DATA BASE

Assignment 1

ERD Diagrams & Explanations

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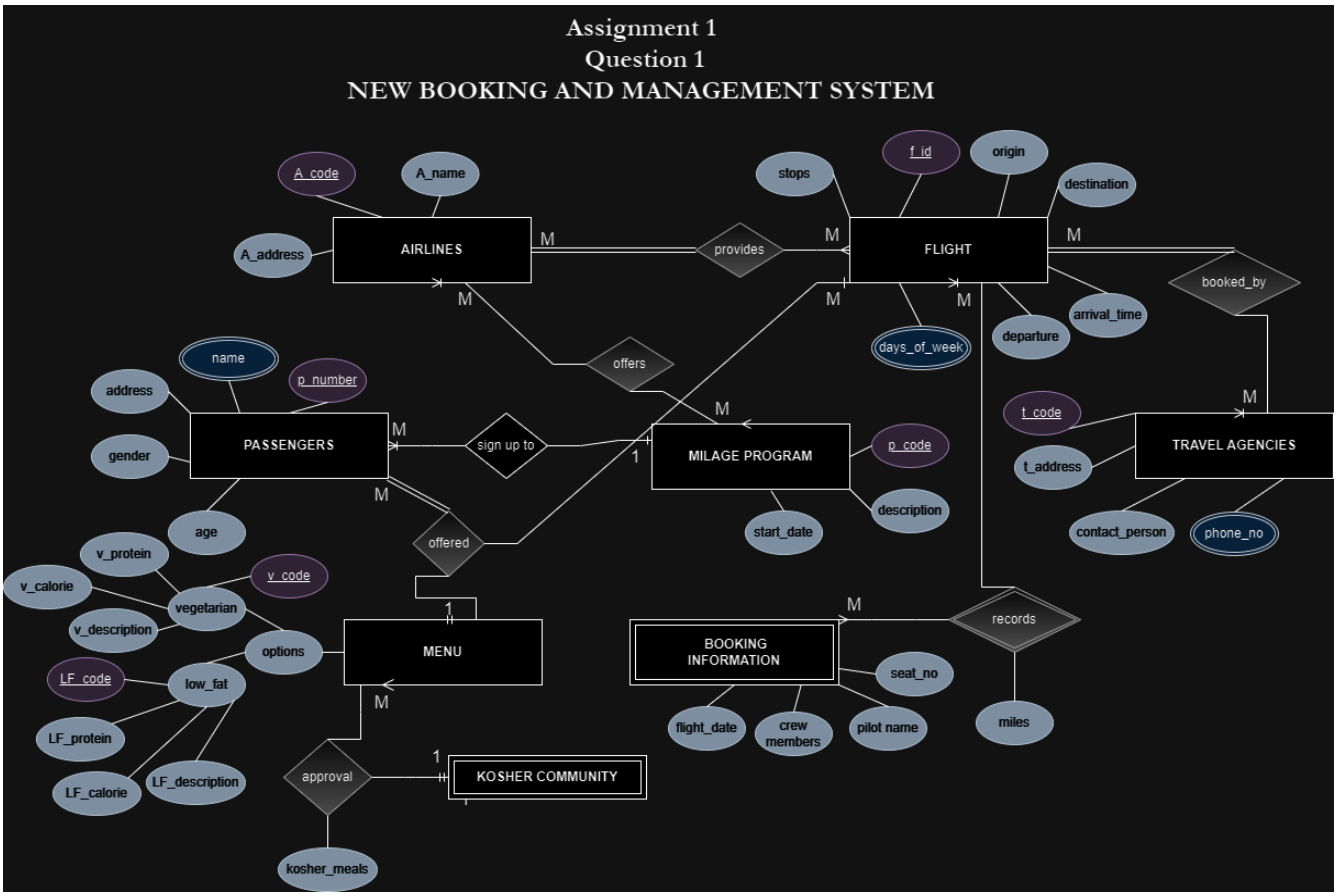


Explanations:

Airlines: Each airline is characterized by a unique code, name, and headquarters address. Since an airline can offer multiple flights, the relationship between Airlines and Flights is appropriately represented as many-to-many, meaning many airlines can offer many flights.

