C# Collections (Data Structures)

INSTRUCTOR: ADEEN BIN WAHEED

LECTURE 12

Important Points

Pop() or Dequeue() Function to get all values using Loops and Count() Function:-

1st Way:

Use a variable like size to store the count of the stack or queue and than use it in loop condition.

For Example:

Int size=s.Count();

2nd Way:

Use the following condition in loop to get all values by pop() or dequeue().

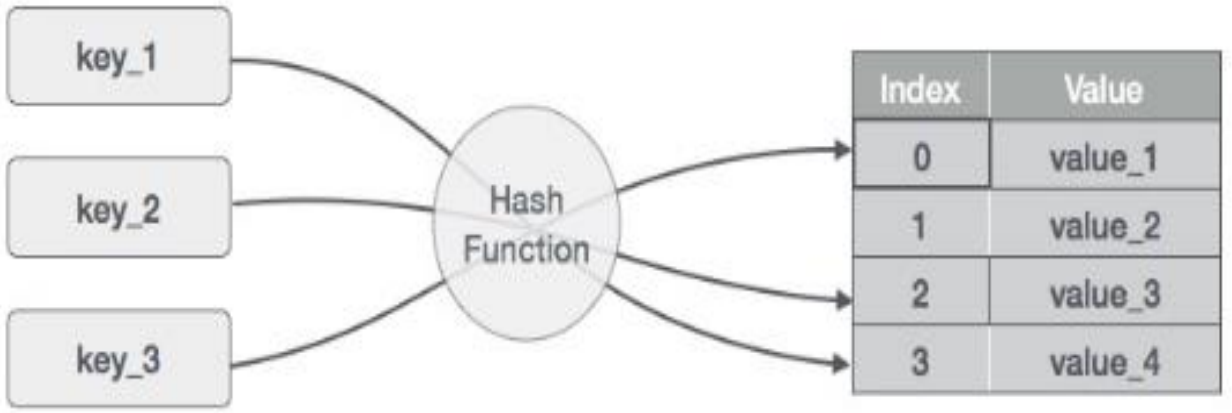
(s.Count() > 0)

Pop() or Dequeue() Function to get all values using Loops and Count() Function

Running Demos

Hashing

Hashing is a technique to convert a range of key values into a range of indexes of an array. We're going to use modulo operator to get a range of key values. Consider an example of hashtable of size 20, and following items are to be stored. Item are in (key,value) format.



Hash Method

Before hashing, define a hashing method to compute the hash code of the key of the data item.

For Example:

```
int hashCode(int key){
   return key % SIZE;
}
```

Hashing using the Hash Method

Key	Hash	Array Index
1	1 % 20 = 1	1
2	2 % 20 = 2	2
42	42 % 20 = 2	2
4	4 % 20 = 4	4
12	12 % 20 = 12	12
14	14 % 20 = 14	14
17	17 % 20 = 17	17
13	13 % 20 = 13	13
37	37 % 20 = 17	17

Linear Probing

It may happen that the hashing technique used create already used index of the array. In such case, we can search the next empty location in the array by looking into the next cell until we found an empty cell. This technique is called linear probing.

Key	Hash	Array Index	After Linear Probing, Array Index
1	1 % 20 = 1	1	1
2	2 % 20 = 2	2	2
42	42 % 20 = 2	2	3
4	4 % 20 = 4	4	4
12	12 % 20 = 12	12	12
14	14 % 20 = 14	14	14
17	17 % 20 = 17	17	17
13	13 % 20 = 13	13	13
37	37 % 20 = 17	17	18

How each node of Linked List will have several values??

Running Demo

Dictionary

A Dictionary contains a collection of key/value pairs. Its **Add** method takes two parameters, one for the key and one for the value. To initialize a **Dictionary<TKey, TValue>**.

Dictionary

Running Demos