CS2023 - In class Lab

Week 9 - Hash tables

Index: 200381U

Note: You are required to answer the below questions and submit a PDF to the submission link provided under this week before the deadline (no extensions will be provided). You can either write / type your answers, but either way your answers should be readable.

Add the link to the GitHub repository

Lab instruction

Please download the lab _materials.zip from the lab 9 section We will be implementing a Password look up system using hash tables. Please follow the instructions given by the instructor at the begining of the session to complete the lab.

Section 1 : Implementing basic hash table

Expected submission

1. Complete *hashfunc, insert, hash lookup*

2. Insert your name as user name and your index number as password. Print hash table and take screenshot.

3. Add 3 more user names and passwords. Print hash table and take screenshot.

4. Delete your user name. Print hash table and take screenshot.

5. What is issue when using a simple hash table like this and how can we change it, explain your answer.

Section 2 : Implementing hash table with chaining

Expected submission

1. Complete *hash lookup*

2. Insert your name as user name and your index number as password(do it two times). Print hash table and take screenshot.

3. Add 3 more user names and passwords. Print hash table and take screenshot.

Answers:

Section 1

1.

2.

```
PS C:\Users\Hansa Niluka>  & 'c:\Users\Hansa Nilu
WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEn
rr=Microsoft-MIEngine-Error-jg3kynnt.k3i' '--pid=
' '--interpreter=mi'
0
Type command: 1
Enter user name: hansa
Enter password to be saved: 200381U
Type command: 4
[0]-->
[1]-->
[2]-->
[3]-->200381U
Type command:
```

3.

```
Type command: 1
Enter user name: maheesha
Enter password to be saved: 200400F
Type command: 1
Enter user name: vinod
Enter password to be saved: 200061N
Type command: 1
Enter user name: sithmini
Enter password to be saved: 200507N
Type command: 4
[0]-->200400F
[1]-->200507N
[2]-->
[3]-->200381U
Type command:
```

4.


```
Type command: 2
Enter item to be deleted: hansa
User deleted
Type command: 4
[0]-->200400F
[1]-->200507N
[2]-->
[3]-->
Type command: ▌
```

5.

When there's a collision between keys new value will override the old value (which is linked to the older key). In order to avoid this error, we can use proper collision avoiding method like chaining.

Section 2

1.

2.

```
0
Type command: 1
Enter user name: hansa
Enter password to be saved: 200381U
Type command: 1
Enter user name: hansa
Enter password to be saved: 200381U
Type command: 4
Type command: -1
[0]-->[]
[1]-->[]
[2]-->[]
[3]-->[hansa, hansa, ]
Exiting...
PS C:\Users\Hansa Niluka>
```

3.

```
0
Type command: 1
Enter user name: hansa
Enter password to be saved: 200381U
Type command: 1
Enter user name: hansa
Enter password to be saved: 200381U
Type command: 1
Enter user name: maheesha
Enter password to be saved: 200400F
Type command: 1
Enter user name: vinod
Enter password to be saved: 200061N
Type command: 1
Enter user name: sithmini
Enter password to be saved: 200507N
Type command: -1
[0]-->[maheesha, vinod, ]
[1]-->[sithmini, ]
[2]-->[]
[3]-->[hansa, hansa, ]
Exiting...
PS C:\Users\Hansa Niluka> []
```