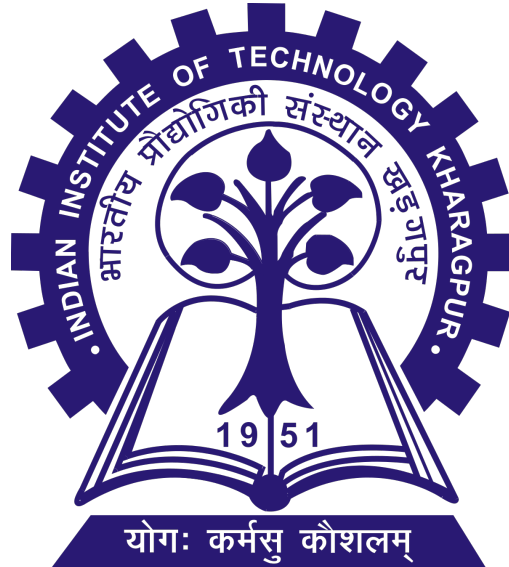# Database Management Systems Laboratory
Assignment 1

University Festival Management System

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1 Introduction

The University Festival Management System is a user-friendly information system built to organize and manage our university's Techno-Cultural Festival effortlessly. It handles a variety of events like talks, competitions, and hackathons, bringing together participants and speakers from our university and beyond. Using a web interface, students, officials, and sponsors can easily input and access data. The system's goal is to improve event management, participant registration, and the overall festival experience by offering a centralized platform for smooth coordination and successful execution.

2 Design of ER Diagram

When crafting the University Festival Management System's Entity-Relationship (ER) diagram, we paid close attention to key elements like ensuring entities and attributes were thorough, using generalization and specialization for clarity, and defining relationships between different entities.

For example, entities such as `Event`, `Participant`, `Sponsor`, and `Organising_Team` were carefully detailed to make sure no important information was left out. The `Event` entity, for instance, included specifics like `Event_ID`, `Event_Name`, and `Event_Date`.

We made use of generalization and specialization to make the diagram clearer and more flexible. Take the `Cultural_Event` entity, a type of `Event` with extra details like `Genre` and `Performance_Type` specific to cultural activities.

Relationships between entities were defined thoughtfully to represent logical connections within the system. The `Evaluates` relationship, for instance, shows how `Evaluators` are associated with `Competitions`, offering a clear way to track evaluation processes.

You can see these design principles in action throughout the diagram. For instance, the `Sponsors` relationship illustrates how a single `Sponsor` can support multiple `Events`, demonstrating the system's adaptability and completeness.

In essence, the ER diagram design is well-founded, focusing on clear entity details, effective generalization, specialization, and distinct relationships.

3 Entity-Relation Diagram

The original diagram can be found here:

1. Link 1
2. Link 2

Figure 1: Entity-Relation Diagram for University Festival Management System

4 Entity Descriptions

In this section, we will describe the entities present in the Entity-Relationship diagram.

4.1 Event

4.1.1 Role and Primary Key

The Event entity plays a central role in the festival management system. It serves as a fundamental entity capturing essential information about the various events within the festival. The primary key for the Event entity is Event_ID.

4.1.2 Attributes

- **Event_ID:** Must be unique for each event. Numeric identifier.
    - **Role:** Identifies the event uniquely.
- **Event_Name:** No special characters allowed. Alphanumeric (text).
    - **Role:** Represents the name of the event.
- **Event_Mode:** Specifies the mode of the event (Online/Offline). Alphanumeric (text).
    - **Role:** Describes whether the event is conducted online or offline.
- **Event_Date:** Must be a valid date. Date format (e.g., DD-MM-YYYY)
    - **Role:** Represents the scheduled date of the event.
- **Entry_Fees:** Positive value indicating the entry fees. Numeric (currency).
    - **Role:** Denotes the cost of participation in the event.
- **Registration_Deadline:** Must be a valid date and should be before the event date. Date format (e.g., DD-MM-YYYY).
    - **Role:** Represents the deadline for participant registration.

4.2 Competition

4.2.1 Role and Primary Key

The Competition entity is a specialization of the Event entity within the festival management system. It focuses on competitive events. The primary key for the Competition entity is Comp_ID and foreign key is Event_ID.

