

# Team Project 1

## **Section 1 (Introduction describing your database at a high level, including problems of current situation, motivation, potential benefits, users, etc)**

**Introduction:** To meet the many demands of students, teachers, alumni, and administrative staff, an educational institution uses the database that is detailed here as a complete management system. It covers a wide range of topics related to academic and administrative operations, such as financial aid management, event planning, faculty administration, student enrollment, and alumni monitoring.

The management of student data within the institution adheres to a set of comprehensive business rules designed to ensure efficient organization and support for students. Each student is uniquely identified through a student ID and is required to provide essential personal details upon registration, including full name, date of birth, and contact information. Students are associated with one or more departments and have the flexibility to enroll in multiple courses, reflecting their academic interests. Departments are characterized by unique branch IDs and key attributes such as name and contact information, facilitating effective communication and administration. Course management involves assigning unique course IDs to each course, with detailed descriptions and instructor information, while courses may be offered by multiple departments, promoting interdisciplinary collaboration. Academic advising is provided to students by faculty members to assist with course selection and academic planning. Internships offer practical experience, each uniquely identified with organization details and assigned responsibilities. Alumni engagement is encouraged, with records maintained to track former students' achievements and involvement in events. Academic records are regularly updated to reflect students' progress, and financial aid management ensures support for students receiving scholarships or grants. These business rules establish a robust framework for managing student data and supporting students throughout their academic journey.

### **Current Situation and Problems:**

**Data Redundancy and Inconsistency:** Different departments or units can keep separate records, which can result in inconsistent data input and redundant data entry.

**Limited Accessibility:** It may be difficult and time-consuming to get vital information, such as student records, course specifics, or financial aid status, in the absence of a centralized database.

**Difficulty in Tracking Alumni and Internships:** Without a single system, tracking alumni involvement, job status, or internship possibilities may be difficult, making it more difficult for the school to assist and stay in touch with alumni.

**Ineffective Event Management:** Without a specific platform for event planning, scheduling, and communication, organizing and overseeing student groups and events may be ineffective.

### **Motivation:**

**Efficiency Improvement:** The system's goals are to increase overall operational efficiency, improve data accuracy, and simplify administrative responsibilities by centralizing data and automating numerous operations.

**Better Decision-Making:** Administrators and decision-makers may make well-informed decisions about program development, resource allocation, and strategic planning when they have access to thorough and current information.

**Enhanced Student Experience:** The system strives to give students a more smooth and interesting educational experience with features including online registration, academic record monitoring, and student organization management.

**Alumni Participation and Support:** The system seeks to strengthen relationships between the university and its graduates by providing alumni monitoring, career assistance, and networking opportunities. This will improve support networks and encourage lifetime participation.

**Compliance and Reporting:** Accurate report production for financing, certification, and other reasons is made easier with the use of a consolidated database, which also streamlines compliance with regulatory standards.

### **Potential Benefits:**

**Better Data Accessibility:** By centralizing data, authorized users may more quickly and easily obtain pertinent information, which helps them make more educated decisions.

**Enhanced Data Integrity:** Our database reduces the possibility of data mistakes and discrepancies by upholding a single source of truth.

**Streamlined Procedures:** Time and resources are saved for both students and staff when regular procedures like course enrollment, academic record maintenance, and financial aid processing are automated.

**Improved Analysis and Reporting:** Data-driven decision-making is made easier by the database's features for producing reports, identifying patterns, and learning about many facets of university operations.

**Improved Student Experience:** Students gain from a seamless experience with prompt access to information and support services from the time they register for classes until they graduate.

**Effective Alumni Management:** The database helps alumni stay involved, following their professional development and offering networking and teamwork chances.

### **Users:**

**Students:** Access academic records, enroll in courses, apply for financial aid, and participate in extracurricular activities.

**Faculty:** Manage course materials, submit grades, and access student information for advising and mentoring.

**Administrators:** Oversee university operations, manage resources, and ensure compliance with policies and regulations.

**Alumni:** Stay connected with the university, access career services, and contribute to the community.

## **Section 2(A detailed description of your business rules and user requirements)**

### **Business Rules:**

- Each student has a single academic adviser who can counsel several pupils.
- Every student must keep up their academic records.
- Every semester, students must sign up for at least three courses.
- Events hosted by student organizations are optional to attend.
- A student may only sign up for one internship.
- To be eligible for alumni status, one must graduate.
- Financial help may be available for certain courses, and there may be fees.
- Courses are offered by departments, and each department offers a particular course.
- Students belong to a single department.
- Teachers may be affiliated with more than one department.

### **User Requirements:**

- To enroll, update records, and participate in events, students must have access.
- The records of assigned pupils must be accessible to academic advisers.
- Teachers require both course materials and grading software.
- To oversee departments, programs, financial assistance, and alumni, administrators must have access.

- Alumni need to have access to job updates and career assistance.
- The financial aid office needs tools to monitor scholarships and provide assistance to students.
- Department heads want information on instructors and courses offered.
- Leaders of student organizations require tools for event management.
- Tools are needed for the internship office to publish opportunities and place students.

