


Assignment Case	
COMP6048 COMP6048001 COMP6048016 COMP6048049 Data Structures	
Computer Science	E223-COMP6048-LC04511-01
<i>Valid on Even Semester Year 2021/2022</i>	Revision 00

Soal

Case

Scitek Lab

Scitek Lab is a laboratory from Yuhuu state government, which engages in science and technology. They develop new products every day, and having to note down every part of research become harder each day. Therefore, the head lab of **Scitek Lab** decides to hire you, an avid programmer to create a program using **C language** and **Hash Table** with **chaining method** to keep track of all research data. The program that will be created has the following requirements :

- The program will consists of **4 menus** :
 - Add Research**
 - View Research**
 - Delete Research**
 - Exit**

```
Scitek Lab
=====
1. Add Research
2. View Research
3. Delete Research
4. Exit
Option:
```

Figure 1. main menu

- If user choose **menu 1 (Add Research)**, the program will :
 - ❖ **Generate Research ID** based on the following formula

REXXX

X : random number between 0 – 9

- ❖ Prompt user to input **Leader Name**. Validate the input must be **5 characters at minimum**

- ❖ Prompt user to input **Leader Age**. Validate the input must be **between 25 and 60 (inclusive)**
- ❖ Prompt user to input **Jobdesk**. Validate the input must be **between “Gather Sample”, “Researching Sample”, and “Documentation” (case sensitive)**
- ❖ Prompt user to input **Research Name**. Validate the input must **ends with “Research” (case sensitive)**
- ❖ Prompt user to input **Research Description**. Validate the input must be **between 10 and 50 characters (inclusive)**
- ❖ Prompt user to input **Member Count**. Validate the input must be **more than 5**
- ❖ Prompt user to input **Tool Used**. Validate the input must be **more than 0**

```

Insert your leader name [min 5 char]: Andy
Insert your leader name [min 5 char]: Andy An
Insert your leader age [25 - 60]: 20
Insert your leader age [25 - 60]: 25
Insert your jobdesk [Gather Sample | Researching Sample | Documentation]: Docs
Insert your jobdesk [Gather Sample | Researching Sample | Documentation]: Documentation
Input research name [ends with "Research"]: Omijrot ViRes
Input research name [ends with "Research"]: Omijrot Research
Input research description [length between 10 - 50]: Omijrot
Input research description [length between 10 - 50]: Delicious Omijrot Taste
Input amount of research members [more than 5]: 4
Input amount of research members [more than 5]: 8
Input amount of tools that has been used [more than 0]: -1
Input amount of tools that has been used [more than 0]: 12

```

Figure 2. insert research input

- ❖ **Store** new research data to the **next item of the last item of chaining hash table** with size **120** based on following key which could be calculated as follows

$$\text{Key} = X \% Y$$

X : sum of ASCII value from research ID

Y : size of hash table (120)

Example :

Research ID : RE784

Y : 120

X : R (82) + E (69) + 7 (55) + 8 (56) + 4 (52)

Key : 314 % 120, therefore key will be 74

- ❖ **Display** success message and **redirect** to **main menu**

```
Successfully Add a new research!
Press enter to continue...
```

Figure 3. success insert message

- If user choose **menu 2 (View Research)**, the program will :
 - ❖ **Check** data from **hash table**. If there are **no research**, **display** following message and **redirect** to **main menu**

```
There is no research.
Press enter to continue...
```

Figure 4. no research message

- ❖ Otherwise, **display** all research data

```
Research Number 1
Research ID: RE784
Research Name: Omijrot Research
Research Description: Delicious Omijrot Taste
Leader Name: Andy An
Leader Job: Documentation
Research Member: 8
Tools used: 12
```

Figure 5. view research

- If user choose **menu 3 (Delete Research)**, the program will :
 - ❖ **Check** data from **hash table**. If there are **no research**, **display** following message and **redirect** to **main menu**

```
There is no research.
Press enter to continue...
```

Figure 6. no research message

- ❖ Otherwise,
 - **Display** all research data
 - Prompt user to input **Research ID**

```
Input ID you want to delete:
```

Figure 7. delete research input

- **Search** data based on input
- If data **not exists**, **display** following message and **redirect** to **main menu**

```
NOT FOUND! Can't delete
```

Figure 8. no data found

- Otherwise, **remove** data from **hash table**, **display** following message and **redirect** to **main menu**

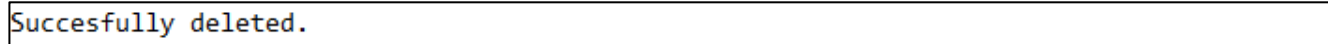
A screenshot of a message box with a thin black border. Inside the box, the text "Succesfully deleted." is displayed in a blue, monospace-style font. The text is left-aligned and followed by a period.

Figure 9. success delete message

- If user choose **menu 4 (Exit)**, the program will **close**