4.2.2 Attributes

- **Comp_ID:** Must be unique for each competition. Numeric identifier.
    - **Role:** Identifies the competition uniquely.
- **Participant:** Set of participants. Multi-valued attribute.
    - **Role:** Indicates individuals or teams participating.
- **Evaluator:** Set of evaluators. Multi-valued attribute.
    - **Role:** Identifies individuals responsible for evaluating participants.
- **Prize:**
    - **First_Prize:** Alphanumeric (text) or Numeric (currency).
        * **Role:** Represents the award for the first-place winner.
    - **Second_Prize:** Alphanumeric (text) or Numeric (currency).
        * **Role:** Represents the award for the second-place winner.
    - **Third_Prize:** Alphanumeric (text) or Numeric (currency).
        * **Role:** Represents the award for the third-place winner.
- **Rule:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Describes the guidelines and regulations for participants.
- **Judging_Criteria:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Identifies the factors considered in the evaluation process.
- **Number_of_Rounds:** Numeric. Positive Value.

– **Role:** Represents the stages or rounds in the competition.

- **Participants_Per_Team:** Numeric. Positive Value.

  – **Role:** Represents the team size allowed in the competition.

- **Max_Team:** Numeric. Positive Value.

  – **Role:** Represents the limit on the total number of participating teams.

4.3 Cultural_Event

4.3.1 Role and Primary Key

The `Cultural_Event` entity is a specialization of the `Event` entity within the festival management system, focusing on cultural activities. The primary key for the `Cultural_Event` entity is `Cult_ID` and foreign key is `Event_ID`.

4.3.2 Attributes

- **Cult_ID:** Must be unique for each cultural event. Numeric identifier.

  – **Role:** Identifies the cultural event uniquely.

- **Genre:** Alphanumeric (text).

  – **Role:** Represents the artistic category of the event (e.g., dance, music).

- **Performance_Type:** Alphanumeric (text).

  – **Role:** Indicates the nature of the performance (e.g., solo, group).

- **Costume_Requirement:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Describes the attire needed for the participants.

- **Stage_Setup_Requirement:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the setup needed for the cultural event.

- **Lighting_Requirement:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the lighting setup needed for the cultural event.

- **Sound_Requirement:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the audio setup needed for the cultural event.

4.4 Exhibition

4.4.1 Role and Primary Key

The `Exhibition` entity is a specialization of the `Event` entity within the festival management system, focusing on showcasing various exhibits. The primary key for the `Exhibition` entity is `Exhibition_ID` and foreign key is `Event_ID`.

4.4.2 Attributes

- **Exhibition_ID:** Must be unique for each exhibition. Numeric identifier.

  – **Role:** Identifies the exhibition uniquely.

- **Theme:** Alphanumeric (text).

  – **Role:** Represents the overarching theme of the exhibition.

- **Exhibition_Type:** Alphanumeric (text).

  – **Role:** Specifies the type or category of the exhibition.

- **Number_of_Booth:** Numeric. Positive value.

  – **Role:** Represents the total number of booths in the exhibition.

- **Booth_Layout:** Alphanumeric (text).

  – **Role:** Describes the arrangement or layout of the booths.

- **Setup_Requirement:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies any specific setup requirements for the exhibition.

4.5 Workshop

4.5.1 Role and Primary Key

The Workshop entity is a specialization of the Event entity within the festival management system, focusing on educational and hands-on sessions. The primary key for the Workshop entity is Workshop_ID and foreign key is Event_ID.

4.5.2 Attributes

- **Workshop_ID:** Must be unique for each workshop. Numeric identifier.
    - **Role:** Identifies the workshop uniquely.
- **Topic:** Alphanumeric (text).
    - **Role:** Represents the subject or main focus of the workshop.
- **Prerequisite:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Specifies any prerequisites or requirements for participants.
- **Equipment_Requirement:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Describes any specific equipment or tools needed for the workshop.
- **Max_Participants:** Numeric. Positive value.
    - **Role:** Represents the maximum number of participants allowed in the workshop.

4.6 Talk

4.6.1 Role and Primary Key

The Talk entity is a specialization of the Event entity within the festival management system, focusing on informative sessions. The primary key for the Talk entity is Talk_ID and foreign key is Event_ID.

4.6.2 Attributes

- **Talk_ID:** Must be unique for each talk. Numeric identifier.
    - **Role:** Identifies the talk uniquely.
- **Talk_Title:** Alphanumeric (text).
    - **Role:** Represents the title or main topic of the talk.
- **Talk_Type:** Alphanumeric (text).
    - **Role:** Specifies the type or category of the talk.
- **Q&A_Format:** Alphanumeric (text).
    - **Role:** Describes the format for questions and answers during the talk.

4.7 Facilitator

4.7.1 Role and Primary Key

The Facilitator entity plays a crucial role in conducting events within the festival management system. The primary key for the Facilitator entity is Facilitator_ID.

