**Apartment Management Database System**

Team-14

**Team Members:**

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**Database Purpose:**

The purpose of this database is to update and maintain the data generated by flatmates to help manage their apartment effectively and track their finances and other tasks concurrently. It will be operated by all the current flatmates exclusively.

**Business Problem Addressed:**

* Allow flatmates to update and maintain their records for their own as well as collective benefit.
* Provide information on flatmate’s daily activities and tasks to enhance communication amongst all the flatmates.
* Track essential information (Emergency Contacts, COVID test schedule/status) of flatmates for faster and easier access in time of need.
* Track the personal and shared expenses of flatmates to provide insights into their finances.
* Track the courses enrolled by each flatmate for a better understanding of their own and other flat mate’s academic schedules.
* Track the grocery items bought by flat mates to estimate the inventory available in the pantry and to also know when the items can be used by.

**Business Rules:**

* Each flatmate will be enrolled to one or more courses.
* Each course in Course Enrolled is registered by at least one flatmate.
* Each course belongs to only one department.
* Each department may have more than one course.
* Each flatmate may have more than one emergency contact
* Each emergency contact is related to one flatmate.
* Each emergency contact only has one phone number.
* Each flatmate may have more than one vehicle.
* Each vehicle is owned by only one flatmate.
* Each grocery record is related to one flatmate only.
* Each personal expense is related to one flatmate only.
* Each common expense is shared by more than one flatmate.
* Each area in a flat is cleaned by only one flatmate in a day.
* Each flatmate only has one COVID test scheduled in a day.
* Each flatmate only uses one laundry machine at a time.
* Only one flatmate can cook at a given time.

**Design Decision:**

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| **Entity Name** | **Why Entity included** | **How entity is related to other entities** |
| Flat Mates | The primary purpose of this Flat Mates entity is to collect and store data about flatmates living in an apartment. This entity collects the name, date of birth and the gender of flatmate. | This is the core entity, so it is connected to all the other entities as all the data in this database is related to a unique flatmate. As there were a few many to many relationships with Flat Mates, several new associative entities were created to resolve it. |
| Emergency Contacts | This entity contains all the necessary details needed to communicate with the emergency contact of a flatmate in case of an accident. | This is a crucial entity for flatmates and so is directly connected to the Flat Mates entity. |
| Courses Enrolled | The Courses Enrolled entity is created so that it can be tracked as to how many courses does a flatmate has enrolled for and what is his respective grade for that course. | This entity is directly related to Flat Mates and Courses entity as an associative entity due to the many to many relationships between them. This is because a flatmate can be registered to many courses and a course can be taken by more than one flatmate. |
| Courses | This entity is where the details of all the courses are stored. It can be used to search and report the course name, professor for that course and the course timings. | This entity is related to Flat Mates entity via Courses Enrolled associative entity. It is also related to Department entity directly as each course must belong to a department. |
| Department | Department entity is essential to store the details of all the departments in a University. We can store the department name and its respective college name in this entity. | This entity is directly connected to courses entity. This is because each department can offer more than one course, so all the courses must belong to one department. |
| Grocery | Grocery entity is used to store all the products sold at the store. We can use this entity to connect with Grocery Record entity and track what and when was bought by each roommate. | This entity is directly related to Flat Mates entity via Grocery Record associative entity. This is because a roommate can buy more than one items, and one item can be bought by many roommate. |
| Grocery Record | Grocery Record entity is created to capture the details of the grocery items brought by the flatmates. This entity is used to store the details of items brought and who brought it. | Grocery Record entity is directly related to Flat Mates entity as it is assumed that only one flatmate buys the grocery items. |
| Personal Expense | This is entity is crucial for a flatmate to store and update his own personal expenses. This can then be used to track finances and understand spending habits to form a budget. | Personal Expense is only connected to Flat Mates entity directly because as the name suggests, its only purpose is to track the personal finance of a flatmate. |
| Common Expense For | Common Expenses entity is created to just track what flatmates are part of the common expense. It is created to solve the many to many relationship between Flat Mates and Common Expense. | This entity is directly related to Flat Mates and Common Expense entity as an associative entity due to the many to many relationships between them. This is because, a single flatmate can be a part of many common expenses and a single common expense can be distributed amongst many flatmates. |
| Common Expense | Common expense entity is usefull to store and track what is the common expense for all/some roommates, how much was it and when was it paid. This is usefull when tracking the budget for entire apartment. | Common Expense is related to Flat Mates via Common Expenses For entity to resolve the many to many relationship between them. |
| Apartment Cleaning Schedule | Apartment Cleaning Schedule exists so that the roommates can look at the entity and figure out who is supposed to clean what and when is it supposed to be done. This entity is present to improve coordination between flatmates. | Apartment Cleaning Schedule entity has a direct relationship with Flat Mates entity as all the flatmates have a direct role in cleaning the flat. |
| COVID Test Schedule | This entity is essential for a person to figure out when and where the covid test was done and what was the result of the test. This data can be viewed by others as well to know the status of a roommate. | COVID Test Schedule entity is directly related to Flat Mates entity as it stores the test records of all the flatmates. |
| Laundry Schedule | Laundry Schedule entity is created to store data about the laundry done by each flatmate. It is usefull to report which flatmate used the machine using what mode at what time. | The laundry Schedule entity is related to the Flat Mates entity as each flatmate is supposed to do his laundry individually. This entity is also connected to the Laundry Mode entity to retrieve data about the mode selected by the flatmate. |
| Laundry Mode | Laundry Mode entity is usefull to store data about the various modes available in a laundry machine including duration so that a flatmate can calculate how much time will it take for a program to finish. | Laundry Mode entity is connected to Laundry Schedule entity and Laundry Machines entity. It's connected in such a way so that it can collect data from laundry machines and report it to the Laundry Schedules entity. |
| Laundry Machines | Laundry Machines entity is usefull to store data about the machine including its type and status. | Laundry Machines is just connected to the Laundry Mode entity as it has a direct relationship with that entity. That is because only a laundry machine can have laundry modes. |
| Cooking Schedule | Cooking Schedule entity stores the data about which flatmate will be using the kitchen at what time. This is to help other flatmates understand when the kitchen is available. | Cooking Schedule entity is directly connected to Flat Mates entity as it needs to store and report when and who is going to use the kitchen for their meals. |
| Vehicle | Vehicle entity is added to store data about flat mates’ vehicles. We can store the basic data about the vehicle as well as when was it last serviced and fueled. This is to help the owner track data about his vehicle. It also contains the parking lot number where the vehicle is parked so that it is easy for other roommates to find it. | Vehicle entity is directly connected to Flat Mates entity as a vehicle is directly owned by a flatmate. |