**Department of Computer Science and Engineering**

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| **Course Code: CSE221** | **Credits: 1.5** |
| **Course Name: Algorithms** | **Semester: Spring ‘19** |

**Lab 11  
Phone Book**

1. **Topic Overview:**

The students are required to implement a phone book using the concept of hash tables(or hash maps). In the phone book one will be able to insert, find and delete phone numbers.

1. **Lesson Fit:**

To solve this problem, the students must have a basic idea on the following concepts:

* 1. Hash Tables
  2. Hash Functions
  3. Arrays

1. **Learning Outcome:**

After this lecture, the students will be able to:

* 1. Implement applications such as phone books, dictionaries etc. using hash tables/hash maps
  2. Learn how to use Java built-in hash tables or hash maps

1. **Anticipated Challenges and Possible Solutions**
   1. Students might face difficulty in using built-in java classes.
2. **Acceptance and Evaluation**

Students will show their progress as they complete each problem. They will be marked according to their class performance. There may be students who might not be able to finish all the tasks, they will submit them later and give a viva to get their performance mark. The mark distribution for the lab will be as follows:

Code: 05

Viva: 05

1. **Activity Detail**
   1. **Hour: 1  
      Explanation:**The teachers will explain the basic problem. The teachers will discuss how to use built-in Java classes and how to implement programmer-defined hash tables
   2. **Hour: 2**

**Implementation:**

After explanation, the students will try to implement the phone book using built-in Java Hash Map

**Problem Task:**

* + 1. Task 1
  1. **Hour: 3**

**Evaluation:**

The teachers will check the status of the assigned tasks.

**Lab 11 Activity List**

**Task 1: Phone Book**

**Problem Statement:**

User will have four options: 1 = insert number, 2 = find number, 3 = delete number and 0 = exit from application. Names will be used as key and name and number will be stored as value. If same name is inserted the user will be notified that same name exists and if it is a new contact or not. If user selects “yes”, the name will be added with a +1 increment. If the user selects “no”, the user will be asked if they want to replace the existing number. If user selects “yes” number will be replaced, if user selects “no” , number will remain same.

**Sample Input**

1

Najeefa 01898989890

1

Arnisha 9283230190

1

Arnisha 3849380223

No

Yes

1

Rubayet 2839829132

2

Najeefa

2

Rasif

3

Najeefa

1

Faisal 901920192

1

Faisal 98239283

Yes

2

Arnisha

0

**Sample Output:**

Najeefa’s Number inserted successfully

Arnisha’s Number inserted successfully

Arnisha already exists. Is it a different contact?

Do you want to replace the number?

Arnisha’s Number replaced successfully

Rubayat’s Number inserted successfully

Najeefa’s Number : 01898989890

Rasif’s Number not found

Najeefa’s Number deleted successfully

Number inserted successfully

Faisal already exists. Is it a different contact?

Faisal2’s Number inserted successfully

Arnisha’s Number: 3849380223