4.7.2 Attributes

- **Facilitator_ID:** Must be unique for each facilitator. Numeric identifier.
    - **Role:** Identifies the facilitator uniquely.
- **Facilitator_Name:** Alphanumeric (text).
    - **Role:** Represents the name of the facilitator.
- **Facilitator_Type:** Alphanumeric (text).
    - **Role:** Specifies the type or category of the facilitator.
- **Contact_Details:**
    - **Contact_Person:** Alphanumeric (text).

* **Role:** Represents the main contact person for the facilitator.
    – **Contact_Email:** Alphanumeric (text). Multi-valued attribute.
        * **Role:** Specifies the email addresses for contacting the facilitator.
    – **Contact_Phone:** Alphanumeric (text). Multi-valued attribute.
        * **Role:** Specifies the phone numbers for contacting the facilitator.

- **Availability_Schedule:** Alphanumeric (text). Multi-valued attribute.

    – **Role:** Describes the schedule or availability of the facilitator.

- **Payment_Amount:** Numeric (currency).

    – **Role:** Represents the amount paid to the facilitator.

- **Payment_Currency:** Alphanumeric (text).

    – **Role:** Specifies the currency for the payment.

- **Payment_Status:** Alphanumeric (text).

    – **Role:** Represents the status of the payment (e.g., pending, completed).

4.8 Evaluator

4.8.1 Role and Primary Key

The `Evaluator` entity is a specialization of the `Facilitator` entity within the festival management system, focusing on evaluating participants in events. The primary key for the `Evaluator` entity is `Evaluator_ID` and foreign key is `Facilitator_ID`.

4.8.2 Attributes

- **Evaluator_ID:** Must be unique for each evaluator. Numeric identifier.

    – **Role:** Identifies the evaluator uniquely.

- **Expertise_Area:** Alphanumeric (text). Multi-valued attribute.

    – **Role:** Specifies the areas of expertise for the evaluator.

- **Affiliation:** Alphanumeric (text).

    – **Role:** Represents the organisation or institution to which the evaluator is affiliated.

- **Assigned_Role:** Alphanumeric (text).

    – **Role:** Specifies the role assigned to the evaluator (e.g., judge, expert).

4.9 Performer

4.9.1 Role and Primary Key

The `Performer` entity is a specialization of the `Facilitator` entity within the festival management system, focusing on individuals or groups providing performances. The primary key for the `Performer` entity is `Performer_ID` and foreign key is `Facilitator_ID`..

4.9.2 Attributes

- **Performer_ID:** Must be unique for each performer. Numeric identifier.

    – **Role:** Identifies the performer uniquely.

- **Performance_Type:** Alphanumeric (text).

    – **Role:** Specifies the type or category of performance (e.g., music, dance).

- **Dress_Code:** Alphanumeric (text).

    – **Role:** Describes the recommended or required attire for the performance.

- **Popularity:** Numeric.

    – **Role:** Represents the popularity or recognition level of the performer.

4.10 Exhibitor

4.10.1 Role and Primary Key

The `Exhibitor` entity is a specialization of the `Facilitator` entity within the festival management system, focusing on organisations or individuals showcasing products or services in an exhibition. The primary key for the `Exhibitor` entity is `Exhibitor_ID` and foreign key is `Facilitator_ID`..

4.10.2 Attributes

- **Exhibitor_ID:** Must be unique for each exhibitor. Numeric identifier.
  - **Role:** Identifies the exhibitor uniquely.
- **Organisation:** Alphanumeric (text).
  - **Role:** Represents the name or title of the exhibiting organisation.
- **Exhibition_Theme:** Alphanumeric (text).
  - **Role:** Describes the thematic focus of the exhibition for the exhibitor.
- **Product_Services:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the products or services offered by the exhibitor.

4.11 Instructor

4.11.1 Role and Primary Key

The `Instructor` entity is a specialization of the `Facilitator` entity within the festival management system, focusing on individuals conducting educational workshops. The primary key for the `Instructor` entity is `Instructor_ID` and foreign key is `Facilitator_ID`..

4.11.2 Attributes

- **Instructor_ID:** Must be unique for each instructor. Numeric identifier.
  - **Role:** Identifies the instructor uniquely.
- **Affiliation:** Alphanumeric (text).
  - **Role:** Represents the organisation or institution to which the instructor is affiliated.
- **Expertise_Area:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the areas of expertise for the instructor.
- **Workshop_Topics:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Describes the topics covered in the workshops conducted by the instructor.

4.12 Speaker

4.12.1 Role and Primary Key

The `Speaker` entity is a specialization of the `Facilitator` entity within the festival management system, focusing on individuals providing talks or sessions. The primary key for the `Speaker` entity is `Speaker_ID and foreign key is Facilitator_ID`..