### **Section 3(An enhanced entity relation diagram (EERD) as well as definitions of entities, attributes, and relationships in the diagram.)**

#### **Relationships:**

**Advisor-Student Relationship (One-to-Many):** An advisor many or many not advises students.

**Academic Records - Student Info Relationship (One-to-Many):** An academic records department must have one or more student records.

**Student - Enrolment Office - Course Relationship (Many-to-Many):** Students must enroll in at least one or more courses through the enrolment office.

**Student - Events - Student Organizations (Many-to-Many):** Students may or may not participate in the events conducted by the student organization.

**Student - Internship (One-to-One):** One Student can enroll up to one internship.

**Student - Alumni (One-to-Many):** A student must graduate.

**Alumni - Higher Studies - Entrepreneur – Company (disjoint-partial):** Some alumni work in companies, and Higher Studies and Entrepreneurs may be others.

**Financial Aid - Course Relationship (One-to-Many):** A course has one or more financial aid.

**Financial Aid (One-to-Many):** A financial aid themselves manages scholarships.

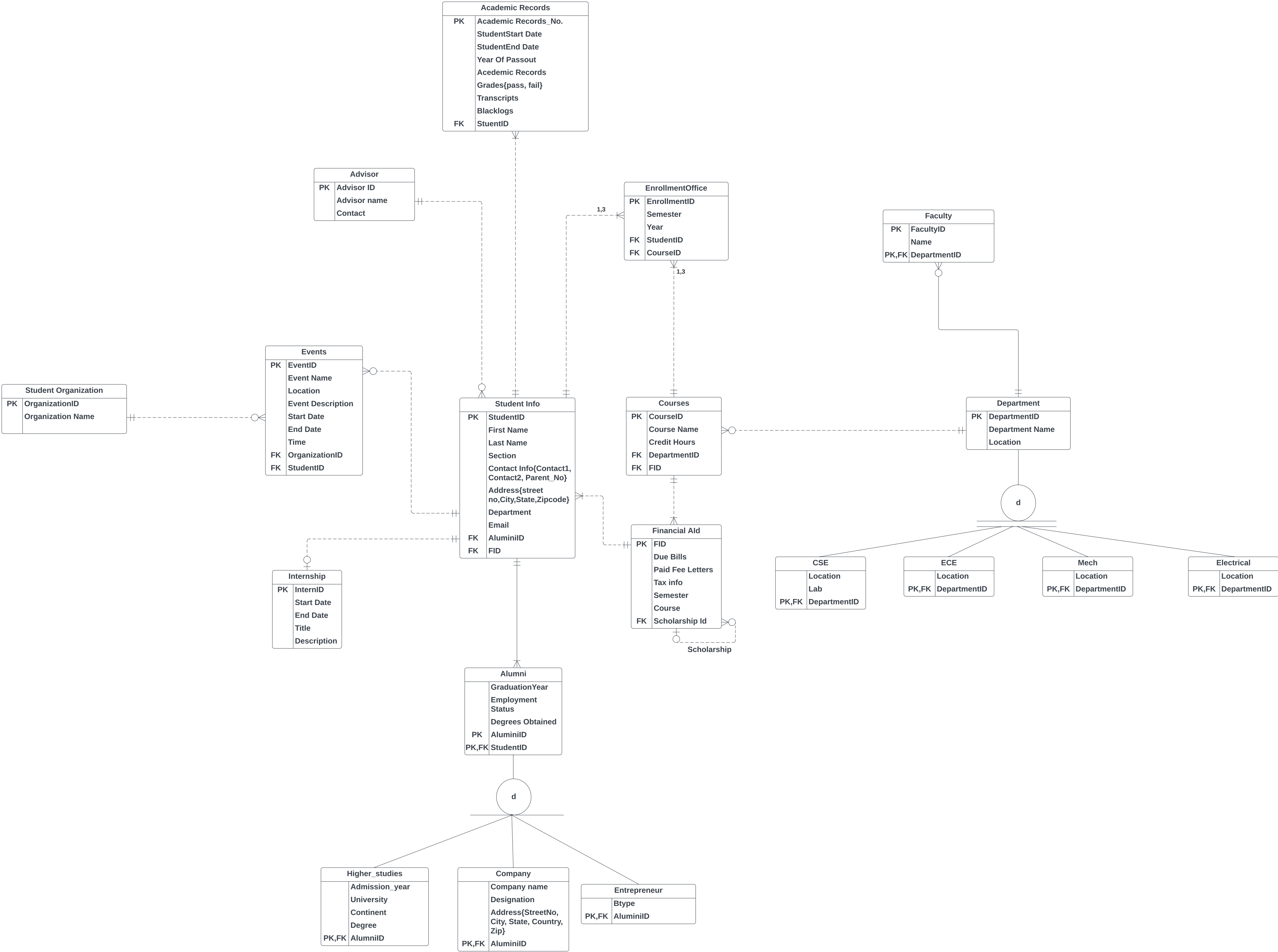
**Financial Aid - Student (One-to-Many):** A student must have to pay one or many dues.

