

Date:

PDS Mini Project

12.12.2022

Title:

Database basic query processing

Data structure:

Singly Linked list

Introduction:

Implementing mini database using linkedlist and performing some query operations using linked list operations.

DBMS sample:

Laundry Management system

Tables:

Laundry table

Attributes

- Student number
- Hostel block name
- Room number
- Balance in laundry account

Student table

Attributes

- Student table
- Student name
- Department
- Semester

Constraiants and keys

1. Check constraint in laundry table
Semester should be greater than 0 and less than or equal to 8
2. Primary key in laundry table
Student number
3. Primary key in student table
Student number
4. Relation between two table(foreign key)
Student number

Triggers

Trigger concept is used in update module. Selecting the laundry service triggers the updation of balance in laundry table.

Main module displaying options:

Displaying options

```
=====
                                THE QUERY RETRIEVER
=====

OPTIONS

1.Insert
2.Update Balance
3.Select
4.Join
5.Delete
6.Count
7.Balance sum
8.Minimum Balance
9.Maximum balance
```

Insert module

Insert is chosen and options are displayed

```
Enter your choice      :1

You have chosen to insert

OPTIONS ON INSERTING

1.Insert into laundry table
2.Insert into student table
```

Choosing invalid option

```
Enter your choice      :21

Invalid option
```

Inserting record in laundry whose foreign key value in student has not been added yet

```
Enter your choice      :1

You have chosen to insert

OPTIONS ON INSERTING

1.Insert into laundry table
2.Insert into student table

Enter your choice      :1

You have chosen to insert into laundry table

Enter the details

Enter the student registration number:35

Foreign key value not found.
```

Inserting record in student table

Record 1

```
OPTIONS ON INSERTING

1.Insert into laundry table
2.Insert into student table

Enter your choice      :2

You have chosen to insert into student table

Enter the details

Enter the student registration number :21

Enter the student name  :Jeevitha

Enter the department name:IT

Enter the semester:3

Record inserted into student table successfully
```

Record 2:

```
Enter your choice      :2  
  
You have chosen to insert into student table  
  
Enter the details  
  
Enter the student registration number  :22  
  
Enter the student name  :Anu  
  
Enter the department name:ECE  
  
Enter the semester:4  
  
Record inserted into student table successfully
```

Record 3:

```
Enter the details  
  
Enter the student registration number  :11  
  
Enter the student name  :Kavya  
  
Enter the department name:CT  
  
Enter the semester:6  
  
Record inserted into student table successfully
```

Record 4:

```
Enter your choice      :2  
  
You have chosen to insert into student table  
  
Enter the details  
  
Enter the student registration number  :23  
  
Enter the student name  :Ganga  
  
Enter the department name:EIE  
  
Enter the semester:5  
  
Record inserted into student table successfully
```

Check constraint violated as semester>8

```
Enter your choice      :2  
  
You have chosen to insert into student table  
  
Enter the details  
  
Enter the student registration number  :24  
  
Enter the student name  :Kavitha  
  
Enter the department name:CT  
  
Enter the semester:9  
  
Check constraint violated.
```

Trying to insert already existing record

OPTIONS ON INSERTING

- 1.Insert into laundry table
- 2.Insert into student table

Enter your choice :2

You have chosen to insert into student table

Enter the details

Enter the student registration number :21

Primary key value exists already

Inserting records in laundry table

Record 1:

You have chosen to insert into laundry table

Enter the details

Enter the student registration number:23

Enter the hostel block :Marudham

Enter the room number :501

Enter the Balance amount :800

Record inserted into laundry table successfully

Record 2:

```
Enter your choice      :1
You have chosen to insert into laundry table
Enter the details
Enter the student registration number:21
Enter the hostel block  :Rajam
Enter the room number   :201
Enter the Balance amount      :1000
Record inserted into laundry table successfully
```

Record 3:

```
You have chosen to insert into laundry table
Enter the details
Enter the student registration number:22
Enter the hostel block  :Birla
Enter the room number   :301
Enter the Balance amount      :600
Record inserted into laundry table successfully
```