4.12.2 Attributes

- **Speaker_ID:** Must be unique for each speaker. Numeric identifier.
  - **Role:** Identifies the speaker uniquely.
- **Affiliation:** Alphanumeric (text).
  - **Role:** Represents the organisation or institution to which the speaker is affiliated.
- **Expertise_Area:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the areas of expertise for the speaker.
- **Speaker_Bio:** Alphanumeric (text).
  - **Role:** Provides a brief biography or introduction of the speaker.
- **Popularity:** Numeric.
  - **Role:** Represents the popularity or recognition level of the speaker.

4.13 Venue

4.13.1 Role and Primary Key

The Venue entity represents the locations where events take place within the festival management system. The primary key for the Venue entity is Venue_ID.

4.13.2 Attributes

- **Venue_ID:** Must be unique for each venue. Numeric identifier.
  - **Role:** Identifies the venue uniquely.
- **Venue_Name:** Alphanumeric (text).
  - **Role:** Represents the name or title of the venue.
- **Capacity:** Numeric.
  - **Role:** Specifies the maximum number of attendees the venue can accommodate.
- **Infrastructures:**
  - **Audio_Visuals:**
    * **Projector:** Alphanumeric (text). Multi-valued attribute.
      · **Role:** Specifies the availability of a projector in the venue.
    * **Screen:** Alphanumeric (text). Multi-valued attribute.
      · **Role:** Specifies the availability of a screen in the venue.
    * **Sound_System:** Alphanumeric (text). Multi-valued attribute.
      · **Role:** Specifies the availability of a sound system in the venue.
  - **Computer_Terminals:**
    * **Work_Station:** Alphanumeric (text). Multi-valued attribute.
      · **Role:** Specifies the availability of workstations in the venue.
    * **Software_Installed:** Alphanumeric (text). Multi-valued attribute.
      · **Role:** Specifies the software installed on workstations in the venue.
    * **Internet_Speed:** Numeric.
      · **Role:** Specifies the internet speed in the venue.
  - **Seating_Arrangement:**
    * **Type_of_Seating:** Alphanumeric (text).
      · **Role:** Describes the type of seating arrangement in the venue.
    * **Number_of_Seats:** Numeric.
      · **Role:** Specifies the total number of seats available in the venue.
  - **Booking_Rate:** Numeric (currency).
    * **Role:** Represents the cost associated with booking the venue.

4.14 Sponsor

4.14.1 Role and Primary Key

The Sponsor entity represents organisations providing financial support or resources to the festival. The primary key for the Sponsor entity is Sponsor_ID.

4.14.2 Attributes

- **Sponsor_ID:** Must be unique for each sponsor. Numeric identifier.
  - **Role:** Identifies the sponsor uniquely.
- **Sponsor_Name:** Alphanumeric (text).
  - **Role:** Represents the name or title of the sponsor.
- **Sponsor_Type:** Alphanumeric (text).
  - **Role:** Describes the type or category of the sponsor (e.g., Gold, Silver, Platinum).
- **Contact_Details:**
  - **Contact_Person:** Alphanumeric (text).
    * **Role:** Represents the individual point of contact at the sponsor organisation.
  - **Contact_Email:** Alphanumeric (text). Multi-valued attribute.

    ∗ **Role:** Specifies the email addresses for contacting the sponsor.
   – **Contact_Phone:** Alphanumeric (text). Multi-valued attribute.
    ∗ **Role:** Specifies the phone numbers for contacting the sponsor.

- **organisation_Type:** Alphanumeric (text).

  – **Role:** Represents the type or category of the sponsor's organisation.

- **Industry_Focus:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the industries or sectors that the sponsor focuses on.

4.15 Team_Member

4.15.1 Role and Primary Key

The `Team_Member` entity represents individuals who are part of the organizing authority for the festival events. The primary key for the `Team_Member` entity is `Member_ID`.

4.15.2 Attributes

- **Member_ID:** Must be unique for each team member. Numeric identifier.

  – **Role:** Identifies the team member uniquely.

- **Member_Name:** Alphanumeric (text).

  – **Role:** Represents the name or title of the team member.

- **Roll_Number:** Alphanumeric (text).

  – **Role:** Represents the roll number or college ID of the team member.

- **Skill:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the skills possessed by the team member.

- **Role:** Alphanumeric (text).

  – **Role:** Describes the role or position held by the team member in the organizing authority.

- **Join_Date:** Date format (e.g., DD-MM-YYYY).

  – **Role:** Represents the date when the team member joined the organizing authority.

4.16 Organising_Team

4.16.1 Role and Primary Key

The `Organising_Team` entity represents teams within the organizing authority responsible for various aspects of the festival. The primary key for the `Organising_Team` entity is `Team_ID`.

