated with that key.

Exercise 1:

The following numbers are to be inserted into a hash table in the order shown: 47 61 91 21 34. The hash function is Key MOD TableSize.

Quadratic probing with alternating plus and minus signs (plus first) is used to resolve collisions. That is, ((f(Key) + i2) MOD TableSize, i going from 1 to TableSize).

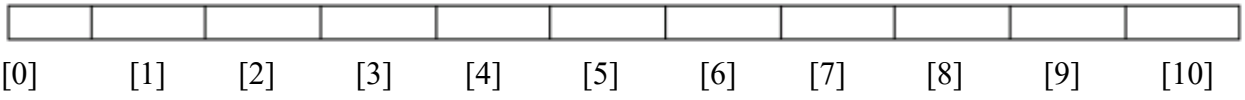


How many comparisons will it take to determine that 35 is not in the table?

Exercise 2:

The following question deals with hash tables. Determine the state of the hash table below when the following values have been entered into the table in this order: 25 96 42 223 112 12 84 102 153.

The hash function is Key MOD TableSize. Use quadratic probing with alternating plus and minus signs (plus first) to resolve collisions ((f(Key) + i^2) MOD TableSize, i going from 1 to TableSize).



How many comparisons are necessary to locate the record whose key value is 112?

How many comparisons are needed to locate the record whose key value is 16?

Exercise 3:

The following question deals with hash tables. Determine the state of the hash table below when the following values have been entered into the table in this order: 25 96 42 223 112 12 84 102 153.

The hash function is Key MOD TableSize.

1. Use Chaining-based hashing to resolve collisions.
2. Use quadratic probing with alternating plus and minus signs (plus first) to resolve collisions ((f(Key) + i2) MOD TableSize, i going from 1 to TableSize).

[0] [1] [2] [3] [4] [5] [6] [7] [8] [9] [10]

3. How many comparisons are necessary to determine that the record whose key value is 14 is not in the table?