Trying to insert already existing record

```
Enter your choice      :1
You have chosen to insert into laundry table
Enter the details
Enter the student registration number:21
Primary key value exists already
```

Update module

Update option is chosen and corresponding options are displayed

```
Enter your choice      :2  
  
You have chosen to update balance in laundry table  
  
Enter the register number of the student for whom you want to update      :21  
  
SERVICES AVAILABLE  
  
1.washing  
2.pressing
```

Washing is chosen and value is updated

```
Enter the service opted :1  
  
Enter the weight of clothes      :2  
  
Value updated successfully.
```

Displaying updated value

```
Enter the register number for which you want the records      :21  
Regno:21  
Hostel block:Rajam  
Room number:201  
Balance:835.000000
```

Pressing option chosen and value updated according to number of clothes

```
Enter the service opted :2  
  
Enter the number of clothes      :1  
  
Value updated successfully.
```


Displaying updated value

```
Enter the register number for which you want the records      :21
Regno:21
Hostel block:Rajam
Room number:201
Balance:828.000000
```

For user convenience another method of choosing service:

Entering 'washing' instead of number:

```
Enter the service opted :washing
Enter the weight of clothes      :4
Value updated successfully.
```

Entering 'washing' instead of number:

```
Enter the service opted :pressing
Enter the number of clothes    :1
Value updated successfully.
```

Choosing non-existing registration number

```
Enter your choice      :2
You have chosen to update balance in laundry table
Enter the register number of the student for whom you want to update :89
Register number not found
```

Choosing invalid service

SERVICES AVAILABLE

- 1.washing
- 2.pressing

Enter the service opted :dkflnds

Invalid service

Select module

Choosing select option and the corresponding options are displayed

Enter your choice :3

You have chosen to select records

OPTIONS ON SELECT

- 1.select * laundry
- 2.select * student
- 3.select from laundry based on regno
- 4.select * from student based on regno
- 5.select * from laundry based on maximum balance
- 6.slect * from laundry based on mininum balance
- 7.select from laundry order by regno
- 8.select from student order by regno
- 9.select from laundry and student based on regno
- 10.select from laundry order by balance

Selecting invalid choice

Enter your choice :11

Invalid option

Selecting all records from laundry

```
Enter your choice          :1

You have chosen to select * from laundry

Regno          :21
Hostel block    :Rajam
Room number     :201
Balance        :828.000000

Regno          :22
Hostel block    :Birla
Room number     :301
Balance        :600.000000

Regno          :23
Hostel block    :Marudham
Room number     :501
Balance        :800.000000
```

Selecting all records from students

```
You have chosen to select * from details

Register number :21
Name block      :Jeevitha
Department      :IT
Semester        :3

Register number :22
Name block      :Anu
Department      :ECE
Semester        :4

Register number :23
Name block      :Ganga
Department      :EIE
Semester        :5

Register number :11
Name block      :Kavya
Department      :CT
Semester        :6
```

Selecting a particular record from laundry table based on regno

```
Enter your choice      :3

You have chosen to select from laundry based on regno

Enter the register number for which you want the records      :21
Regno                  :21
Hostel block           :Rajam
Room number            :201
Balance                :828.000000
```

If the regno does not exist in laundry table:

```
You have chosen to select from laundry based on regno

Enter the register number for which you want the records      :67

Record not found
```

Selecting a particular record from student table based on regno

```
You have chosen to select from students based on regno

Enter the register number for which you want the records:21
Register number:21
Name:Jeevitha
Department:IT
Semester:3
```

If the regno does not exist in student table:

```
You have chosen to select from students based on regno

Enter the register number for which you want the records:89

Record not found
```