4.16.2 Attributes

- **Team_ID:** Must be unique for each organizing team. Numeric identifier.

  – **Role:** Identifies the organizing team uniquely.

- **Organising_Team:** Alphanumeric (text).

  – **Role:** Represents the type or category of the organizing team.

- **Team_Name:** Alphanumeric (text).

  – **Role:** Represents the name or title of the organizing team.

- **Team_Lead:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the team lead(s) of the organizing team.

- **Responsibility:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Describes the responsibilities assigned to the organizing team.

- **Work_Schedule:** Alphanumeric (text). Multi-valued attribute.

  – **Role:** Specifies the work schedule or tasks assigned to the organizing team.

4.17 Web_Team

4.17.1 Role and Primary Key

The Web_Team entity represents the team responsible for managing the festival's web-related activities. The primary key for the Web_Team entity is Team_ID.

4.17.2 Attributes

- **Team_ID:** Must be unique for each web team. Numeric identifier.
  - **Role:** Identifies the web team uniquely.
- **Team_Name:** Alphanumeric (text).
  - **Role:** Represents the name or title of the web team.
- **Team_Lead:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the team lead(s) of the web team.
- **Responsibility:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Describes the responsibilities assigned to the web team.
- **Work_Schedule:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the work schedule or tasks assigned to the web team.
- **Technical_Skill:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Indicates the technical skills possessed by the web team members.
- **Web_Tool:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Specifies the web development tools used by the web team.
- **Meeting_Schedule:** Alphanumeric (text). Multi-valued attribute.
  - **Role:** Describes the schedule for web team meetings.

4.18 Web_Interface

4.18.1 Role and Primary Key

The Web_Interface entity represents the various interfaces associated with the festival's web presence. The primary key for the Web_Interface entity is Interface_ID.

4.18.2 Attributes

- **Interface_ID:** Must be unique for each web interface. Numeric identifier.
  - **Role:** Identifies the web interface uniquely.
- **Interface_Name:** Alphanumeric (text).
  - **Role:** Represents the name or title of the web interface.
- **Interface_Type:** Alphanumeric (text).
  - **Role:** Describes the type or category of the web interface.
- **Version:** Alphanumeric (text).
  - **Role:** Indicates the version number of the web interface.
- **Release_Date:** Date format (e.g., DD-MM-YYYY).
  - **Role:** Represents the date when the web interface was released.
- **Maintenance_Status:** Alphanumeric (text).
  - **Role:** Indicates the maintenance status of the web interface (e.g., Active, Inactive).
- **Maintenance_Date:** Date format (e.g., DD-MM-YYYY).
  - **Role:** Represents the date of the last maintenance activity on the web interface.

4.19 Social_Media_Page

4.19.1 Role and Primary Key

The `Social_Media_Page` entity represents the social media pages associated with the festival. The primary key for the `Social_Media_Page` entity is the combination of `Platform` and `Page_Name`.

4.19.2 Attributes

- **Platform:** Alphanumeric (text).
    - **Role:** Identifies the social media platform.
- **Page_Name:** Alphanumeric (text).
    - **Role:** Represents the name or title of the social media page.
- **Posts:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Represents the posts or content associated with the social media page.
- **Creation_Date:** Date format (e.g., DD-MM-YYYY).
    - **Role:** Represents the date when the social media page was created.
- **Page_URL:** Alphanumeric (text).
    - **Role:** Specifies the URL or link to access the social media page.

4.20 Participant

4.20.1 Role and Primary Key

The `Participant` entity represents individuals participating in various events within the festival. The primary key for the `Participant` entity is `Participant_ID`.

4.20.2 Attributes

- **Participant_ID:** Must be unique for each participant. Numeric identifier.
    - **Role:** Identifies the participant uniquely.
- **Participant_Name:** Alphanumeric (text).
    - **Role:** Represents the name of the participant.
- **College:** Alphanumeric (text).
    - **Role:** Represents the college affiliation of the participant.
- **College_ID:** Alphanumeric (text).
    - **Role:** Identifies the college uniquely.
- **Contact_Details:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Represents the contact details of the participant.
- **User_ID:** Alphanumeric (text).
    - **Role:** Identifies the user uniquely.
- **Password:** Alphanumeric (text).
    - **Role:** Represents the password associated with the user account.

4.21 Accommodation

4.21.1 Role and Primary Key

The `Accommodation` entity plays a crucial role in managing accommodation facilities within the festival. The primary key for the `Accommodation` entity is `Accommodation_ID`.