Flights: The Flights entity has attributes such as FlightNumber, DayOfWeek, DepartureTime, ArrivalTime, Origin, Destination, and Stops. Each flight can be associated with one or more airlines. This relationship is correctly depicted as many-to-many because many airlines can offer many flights.

Passengers: Passengers are identified by a unique number and are associated with a name, address, gender, and age. Passengers can enroll in mileage programs offered by airlines. This relationship is depicted as one-to-many because a passenger can sign up for one or more mileage programs, and each mileage program can have multiple passengers.

MileageProgram: The MileageProgram entity has attributes such as ProgramID, Code, Description, and Start Date. Each mileage program is offered by one or more airlines, and each

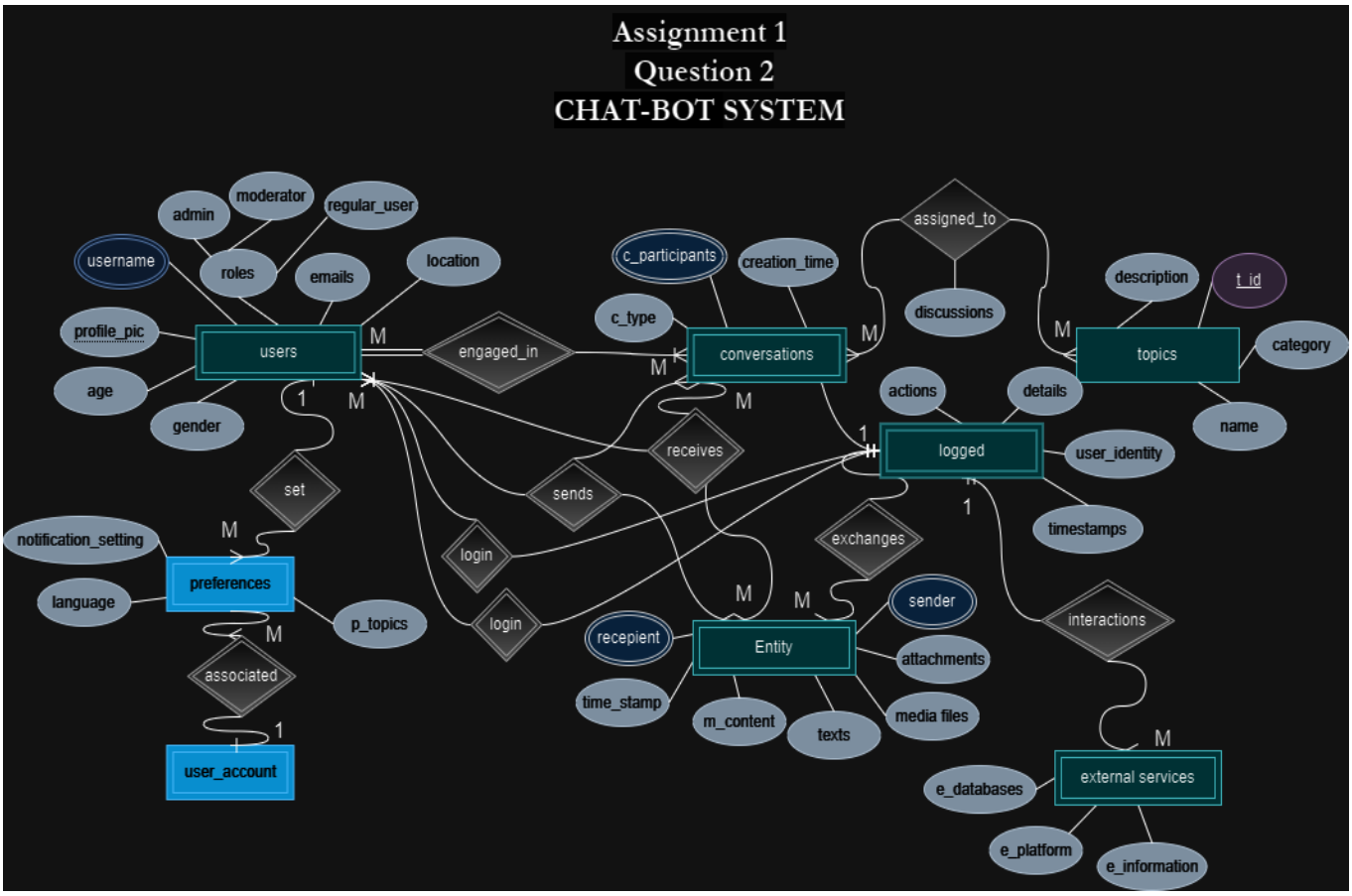
airline can offer multiple mileage programs. This relationship is depicted as many-to-many, as many airlines can offer many mileage programs.

