INTERNATIONAL INSTITUTE OF
INFORMATION TECHNOLOGY
H Y D E R A B A D

CS4.301 Data and Applications - Project Phase 4

Gargie Tambe - 2022111008
Chetan Mahipal - 2022101096
Yash Shinde - 2022111009
Abhinav Raundhal - 2022101089

December 2, 2023

Operations for the Hospital management system

The hospital Management system has to be equipped with different functionalities which include Modifications like insert, delete, update. It's also equipped with retrievals like Aggregates, Search, Projection, Analysis of different relations from the database.

1 Modifications

1.1 Insert

- **Insert a New Doctor into the database:** When a new doctor joins the hospital, a comprehensive entry is made into the hospital database. This entry includes essential details about the doctor, encompassing basic personal information, areas of specialization, educational degrees, and any other pertinent information.

- **Insert a New Patient into the database:** When a new patient is admitted to the hospital, a corresponding entry is created in the database. This entry encompasses crucial information about the patient, including personal details, dependents information, and admission specifics.

- **Insert a New Director into the database:** Upon the recruitment of a new director, a comprehensive entry is inserted into the hospital database. This entry includes essential details about the director, such as personal information, role within the organization, and any other pertinent information.

- **Insert a New Equipment into the database:** When new equipment is procured by the hospital, an entry is added to the database. This entry includes details about the equipment, such as its type, department allocation, and procurement information.

- **Insert a New Treatment into the database:** Following every consultation, a new treatment entry is made in the hospital database. This entry captures details about the treatment administered, linking it to the respective patient and doctor.

1.2 Update

- **Update the Salary of a Doctor:**

This update operation involves modifying the salary of a doctor, typically to incorporate an annual increment or salary adjustment. By keeping the salary information up-to-date, the hospital ensures that the compensation for medical staff aligns with organizational policies and market standards, contributing to employee satisfaction and retention.

- **Update the Department Manager in the Event of Any Changes:**

  This update operation is designed to modify the department manager in the event of organizational changes. By updating this information, the hospital maintains an accurate representation of the current departmental leadership structure, facilitating effective communication and decision-making within the organization.

1.3   Delete

- **Delete a Doctor from the database:** When a doctor departs from the hospital, a deletion operation is executed in the database. This process involves removing all records and information associated with the departing doctor.

- **Delete an Attendant from the database:** In the event of an attendant's departure, the database is updated through a deletion operation. This process involves removing all records and details related to the departing attendant in accordance with a formal process.

- **Delete an Equipment from the database:** When a piece of equipment is discarded or no longer in use, it is removed from the hospital database. This deletion operation includes eliminating all relevant records associated with the equipment.

2   Retrievals

2.1   Aggregates

- **Retrieve Total Salary of Doctors in a Department:**

  This aggregate retrieval involves calculating the total salary of all doctors within a specific department. By summing up the individual salaries of doctors in the designated department, the hospital can gain insights into the financial allocation for medical staff in that particular area. This information aids in budgeting and resource planning for the department.

- **Retrieve Total Amount of Equipment within a Department:**

  This aggregate retrieval focuses on determining the total quantity of equipment present in a designated department. By summing up the number of individual equipment units within the specified department, the hospital can effectively manage its inventory. This information is valuable for assessing resource distribution and ensuring that each department has the necessary equipment for optimal functionality.

2.2   Search

- **Retrieve List of Doctor Names Consulted by a Patient:**

  This search operation involves retrieving a list of doctors whose services have been utilized by a specific patient. By accessing this information, the hospital can ensure continuity of care, track patient interactions with different doctors, and maintain a comprehensive record of the medical professionals involved in a patient's treatment journey.

- **Retrieve List of Treatments Administered to a Patient:**

  This search operation is designed to retrieve a detailed list of treatments administered to a particular patient. By accessing this information, healthcare providers can gain insights into the patient's medical history, track the effectiveness of past treatments, and make informed decisions about ongoing or future healthcare interventions.

- **Retrieve List of Patients Under the Age of 10 and Above the Age of 60:**

  This search operation aims to identify and retrieve a list of patients falling within specific age brackets, namely those under the age of 10 and those above the age of 60. This information is valuable for tailoring healthcare services to different age groups, conducting age-specific medical research, and ensuring targeted health interventions.

- **Retrieve List of Doctors Available on a Particular Day:**

  This search operation provides a list of doctors who are available to provide medical services on a specified day. While this functionality may be challenging to implement due to real-time scheduling considerations, it would greatly assist in optimizing patient appointments and improving the overall efficiency of the hospital's daily operations.

2.3 Projection

- **Retrieve Inventory of Equipment Categorized by Their Respective Departments:**

  This projection operation involves retrieving a comprehensive inventory list of equipment, organized and categorized based on their respective departments. By presenting this information, the hospital can effectively manage and monitor the distribution of equipment across different departments, aiding in resource allocation, procurement decisions, and maintenance planning.

- **Retrieve Available Days for Each Doctor:**

  This projection operation aims to provide a schedule detailing the available days for each doctor within the hospital. While the real-time availability of doctors may pose implementation challenges, having a projected schedule can assist in appointment planning, enabling efficient patient scheduling and optimizing the utilization of medical staff.

2.4 Analysis

- **Retrieve List of Patients who have Made Visits to the Hospital Exceeding 'k' Times:**

  This analysis operation involves identifying and retrieving a list of patients who have visited the hospital more than 'k' times. By accessing this information, healthcare administrators can focus on managing the healthcare needs of frequent visitors, potentially identifying chronic conditions, and implementing targeted interventions to enhance patient care and satisfaction.

- **Retrieve the Number of Treatments Administered Between a Specified Start Date and End Date:**

  This analysis operation aims to provide a count of treatments administered within a defined time frame, starting from a specified start date and ending on a specified end date. This information is valuable for assessing the volume of medical interventions over a specific period, tracking treatment trends, and facilitating data-driven decision-making in healthcare management.