4.21.2 Attributes

- **Accommodation_ID:** Must be unique for each accommodation. Numeric identifier.
    - **Role:** Uniquely identifies the accommodation facility.
- **Accommodation_Name:** Alphanumeric (text).
    - **Role:** Describes the name of the accommodation facility.
- **Location:** Alphanumeric (text).
    - **Role:** Indicates the geographical location of the accommodation facility.
- **Capacity:** Numeric .
    - **Role:** Specifies the maximum number of individuals the facility can accommodate.
- **Facility:** Alphanumeric (text). Multi-valued attribute.
    - **Role:** Describes the extra facilities available in the accommodation.
- **Booking_Rate:** Numeric (currency).
    - **Role:** Represents the cost associated with booking the venue.

5 Entity Relationships

In this section, we will describe the relationships between the entities present in the Entity-Relationship diagram.

5.1 Evaluates

5.1.1 Participating Entities

- **Evaluator**
- **Competition**

5.1.2 Description

The `Evaluates` connection signifies the evaluation process conducted by an evaluator for a competition within the festival management system. An evaluator evaluates competitions, and a competition is evaluated by one or more evaluators.

5.1.3 Cardinality Constraints

- One **Evaluator** is associated with **Exactly One Competition**. Hence total participation.
- One **Competition** can be evaluated by **Zero to Many Evaluators**.
- The connection is many-to-one.

5.1.4 Attributes

- **Evaluation_Status:** Alphanumeric (text) indicating the evaluation status.
- **Assigned_Date:** Date format (e.g., DD-MM-YYYY) for the date of assignment.
- **Evaluation_Result:** Alphanumeric (text) representing the evaluation outcome.

5.2 Performs

5.2.1 Participating Entities

- **Performer**
- **Cultural_Event**

5.2.2 Description

The `Performs` connection signifies the performance conducted by a performer in a cultural event within the festival management system. A performer performs in cultural events, and a cultural event can have one or more performers.

5.2.3 Cardinality Constraints

- One **Performer** is associated with **Exactly One Cultural_Event**. Hence total participation.

- One **Cultural_Event** can have **One to Many Performers**. Hence total participation.

- The connection is many-to-one.

5.2.4 Attributes

- **Performance_Date:** Date format (e.g., DD-MM-YYYY) indicating the date of the performance.

- **Performance_Time:** Time format (e.g., HH:MM AM/PM) specifying the time of the performance.

- **Performance_Status:** Alphanumeric (text) representing the status of the performance.

- **Audience_Attendance:** Numeric value indicating the number of attendees.

5.3 Exhibits

5.3.1 Participating Entities

- **Exhibitor**
- **Exhibition**

5.3.2 Description

The Exhibits connection signifies the participation of an exhibitor in an exhibition within the festival management system. An exhibitor exhibits in exhibitions, and an exhibition can have one or more exhibitors.

5.3.3 Cardinality Constraints

- One **Exhibitor** is associated with **Exactly One Exhibition**. Hence total participation.

- One **Exhibition** can have **One to Many Exhibitors**. Hence total participation.

- The connection is many-to-one.

5.3.4 Attributes

- **Participation_Status:** Alphanumeric (text) indicating the status of the exhibitor's participation.

- **Registration_Date:** Date format (e.g., DD-MM-YYYY) specifying the date of registration.

- **Booth_Number:** Numeric value representing the booth number assigned to the exhibitor.

5.4 Instructs

5.4.1 Participating Entities

- **Instructor**
- **Workshop**

5.4.2 Description

The Instructs connection signifies the instructional role played by an instructor in a workshop within the festival management system. An instructor instructs in workshops, and a workshop can have one or more instructors, forming a many-to-many relationship.

5.4.3 Cardinality Constraints

- One **Instructor** can instruct **One to Many Workshops**. Hence total participation.

- One **Workshop** can have **One to Many Instructors**. Hence total participation.

- The connection is many-to-many.

5.4.4 Attributes

- **Event_Status:** Alphanumeric (text) indicating the status of the workshop event.

5.5 Lectures

5.5.1 Participating Entities

- **Speaker**
- **Talk**

5.5.2 Description

The Lectures connection signifies the lecture delivered by a speaker in a talk within the festival management system. A speaker lectures in talks, and a talk can have one or more speakers.

5.5.3 Cardinality Constraints

- One **Speaker** is associated with **Exactly One Talk**. Hence total participation.
- One **Talk** can have **One to Many Speakers**. Hence total participation.
- The connection is many-to-one.

5.5.4 Attributes

- **Talk_Topic:** Alphanumeric (text) representing the topic of the talk.
- **Talk_Status:** Alphanumeric (text) indicating the status of the talk.

