**1.Chosen Case Study**

**Case Study: Database design for a high school management system**

**2. Description of the Case Study**

**A database will be designed for a high school management system. This system will be used to manage students, teachers, courses, classes, and club memberships. The objective is to systematically manage student enrollments, teacher assignments, course details, and club memberships.**

**3. Requirements Analysis and Collection**

**General Requirements:**

**Recording student information, class numbers, and enrolled courses.**

**Recording teacher information, subjects, and assigned courses.**

**Managing each course’s assigned teacher and enrolled students.**

**Recording student grades and attendance data.**

**Managing club details and club memberships.**

**Specific Requirements:**

**A student can enroll in multiple courses.**

**A teacher can teach multiple courses.**

**Each course will have one assigned teacher.**

**Each class will have one class president.**

**Students will be able to join different clubs.**

**4. Structuring of Requirements**

**Student: StudentID, Name, SurName, BirthDate, Gender, Register state, Classno**

**Teacher: TeacherID, Name, Surname, Branch, Phone, Email**

**Lessons: LessonName, LessonCode, Credits**

**Class: ClassNo, Number of Student,Lesson Code,Minister of Class Id**

**Registration: RegisterID, StudentID, LessonCode, Score, Discontinutiy**

**Assignment: AssignID, LessonCode, TeacherID**

**Club: ClubID, ClubName, Advisor**

**Club Membership: MembershipID, StudentID, ClubID**

**5. Glossary of Terms**

**Student: Individuals enrolled at the high school.**

**Teacher: Members of the high school teaching staff.**

**Course: Subjects taught at the high school.**

**Class: Educational group to which students belong.**

**Registration: The process of a student registering for a course.**

***Assignme*nt: The process of a teacher being assigned to a course.**

**Club: Organizations where students participate in social and academic activities.**

**Club Membership: The participation status of students in various clubs.**

**6. ER Diagram Relationships and Types**

**Relationships:**

1. **Student - Class Relationship (1-n)**

**A class can have multiple students; each student belongs to one class.**

**Relationship Name: EnrolledIn**

1. **Student - Registration Relationship (1-n)**

**A student can enroll in multiple courses; each enrollment is for one student and one course.**

**Relationship Name: RegistersFor**

1. **Lesson- RegistrationRelationship (1-n)**

**A course can have multiple enrollments (students).**

**Relationship Name: TakenBy**

1. **Lesson - Assignment Relationship (1-n)**

**A course can have one or more teacher assignments.**

**Relationship Name: TaughtIn**

1. **Teacher - Assignment Relationship (1-n)**

**A teacher can teach multiple courses.**

**Relationship Name: AssignedTo**

1. **Class - Student (Class President, 1:1)**

**Each class has one class president; the president is a student.**

**Relationship Name: Represents**

1. **Teacher - Club Relationship (1:1)**

**A teacher can be the advisor for one club.**

**Relationship Name: Advises**

1. **Student - Club Membership Relationship (N-n)**

**A student can be a member of multiple clubs.**

**Also multiple clubs can have a many student**

**Relationship Name: together**

1. **Club - Club Membership Relationship (1-n)**

**A club can have multiple members (students).**

**Relationship Name: HasMembers**

1. **Class- Lesson( 1:1)**

**A class can have more then one lessons.**

**Relationship Name: Advises**

**7. Design Strategy**

* **Methodology: After the requirements analysis, all entities and relationships were defined. The ER diagram was structured with one-to-one (1:1), one-to-many (1**

**), and many-to-many (M**

**) relationships. Foreign key usage ensures data integrity.**