TravelAgencies: Travel agencies have attributes such as Code, Name, Address, ContactPerson, and PhoneNumber. They can book many flights, and each flight can be booked by many travel agencies. This relationship is correctly represented as many-to-many.

BookingInformation: This entity records information about each booking, including the flight, passenger, seat number, pilot's name, crew members, and miles earned. One or many flights can be recorded in many booking information records. This relationship is correctly depicted as one-to-many.

Menu: Each flight offers a menu with various options, each with a code and description. A menu can have one or more kosher meal options. This relationship is represented as one-to-many because a menu can offer multiple meal options, but each meal option can belong to only one menu.

KosherMeal (Weak Entity): This is a weak entity because its existence depends on the presence of a menu offering kosher meals. It has attributes such as ProteinLevel and CalorieCount. Kosher meals require approval from the Kosher community, which indicates a many-to-one relationship.



Users: The "Users" entity represents individuals who are registered with the chatbot system. It has attributes such as UserID, Username, Email, Profile Picture, Age, Gender, Location, Role, and Preferences. Users can engage in conversations (the relationship named "engaged_in") and can have multiple preferences. Each user's preferences are associated with their User Account (the relationship named "has_account").

Conversations: The "Conversations" entity represents the conversations that take place within the chatbot system. Each conversation has metadata such as ConversationID, Creation Time, Participants, and Conversation Type. The relationship between Users and Conversations is named "engaged_in," as users are involved in conversations.

Logged: The "Logged" entity represents system activities and logs. It has attributes such as LogID, Timestamp, User Identifier, and Action Performed. Users can log in, log out, and interact with the system, which is recorded in the "Logged" entity. The relationship between Users and Logged is named "interacts_with."

Topics: The "Topics" entity represents the topics that can be assigned to conversations to categorize discussions. It has attributes such as TopicID, Name, Description, and Category. The relationship between Topics and Conversations is named "categorized_as."

Messages: The "Messages" entity represents the messages exchanged within conversations. Each message has attributes such as MessageID, SenderID, RecipientID, Timestamp, and Content. The relationship between Users and Messages is named "sends_and_receives," as users send and receive messages.

External Services: The "External Services" entity represents external services that can be integrated with the chatbot system. It has attributes such as ServiceID, Service Name, Service Type, and Service Description. The relationship between External Services and Logged is named "interacts_with_external_services," as system activities involving external services are recorded in the "Logged" entity.

Preferences (Weak Entity): The "Preferences" entity is a weak entity, meaning its existence depends on the existence of another entity (in this case, the "User" entity). It has attributes such as PreferenceID, UserID, PreferredTopics, NotificationSettings, and LanguagePreferences. The relationship between Users and Preferences is named "has_preferences."

User Account (Weak Entity): The "User Account" entity is also a weak entity, depending on the existence of the "User" entity. It has attributes such as AccountID, UserID, Username, and Password. The relationship between Users and User Account is named "has_account."