5.6 Event_Venue

5.6.1 Participating Entities

- **Event**
- **Venue**

5.6.2 Description

The Event_Venue connection signifies the venue booking for an event within the festival management system. An event is held in a venue, and a venue can host zero or more events, forming a many-to-one relationship.

5.6.3 Cardinality Constraints

- One **Event** can be associated with **Zero to One Venue**.
- One **Venue** can host **Zero to Many Events**. Hence total participation.
- The connection is many-to-one.

5.6.4 Attributes

- **Booking_ID:** Numeric identifier representing the booking identification.
- **Start_Time:** Time format (e.g., HH:MM AM/PM) indicating the event's start time.
- **End_Time:** Time format (e.g., HH:MM AM/PM) indicating the event's end time.
- **Booking_Price:** Numeric (currency) specifying the cost of booking the venue.
- **Payment_Status:** Alphanumeric (text) indicating the payment status for the venue booking.

5.7 Sponsors

5.7.1 Participating Entities

- **Sponsor**
- **Event**

5.7.2 Description

The Sponsors connection signifies the sponsorship provided by a sponsor to an event within the festival management system. A sponsor sponsors events, and an event can have one or more sponsors, forming a many-to-many relationship.

5.7.3 Cardinality Constraints

- One **Sponsor** can sponsor **One to Many Events**. Hence total participation.
- One **Event** can be sponsored by **Zero to Many Sponsors**. Hence total participation.
- The connection is many-to-many.

5.7.4 Attributes

- **Sponsorship_Amount:** Numeric (currency) representing the amount of sponsorship.
- **Payment_Status:** Alphanumeric (text) indicating the payment status of the sponsorship.
- **Contract_Duration:** Numeric (time duration) specifying the duration of the sponsorship contract.
- **Sponsorship_Level:** Alphanumeric (text) denoting the level or category of the sponsorship.

5.8 Web_Team_Membership

5.8.1 Participating Entities

- **Team_Member**
- **Web_Team**

5.8.2 Description

The `Web_Team_Membership` connection signifies the membership of a team member in a web team within the festival management system. A team member can be a part of zero or one web team, and a web team can have one or more team members, forming a many-to-one relationship.

5.8.3 Cardinality Constraints

- One **Team_Member** can be a member of **Zero to One Web_Team**.
- One **Web_Team** must have **One to Many Team_Members**. Hence total participation.
- The connection is many-to-one.

5.8.4 Attributes

- **Work_Section:** Alphanumeric (text) indicating the specific work section or domain of the web team.
- **Role:** Alphanumeric (text) describing the role or position of the team member in the web team.
- **Work_Hour:** Numeric representing the number of hours contributed by the team member.

5.9 Organising_Team_Membership

5.9.1 Participating Entities

- **Team_Member**
- **Organising_Team**

5.9.2 Description

The `Organising_Team_Membership` connection signifies the membership of a team member in an organizing team within the festival management system. A team member can be a part of zero or one organizing team, and an organizing team can have one or more team members, forming a many-to-one relationship.

5.9.3 Cardinality Constraints

- One **Team_Member** can be a member of **Zero to One Organising_Team**.
- One **Organising_Team** must have **One to Many Team_Members**. Hence total participation.
- The connection is many-to-one.

5.9.4 Attributes

- **Role:** Alphanumeric (text) describing the role or position of the team member in the organizing team.
- **Work_Hour:** Numeric representing the number of hours contributed by the team member.

5.10 Post_Promotion

5.10.1 Participating Entities

- **Web_Team**
- **Social_Media_Page**

5.10.2 Description

The Post_Promotion connection signifies the promotion of posts by a web team on a social media page within the festival management system. A web team can promote posts on zero or one social media page, and a social media page must be promoted by exactly one web team, forming a one-to-one relationship.

5.10.3 Cardinality Constraints

- One **Web_Team** can promote posts on **Zero to One Social_Media_Page**.
- One **Social_Media_Page** must be promoted by **Exactly One Web_Team**. Hence total participation.
- The connection is one-to-one.

5.10.4 Attributes

- **Post_ID:** Numeric identifier.
- **Post_Description:** Alphanumeric (text) describing the content or purpose of the promoted post.

5.11 Manages

5.11.1 Participating Entities

- **Web_Team**
- **Web_Interface**

5.11.2 Description

The Manages connection signifies the management of a web interface by a web team within the festival management system. A web team must manage exactly one web interface, and a web interface must be managed by exactly one web team, forming a one-to-one relationship.

5.11.3 Cardinality Constraints

- One **Web_Team** must manage **Exactly One Web_Interface**. Hence total participation.
- One **Web_Interface** must be managed by **Exactly One Web_Team**. Hence total participation.
- The connection is one-to-one.

