

Report on Problem 3:

Files included in assignment:

Source Code, Database csv file, Report.

Datastructures used:

Doubly linked list, Arrays(to store data in nodes).

Program outputs:

1. Add operation:

```
-----
Enter 1 to  Add a record.
Enter 2 to  Delete a record.
Enter 3 to  Search a Record.
Enter 4 to  Update a record.

-----
1

You pressed 1.

Please do not exit until current persons data is not entered completly.
Enter the Adhar number/Social security number of the person: 65654845386
Enter the name of person(First letter capital) : Leonal Messi
Enter the gender   : Male
Enter the fathers name.   : Dieago Maradona
Enter the mothers name.  : Jennifer Anniston
Enter the date of birth.  : 15/04/2000

Thank you the data base has been updated.
Open the databse at C:\Users\Abdul\Desktop\programs\assignment 3\db.csv

Press 0 to exit, any other key to continue,
0

You entered 0.
PS C:\Users\Abdul\Desktop\programs\assignment 3> |
```

*Before Add: //Note: data is **unordered**

	A	B	C	D	E	F	G
1	8635752597	Sanjay Dutt	Male	Randhir Kapoor	Madhuri Dixit	25-08-2008	
2	3126515151	Alia Bhatt	Female	Mukesh Bhatt	Emma Watson	17-05-1995	
3	8463565511	Amir Khan	Male	Javed Akhtar	Gulshan	29-05-1997	
4	6064081606	Momina Mustehsen	Female	Naseer Ud Din Shah	Akhtari Begum	18-07-1996	
5	4313532613	Zeba	Female	Dr. A.P.J. Abdul Kalam	Nur uz Zamani	02-04-1994	
6	6832658732	Shah Rukh Khan	Male	Mohd. Yousuf Khan	Nargis	15-05-1995	
7	1614526462	Stephan Hawking	Male	Einstein	Margot Robbie	16-12-2000	
8	3451650159	Walter Lewin	Male	Ruther Ford	Hillary Clinton	26-05-1990	
9	8194832500	Ranbeer Kapoor	Male	Akshay Kumar	Preety Zenta	15-02-2009	
10	1151313512	Abdul Rahim	Male	Carl Segan	Dua Lipa	29-05-2002	
11							
12							
13							

*After Add

	A	B	C	D	E	F	G
1	1151313512	Abdul Rahim	Male	Carl Segan	Dua Lipa	29-05-2002	
2	3126515151	Alia Bhatt	Female	Mukesh Bhatt	Emma Watson	17-05-1995	
3	8463565511	Amir Khan	Male	Javed Akhtar	Gulshan	29-05-1997	
4	65654845386	Leonel Messi	Male	Dieago Maradona	Jennifer Anniston	15-04-2000	
5	6064081606	Momina Mustehsen	Female	Naseer Ud Din Shah	Akhtari Begum	18-07-1996	
6	8194832500	Ranbeer Kapoor	Male	Akshay Kumar	Preety Zenta	15-02-2009	
7	8635752597	Sanjay Dutt	Male	Randhir Kapoor	Madhuri Dixit	25-08-2008	
8	6832658732	Shah Rukh Khan	Male	Mohd. Yousuf Khan	Nargis	15-05-1995	
9	1614526462	Stephan Hawking	Male	Einstein	Margot Robbie	16-12-2000	
10	3451650159	Walter Lewin	Male	Ruther Ford	Hillary Clinton	26-05-1990	
11	4313532613	Zeba	Female	Dr. A.P.J. Abdul Kalam	Nur uz Zamani	02-04-1994	
12							
13							

2. Delete operation:

Initial database: // Deleting Alia Bhatt @ 2

	A	B	C	D	E	F	G
1	1151313512	Abdul Rahim	Male	Carl Segan	Dua Lipa	29-05-2002	
2	3126515151	Alia Bhatt	Female	Mukesh Bhatt	Emma Watson	17-05-1995	
3	8463565511	Amir Khan	Male	Javed Akhtar	Gulshan	29-05-1997	
4	65654845386	Leonel Messi	Male	Dieago Maradona	Jennifer Anniston	15-04-2000	
5	6064081606	Momina Mustehsen	Female	Naseer Ud Din Shah	Akhtari Begum	18-07-1996	
6	8194832500	Ranbeer Kapoor	Male	Akshay Kumar	Preety Zenta	15-02-2009	
7	8635752597	Sanjay Dutt	Male	Randhir Kapoor	Madhuri Dixit	25-08-2008	
8	6832658732	Shah Rukh Khan	Male	Mohd. Yousuf Khan	Nargis	15-05-1995	
9	1614526462	Stephan Hawking	Male	Einstein	Margot Robbie	16-12-2000	
10	3451650159	Walter Lewin	Male	Ruther Ford	Hillary Clinton	26-05-1990	
11	4313532613	Zeba	Female	Dr. A.P.J. Abdul Kalam	Nur uz Zamani	02-04-1994	
12							
13							

Program:

```

-----
Enter 1 to Add a record.
Enter 2 to Delete a record.
Enter 3 to Search a Record.
Enter 4 to Update a record.
-----
2

You pressed 2.

Enter the name of the adhar/social security no. of the person you want to delete: 1151313512
Deleted successfully. Check here: C:\Users\Abdul\Desktop\programs\assignment 3\db.csv
PS C:\Users\Abdul\Desktop\programs\assignment 3> 

