Customised DBMS

Developer

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Disclaimer: This system stores data temporarily in primary memory; all records are lost upon program termination.

1. Project Overview:
The Customised DBMS (Database Management System) is a console-based Java application designed to simulate basic database functionalities for managing employee records. It supports insertion, deletion, searching, and aggregation operations on employee data using core Java data structures, particularly LinkedList.

2. Technologies Used:
- Java (JDK)
- Core Java Libraries
- Collections Framework (LinkedList)
- OOP Concepts (Classes, Objects, Encapsulation, Static members)

3. Functional Modules:

a. Employee Class: Represents a single employee record.
- Fields: `EID`, `Ename`, `EAddress`, `ESalary`
- Static Field: `Counter` (auto-increments to assign unique EID)
- Constructor to initialize employee details.
- Method: `DisplayInfo()` to print employee details.

- **b. CustomisedDBMS Class:**
- Simulates a simple DBMS to perform operations on a list of employees.
- Uses LinkedList to store employee records.

Key Methods:
- `InsertIntoTable(String, String, int)` – Inserts a new employee.
- `SelectStar()` – Displays all employees.
- `SelectSpecific(int)` – Searches employee by EID.
- `SelectSpecific(String)` – Searches employee by name.
- `DeleteFrom(int)` – Deletes employee by EID.
- `DeleteFrom(String)` – Deletes employee by name.
- `AggregateSum()` – Total salary.
- `AggregateMax()` – Maximum salary.
- `AggregateMin()` – Minimum salary.
- `AggregateAvg()` – Average salary.
- `AggregateCount()` – Count of employees.

c. program665 (Main Class):

- Acts as the UI layer using console inputs and outputs. Provides a menu-driven interface for the user to interact with the system.

4. Features Implemented:

- Insertion of new employee records.
- Display of all employee records.
- Query employees by EID or Name.
- Delete employee records by EID or Name.
- Salary Aggregation: Sum, Max, Min, Avg, Count.
- Help & About sections.

5. Sample Menu:

```
1 : Insert new record into the table
2 : Display all records
3 : Display all records having specific EID
4 : Display all records having specific Name
5 : Delete the record based on EID
6 : Delete the record based on Employee name
7 : Display Sum of all salary
8 : Display Average of all salary
9 : Display Minimum from all salary
10 : Display Maximum from all salary
11 : Display the Count of records
12 : Display Help
13 : Display About
14 : Terminate the DBMS
```

6. Conclusion:

This project demonstrates the simulation of database operations using object-oriented programming in Java. It serves as a learning tool for beginners to understand database concepts such as CRUD and aggregation operations using in-memory data structures.