

Course Code	:	MCSL-217
Course Title	:	Software Engineering Lab
Assignment Number	:	MCAOL(I)/217/Assign/2025
Maximum Marks	:	100
Weightage	:	40%
Last Dates for Submission	:	30st April 2025 (for January session) 31st October 2025 (for July session)

This assignment has one question for 40 marks. Answer this question. Your Lab Records will carry 40 Marks. Rest 20 marks are for viva voce. You may use illustrations and diagrams to enhance the explanations. Please go through the guidelines regarding assignments given in the programme guide for the format of presentation.

Note: You must execute the program and submit the program logic, sample input and output along with the necessary documentation. Assumptions can be made wherever necessary.

Q1:

ABC is a network of Hospitals. Its having Hospitals across the World. Its possible to take appointment for any Doctor for an available slot on an available date through its website. Its having a Chatbot also. There are many specialities in each of its Hosptitals. However, not all specialities are available across all its Hospitals. Doctors may provide consultancy services in more than one hospital of its network. Its possible to make payment of consultation fee online while taking appointment or directly at hospital prior to consultation. Make assumptions, wherever necessary. Also, list them very clearly.

Now, with reference to the above, answer the following:

- | | |
|---|-------------------|
| (1) List the Entities | (10 Marks) |
| (2) For each Entity, list Attributes | (10 Marks) |
| (3) Define relationships between the Entities | (10 Marks) |
| (4) Finally, draw the Entity Relationship Diagram | (10 Marks) |

MCSL-217

SOLVED ASSIGNMENT 2025

Disclaimer/ Note: These Sample Answers/Solutions are prepared by Private Teacher/Tutors/Authors for the help and guidance of the student to get an idea of how he/she can answer the Questions given the Assignments. We do not claim 100% accuracy of these sample answers as these are based on the knowledge and capability of Private Teacher/Tutor. As these solutions and answers are prepared by the private teacher/tutor so the chances of error or mistake cannot be denied. Please consult your own Teacher/Tutor before you prepare a Particular Answer and for up-to-date and exact information, data and solution. Student should must read and refer the official study material provided by the university.

Q.1 - ABC is a network of Hospitals. Its having Hospitals across the World. Its possible to take appointment for any Doctor for an available slot on an available date through its website. Its having a Chatbot also. There are many specialities in each of its Hosptitals. However, not all specialities are available across all its Hospitals. Doctors may provide consultancy services in more than one hospital of its network. Its possible to make payment of consultation fee online while taking appointment or directly at hospital prior to consultation. Make assumptions, wherever necessary. Also, list them very clearly.

Now, with reference to the above, answer the following:

- (1) - List the Entities**
- (2) - For each Entity, list Attributes**
- (3) - Define relationships between the Entities**
- (4) - Finally, draw the Entity Relationship Diagram**

ANS.- design an Entity-Relationship Diagram (ERD) for the ABC Hospital Network based on the provided scenario.

Assumptions:

1. **Doctor Specialization:** A doctor can specialize in multiple medical fields.
2. **Hospital Specializations:** A hospital can offer multiple specializations.
3. **Appointment Slots:** Each appointment slot has a specific time and duration.
4. **Payment Methods:** Online payment can be made through various gateways like credit cards, debit cards, net banking, etc.
5. **Chatbot Interactions:** Chatbot interactions are recorded for analysis and improvement.
6. **Patient Demographics:** Basic patient information like age, gender, and contact details are collected for appointments.

1. Entities

- **Hospital**
- **Doctor**
- **Patient**
- **Specialization**
- **Appointment**
- **Appointment Slot**
- **Payment**
- **Chatbot Interaction**

2. Attributes

- **Hospital**
 - HospitalID (Primary Key)
 - HospitalName
 - Address
 - City
 - Country
 - ContactNumber
 - Email
 - Website
 - Specializations (List)
- **Doctor**
 - DoctorID (Primary Key)
 - DoctorName
 - Specializations (List)
 - ContactNumber
 - Email
 - Experience