```

Final Database:

//Abdul Rahim deleted

	A	B	C	D	E	F	G
1	3126515151	Alia Bhatt	Female	Mukesh Bhatt	Emma Watson	17-05-1995	
2	8463565511	Amir Khan	Male	Javed Akhtar	Gulshan	29-05-1997	
3	65654845386	Leonel Messi	Male	Dieago Maradona	Jennifer Anniston	15-04-2000	
4	6064081606	Momina Mustehsen	Female	Naseer Ud Din Shah	Akhtari Begum	18-07-1996	
5	8194832500	Ranbeer Kapoor	Male	Akshay Kumar	Preety Zenta	15-02-2009	
6	8635752597	Sanjay Dutt	Male	Randhir Kapoor	Madhuri Dixit	25-08-2008	
7	6832658732	Shah Rukh Khan	Male	Mohd. Yousuf Khan	Nargis	15-05-1995	
8	1614526462	Stephan Hawking	Male	Einstein	Margot Robbie	16-12-2000	
9	3451650159	Walter Lewin	Male	Ruther Ford	Hillary Clinton	26-05-1990	
10	4313532613	Zeba	Female	Dr. A.P.J. Abdul Kalam	Nur uz Zamani	02-04-1994	
11							
12							

3.Search Operation:

```
-----  
Enter 1 to  Add a record.  
Enter 2 to  Delete a record.  
Enter 3 to  Search a Record.  
Enter 4 to  Update a record.  
-----
```

```
3
```

You pressed 3.

Enter the adhar no./Social security no. of person: 3451650159

Adhar no./Social Security no. : 3451650159
Name: Walter Lewin
Gender: Male
Fathers name: Ruther Ford
Mothers name: Hillary Clinton
Date of Birth : 26-05-1990

PS C:\Users\Abdul\Desktop\programs\assignment 3> █

4.Update a record:

*before update

```
-----  
Enter 1 to  Add a record.  
Enter 2 to  Delete a record.  
Enter 3 to  Search a Record.  
Enter 4 to  Update a record.  
  
-----  
3  
  
You pressed 3.  
  
Enter the adhar no./Social security no.  of person: 8194832500  
  
Adhar no./Social Security no. : 8194832500  
Name: Ranbeer Kapoor  
Gender: Male  
Fathers name: Akshay Kumar  
Mothers name: Preety Zenta  
Date of Birth : 15-02-2009  
  
PS C:\Users\Abdul\Desktop\programs\assignment 3> █
```

*After update:

```
-----  
Enter 1 to  Add a record.  
Enter 2 to  Delete a record.  
Enter 3 to  Search a Record.  
Enter 4 to  Update a record.  
  
-----  
3  
  
You pressed 3.  
  
Enter the adhar no./Social security no.  of person: 8194832500  
  
Adhar no./Social Security no. : 8194832500  
Name: Ranbir Kapoor  
Gender: Male  
Fathers name: Rishi Kapoor  
Mothers name: Anita Kapoor  
Date of Birth : 17/05/2000  
  
PS C:\Users\Abdul\Desktop\programs\assignment 3> █
```

Update Program:

```
Enter 1 to  Add a record.
Enter 2 to  Delete a record.
Enter 3 to  Search a Record.
Enter 4 to  Update a record.
```

4

You pressed 4.

Enter the Adhar number/Social security number of person to update: 8194832500

Please do not exit until current persons data is not entered completly.

Enter the name of person. : Ranbir Kapoor

Enter the gender : Male

Enter the fathers name. : Rishi Kapoor

Enter the mothers name. : Anita Kapoor

Enter the date of birth. : 17/05/2000

Thank you the data base has been updated.

Open the databse at C:\Users\Abdul\Desktop\programs\assignment 3\db.csv

PS C:\Users\Abdul\Desktop\programs\assignment 3> █

Conclusion:

Advantages of doubly linked list over singly linked list.

1. **Data Loss:** In Singly linked list, imagine if you deleted a node. Then all the nodes(data) present to the next of that node will be lost. This problem is doesn't occur in doubly linked list since transversal from both sides is possible.
2. **Can be resized dynamically.** As happens in the case of add() and update() operation. A new node is generated and then inserted into the list.

Disadvantages of using a Doubly linked list.

1. Random access in doubly linked list is not possible.
2. Compared to a singly linked list, each node store an extra pointer which consumes extra memory.

How to use the program:

Step 1:

Download both the files provided.

Step 1:

Open the source code and change the path variable (on line 7) to the address of db.csv file provided. (Note: use “ \\ ” instead of “ \ ”)

Compile the source code.

Step 2:

Open the csv with notepad and check if the csv file is in the format,

```
data 1,data 2,data 3, ... ,data 10 “\n”
data 11,data 12,data 13, ... ,data 20 “\n”
.
.
.
data n, data (n+1), ... , data m “\n”
```

i.e. a new line character after the last data field in the last line.

Note: program wont know if a record is present until it sees a (next line char (\n)).

Step 3:

Run the executable. And perform the required operati