5.12 Event_organisation

5.12.1 Participating Entities

- **Organising_Team**
- **Event**

5.12.2 Description

The Event_organisation connection signifies the organisation of events by an organizing team within the festival management system. An organizing team must organize one or more events, and an event is organized by exactly one organizing team, forming a many-to-one relationship.

5.12.3 Cardinality Constraints

- One **Organising_Team** must organize **Exactly One Event**. Hence total participation.
- One **Event** can be organized by **One to Many Organising_Teams**. Hence total participation.
- The connection is many-to-one.

5.12.4 Attributes

- **Team Feedback:** Alphanumeric (text) capturing feedback from the organizing team regarding the event.

- **Role in Event:** Alphanumeric (text) specifying the role played by the organizing team in the event.

- **Team Contribution:** Alphanumeric (text) detailing the contribution of the organizing team to the event.

5.13 User Interface

5.13.1 Participating Entities

- **Participant**

- **Web Interface**

5.13.2 Description

The User_Interface connection represents the interaction of a participant with the web interface within the festival management system. A participant may interact with zero or one web interface, and a web interface may be interacted with by zero or many participants, forming a many-to-one relationship.

5.13.3 Cardinality Constraints

- One **Participant** may interact with **Zero or One Web Interface**.

- One **Web Interface** can be interacted with by **Zero to Many Participants**.

- The connection is many-to-one.

5.13.4 Attributes

- **Interaction Timestamp:** Date and time capturing when the participant interacts with the web interface.

- **Last Login:** Date and time indicating the last login time of the participant.

- **Duration:** Numeric representing the duration of the participant's interaction.

5.14 Register

5.14.1 Participating Entities

- **Web Interface**

- **Event**

5.14.2 Description

The Register connection represents the registration of events through the web interface within the festival management system. A web interface may be used to register for zero or one event, and an event may have registrations from zero to many web interfaces, forming a one-to-many relationship.

5.14.3 Cardinality Constraints

- One **Web Interface** may be used to register for **Zero or One Event**.

- One **Event** can have registrations from **Zero to Many Web Interfaces**.

- The connection is one-to-many.

5.14.4 Attributes

- **Registration Date:** Date and time indicating when the registration was done.

- **Registration Status:** Alphanumeric (text) denoting the status of the registration.

- **Payment Status:** Alphanumeric (text) indicating the payment status of the registration.

5.15 Participant Accommodated

5.15.1 Participating Entities

- **Participant**

- **Accommodation**

5.15.2 Description

The `Participant_Accommodated` relationship signifies the accommodation allocation for participants within the festival management system. A participant may or may not be accommodated, and an accommodation facility can host accommodations for zero or more participants.

5.15.3 Cardinality Constraints

- One **Participant** may be accommodated in **Zero or One Accommodation**.

- One **Accommodation** can host accommodations for **Zero to Many Participants**.

- The relationship is many-to-one.

5.15.4 Attributes

- **Start_Date:** Date format (e.g., DD-MM-YYYY).

- **End_Date:** Date format (e.g., DD-MM-YYYY).

- **Booking_Price:** Numeric (currency) specifying the cost of booking the venue.

- **Payment_Status:** Alphanumeric (text) indicating the payment status of the registration.

5.16 Facilitator_Accommodated

5.16.1 Participating Entities

- **Facilitator**
- **Accommodation**

5.16.2 Description

The `Facilitator_Accommodated` relationship signifies the accommodation allocation for facilitators within the festival management system. A facilitator may or may not be accommodated, and an accommodation facility can host accommodations for zero or more facilitators.

5.16.3 Cardinality Constraints

- One **Facilitator** may be accommodated in **Zero or One Accommodation**.

- One **Accommodation** can host accommodations for **Zero to Many Facilitators**.

- The relationship is many-to-one.

5.16.4 Attributes

- **Start_Date:** Date format (e.g., DD-MM-YYYY).

- **End_Date:** Date format (e.g., DD-MM-YYYY).

- **Booking_Price:** Numeric (currency) specifying the cost of booking the venue.

- **Payment_Status:** Alphanumeric (text) indicating the payment status of the registration.

6 Conclusion

In conclusion, the Entity-Relationship diagram serves as a vital blueprint for modeling the Techno-Cultural Festival's information system in a database management system. By delineating entities, relationships, and attributes, the ER diagram provides a structured foundation for efficient data organisation. This model allows for seamless integration into a relational database, ensuring effective management of events, participants, and various festival aspects. The scalability of the design enables easy adaptability to evolving requirements, making it a valuable tool for successful and dynamic event planning. The ER diagram not only captures the current festival structure but also serves as a roadmap for future enhancements and optimizations in the database system.