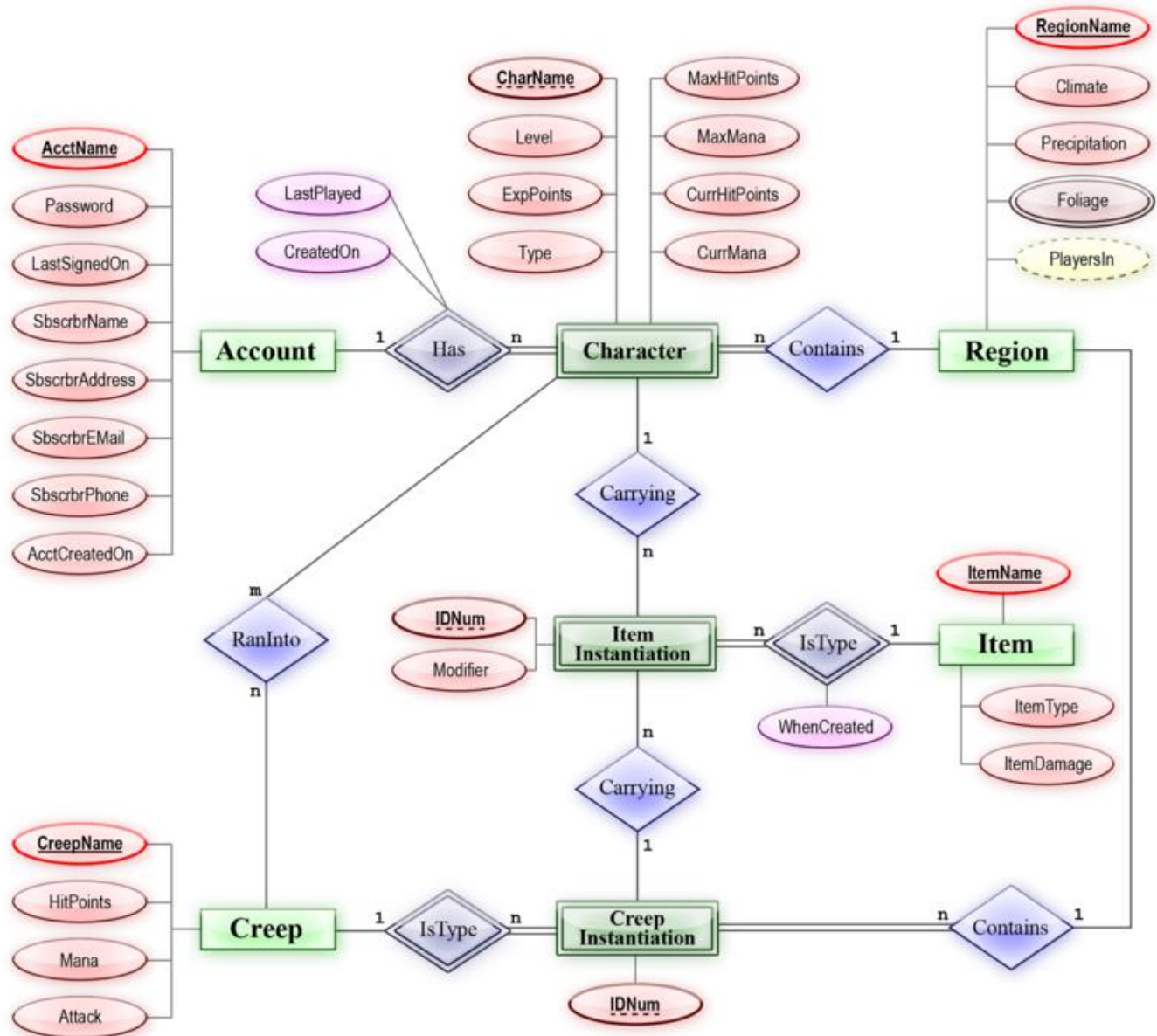
- Qualifications
 - Hospitals (List of HospitalIDs)
- **Patient**
 - PatientID (Primary Key)
 - FirstName
 - LastName
 - DateOfBirth
 - Gender
 - ContactNumber
 - Email
 - Address
 - MedicalHistory (if applicable)
- **Specialization**
 - SpecializationID (Primary Key)
 - SpecializationName
- **Appointment**
 - AppointmentID (Primary Key)
 - PatientID (Foreign Key referencing Patient)
 - DoctorID (Foreign Key referencing Doctor)
 - HospitalID (Foreign Key referencing Hospital)
 - AppointmentSlotID (Foreign Key referencing Appointment Slot)
 - AppointmentDate
 - AppointmentTime
 - Status (e.g., Booked, Cancelled, Completed)
 - ConsultationFee
 - PaymentStatus (e.g., Paid, Unpaid)
- **Appointment Slot**
 - AppointmentSlotID (Primary Key)
 - DoctorID (Foreign Key referencing Doctor)
 - HospitalID (Foreign Key referencing Hospital)
 - Date
 - StartTime
 - EndTime
 - Availability (Boolean)
- **Payment**
 - PaymentID (Primary Key)
 - AppointmentID (Foreign Key referencing Appointment)
 - PaymentDate

- Amount
- PaymentMethod
- TransactionID
- **Chatbot Interaction**
 - InteractionID (Primary Key)
 - PatientID (Foreign Key referencing Patient)
 - ChatbotTimestamp
 - UserQuery
 - ChatbotResponse
 - InteractionType (e.g., Text, Voice)

3. Relationships

- **Works_At:**
 - Many-to-Many relationship between Doctor and Hospital.
 - Represents the association of doctors with the hospitals where they practice.
- **Specializes_In:**
 - Many-to-Many relationship between Doctor and Specialization.
 - Indicates the medical fields in which a doctor specializes.
- **Offers:**
 - Many-to-Many relationship between Hospital and Specialization.
 - Shows the specializations offered by each hospital.
- **Has:**
 - One-to-Many relationship between Hospital and Appointment Slot.
 - Each hospital has multiple appointment slots available.
- **Schedules:**
 - One-to-Many relationship between Doctor and Appointment Slot.
 - Each doctor schedules multiple appointment slots.
- **Books:**
 - One-to-Many relationship between Patient and Appointment.
 - A patient can book multiple appointments.
- **Belongs_To:**
 - One-to-One relationship between Appointment and Appointment Slot.
 - Each appointment is associated with a specific appointment slot.
- **Makes:**
 - One-to-Many relationship between Appointment and Payment.
 - An appointment can have associated payment records.
- **Interacts_With:**
 - One-to-Many relationship between Patient and Chatbot Interaction.
 - A patient can have multiple interactions with the chatbot.

4. Entity-Relationship Diagram



ERD diagram

Explanation of the Diagram:

- **Entities:** Represented by rectangles.
- **Attributes:** Listed within the rectangles. Primary keys are underlined.
- **Relationships:** Represented by lines connecting entities.
- **Cardinality:** Indicated by crows feet or numbers on the lines (e.g., one-to-many, many-to-many).

This ERD provides a conceptual blueprint for the database structure of the ABC Hospital Network. It can be further refined based on specific requirements and implementation considerations.