**PART – 1**

GitHub Link: <https://github.com/harshitjain17/Database-Management-Systems-CMPSC-431W-Final-Project>

**PART – 2**

**HOSPITAL MANAGEMENT SYSTEM CLI DOCUMENTATION**

**Table of Contents**

1. Introduction
2. Getting Started
3. Main Menu Options
   1. Insert a new patient
   2. Delete the expired insurance on file for a patient
   3. Update the billing amount for a patient
   4. Search for patients by the doctor assigned to them
   5. Aggregate Functions on Patient table
   6. Sort patients by age in descending order
   7. Joins Patients and Admission tables for emergency admissions with O- blood type
   8. Group patients based on user-specified columns
   9. Find patients with a length of stay exceeding a threshold using a subquery
   10. Discharge a patient using a transaction
   11. Bonus: Custom Query
   12. Error Handling
   13. Exit
4. Conclusion

**A. Introduction**

The Hospital Management System CLI is a Python-based interface for interacting with a PostgreSQL database. It allows users to perform various operations related to patient management, including adding new patients, updating billing information, searching for patients by doctor, and more.

**B. Getting Started**

Before using the CLI, ensure that you have Python installed on your system along with the required dependencies listed in the requirements.txt file. Additionally, make sure you have PostgreSQL installed and running, with the database schema set up according to the provided SQL scripts.

To start the CLI, run the `main.py` script in your terminal.

python main.py

**C. Main Menu Options**

**1. Insert a new patient**

This option allows users to insert information for a new patient into the database.

Usage:

* Choose option 1 from the main menu.
* Follow the prompts to enter the required information for the new patient, such as name, age, gender, etc.
* Press Enter for optional fields or provide the requested information.

Interpretation of Query Output:

* Upon successful insertion, the CLI will display the patient ID and admission ID of the newly inserted patient.

**2. Delete the expired insurance on file for a patient**

This option allows users to delete the expired insurance information for a specific patient.

Usage:

* Choose option 2 from the main menu.
* Enter the patient ID for which you want to delete the expired insurance.
* Press Enter to execute the deletion.

Interpretation of Query Output:

* The CLI will confirm the deletion of the expired insurance provider for the specified patient.

**3. Update the billing amount for a patient**

This option allows users to update the billing amount for a patient's admission.

Usage:

* Choose option 3 from the main menu.
* Enter the admission ID for which you want to update the billing amount.
* Enter the new billing amount.
* Press Enter to execute the update.

Interpretation of Query Output:

* The CLI will confirm the successful update of the billing amount for the specified admission.

**4. Search for patients by the doctor assigned to them**

This option allows users to search for patients based on the doctor assigned to them.

Usage:

* Choose option 4 from the main menu.
* Enter the full name of the doctor.
* Press Enter to execute the search.

Interpretation of Query Output:

* The CLI will display the patient ID, name, admission ID, doctor name, admission date, and discharge date for each patient found.

**5. Aggregate Functions on Patient table**

This option provides various aggregate functions on the patient table, such as counting total patients and finding the average age of patients.

Usage:

* Choose option 5 from the main menu.
* Select the desired option from the sub-menu.
* Press Enter to execute the chosen aggregate function.

Interpretation of Query Output:

* The CLI displays the result of the chosen aggregate function, such as total patients or average patient age.

**6. Sort patients by age in descending order**

This option allows users to sort patients by age in descending order.

Usage:

* Choose option 6 from the main menu.
* The CLI will display the sorted list of patients along with their details.

Interpretation of Query Output:

* The CLI displays the sorted list of patients with details including name, age, gender, etc., arranged in descending order of age.

**7. Joins Patients and Admission tables for emergency admissions with O- blood type**

This option joins the Patients and Admission tables to find emergency admissions with O- blood type.

Usage:

* Choose option 7 from the main menu.
* The CLI will display emergency admissions with patients having O- blood type along with their details.

Interpretation of Query Output:

* The CLI will display emergency admissions with details including patient name, blood type, admission date, and admission type.

**8. Group patients based on user-specified columns**

This option allows users to group patients based on user-specified columns and find the average age of each group.

Usage:

* Choose option 8 from the main menu.
* Enter the column name to group by.
* The CLI will display the average age of patients in each group.

Interpretation of Query Output:

* The CLI will display the average age of patients in each group along with the specified column.

**9. Find patients with a length of stay exceeding a threshold using a subquery**

This option finds patients with a length of stay exceeding a user-specified threshold using a subquery.

Usage:

* Choose option 9 from the main menu.
* Enter the minimum threshold for length of stay in days.
* The CLI will display patients with a length of stay exceeding the specified threshold.

Interpretation of Query Output:

* The CLI will display patients with details including patient ID, name, admission date, discharge date, and length of stay.

**10. Discharge a patient using a transaction**

This option allows users to discharge a patient using a transaction.

Usage:

* Choose option 10 from the main menu.
* Enter the patient ID of the patient to be discharged.
* The CLI will confirm the successful discharge of the patient.

Interpretation of Query Output:

* The CLI will confirm the successful discharge of the patient.

**11. Bonus: Custom Query**

This option allows users to execute custom SQL queries on the database.

Usage:

* Choose option 11 from the main menu.
* Enter the desired SQL query when prompted.
* The CLI will execute the query and display the results, if any.

Interpretation of Query Output:

* The CLI will display the query results if applicable.

**12. Error Handling**

Error handling is performed throughout the CLI to handle various exceptions and provide informative error messages.

**13. Exit**

This option exits the CLI and closes the database connection.

**D. Conclusion**

The Hospital Management System CLI provides a convenient interface for managing patient data in a PostgreSQL database. With a range of functionalities available through simple CLI commands, users can efficiently perform operations such as patient insertion, update, search, and more. For any queries or issues, refer to the documentation or contact the system administrator.

**PART – 3**