Selecting record with maximum balance

You have chosen to select from laundry based on maximum balance

Regno	:21
Hostel block	:Rajam
Room number	:201
Balance	:828.000000

Selecting record with minimum balance

You have chosen to select from laundry based on minimum balance

Regno:22
Hostel block:Birla
Room number:301
Balance:600.000000

Selecting records from laundry table ordered by regno

You have chosen select from laundry order by regno

Regno	:21
Hostel block	:Rajam
Room number	:201
Balance	:828.000000

Regno	:22
Hostel block	:Birla
Room number	:301
Balance	:600.000000

Regno	:23
Hostel block	:Marudham
Room number	:501
Balance	:800.000000

Selecting records from student table ordered by regno

You have chosen select from student order by regno

Register number :11

Name :Kavya

Department :CT

Semester :6

Register number :21

Name :Jeevitha

Department :IT

Semester :3

Register number :22

Name :Anu

Department :ECE

Semester :4

Register number :23

Name :Ganga

Department :EIE

Semester :5

Join operation on laundry and student table for a particular record based on regno

You have chosen select from laundry and student based on regno

Enter the register number :23

Regno:23

Name:Ganga

Department:EIE

Semester:5

Hostel block:Marudham

Room number:501

Balance:800.000000

Selecting records sorted according to balance

```
Regno          :22
Hostel block   :Birla
Room number    :301
Balance        :600.000000
```

```
Regno          :23
Hostel block   :Marudham
Room number    :501
Balance        :800.000000
```

```
Regno          :21
Hostel block   :Rajam
Room number    :201
Balance        :828.000000
```

Join module

Joining all records from laundry and student table based on regno

```
You have chosen to join based on register number
```

```
Regno:21  
Name:Jeevitha  
Department:IT  
Semester:3  
Hostel block:Rajam  
Room number:201  
Balance:828.000000
```

```
Regno:22  
Name:Anu  
Department:ECE  
Semester:4  
Hostel block:Birla  
Room number:301  
Balance:600.000000
```

```
Regno:23  
Name:Ganga  
Department:EIE  
Semester:5  
Hostel block:Marudham  
Room number:501  
Balance:800.000000
```

Count module

Count option is chosen and corresponding options are displayed

```
You have chosen to count
```

```
OPTIONS IN COUNT
```

- 1.count * from laundry
- 2.count * from student

Counting from student table

```
You have chosen count * from student  
The total records in student table is 4
```

Counting from student table

```
You have chosen count * from laundry  
The total records in laundry table is 3
```

Sum module

Displaying sum of balance

```
Enter your choice      :7  
You have chosen to sum the balance amount in laundry table  
The sum of balance is:2228.000000
```

If no record exists

```
You have chosen to sum the balance amount in laundry table  
No records in laundry table
```

Minimum balance module

Displaying minimum balance

```
Enter your choice      :8  
You have chosen to find minimum balance amount in laundry table  
The minimum balance is:600.000000
```

If no record exists

```
You have chosen to find minimum balance amount in laundry table  
No records in laundry table
```

Maximum balance module

Displaying maximum balance

```
Enter your choice      :9  
You have chosen to find maximum balance amount in laundry table  
The maximum balance is:828.000000
```

If no record exists

```
You have chosen to find maximum balance amount in laundry table  
No records in laundry table
```

Delete module

Choosing delete option

```
You have chosen to delete  
  
OPTIONS ON DELETE  
  
1.delete from laundry based on regno  
2.delete from student based on regno  
3.Delete all records from laundry  
4.Delete all records from student
```

Deleting from student table whose foreign key value is associated with laundry table

```
You have chosen to delete from student based on regno  
Enter the register number of the student to delete      :21  
Foreign key value associated.  
Cannot delete.
```

Trying to delete all records from student table

```
You have chosen to delete all records from students  
Records cannot be deleted.Foreign key values associated with laundry table
```

Deleting all records from laundry table

```
You have chosen to delete all records from laundry  
All records in laundry table deleted successfully
```

Trying to display laundry records after deleting

```
You have chosen to select * from laundry  
No records
```

Trying to delete a non-existing regno

```
You have chosen to delete from student based on regno  
Enter the register number of the student to delete      :67  
Record not found
```

Exit module

Exiting

```
Enter your choice      :10
```

```
Exiting....
```

Result

Thus, the various queries in DBMS are implemented using linked list data structure