**National University of Computer and Emerging Sciences**



Laboratory Manual 10

for

Data Structures Lab

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| Section | BCS-3F |
| Semester | Fall 2022 |

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**Objectives:**

In this lab, students will practice:

* Hashing
  + Chaining
  + Linear probing and Quadratic probing

**Task 1:**

Implement a **Hash** class containing following functions:

1. Hash():

constructor creates a hashArray of size 10.

1. Hash(int const capacity):

An overloaded constructor that creates hashArray of size capacity. If capacity is less than 1 return error via assert(capacity>1)

1. void insert(int const key, v const value):

The insert method inserts the value at its appropriate location. Find the first candidate index of the key using hash function:

*index= key* ***mod*** *capacity*

1. bool deleteKey(k const key) const:

This method deletes the given key. It returns true if the key was found. If the key was not found it returns false. When the key is found, simply set the status of the hashitem containing the key to deleted (value of 1). It also uses status variable to search for the key intelligently.

**Task 2:**

Using the hash function ‘key mod 7’, insert the following sequence of keys in the hash table-

50, 700, 76, 85, 92, 73 and 101

Implement separate chaining technique for collision resolution. (Use linked list from STL library to implement chaining)

**Task 3:**

Modify the above class to implement Linear and Quadratic probing while inserting the values.