**Department – Course (One-to-Many):** A department may or may not have one or more courses.

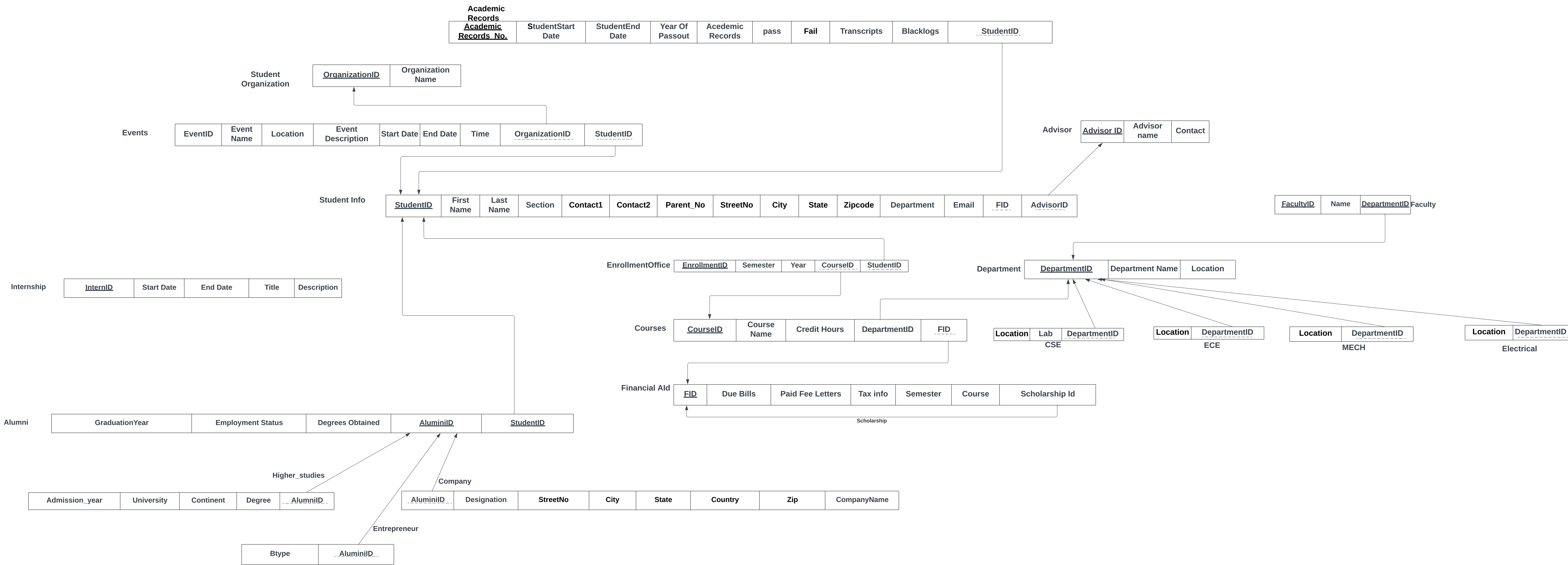
**Department – CSE – ECE- Mech -Electrical (disjoint-total):** A student must be either a CSE, ECE, Mech, or Electrical but may not be both.

**Faculty-Department Relationship (Many-to-One):** Faculty members may or may not belong to specific departments.

EERD



Section 4(Relations at least in the 3rd normal form.)



## Scholarship

### DESC Command:

| Results     | Explain       | Describe  | Saved SQL | History   |               |             |          |         |         |
|-------------|---------------|-----------|-----------|-----------|---------------|-------------|----------|---------|---------|
| Object Type |               | TABLE ?   | Object    |           | SCHOLARSHIP ? |             |          |         |         |
| Table       | Column        | Data Type | Length    | Precision | Scale         | Primary Key | Nullable | Default | Comment |
| SCHOLARSHIP | SCHOLARSHIPID | NUMBER    | 22        | -         | -             | 1           | -        | -       | -       |

### SELECT Command:

| Results       | Explain | Describe | Saved SQL | History |
|---------------|---------|----------|-----------|---------|
| SCHOLARSHIPID |         |          |           |         |
| 101           |         |          |           |         |
| 24896         |         |          |           |         |
| 24897         |         |          |           |         |
| 24898         |         |          |           |         |
| 24899         |         |          |           |         |
| 248100        |         |          |           |         |

## Financial Aid table

DESC Command:

| Table        | Column         | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|--------------|----------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| FINANCIALAID | FID            | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|              | DUEBILLS       | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|              | PAIDFEELETTERS | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|              | TAXINFO        | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|              | SEMESTER       | VARCHAR2  | 20     | -         | -     | -           | ✓        | -       | -       |
|              | SCHOLARSHIPID  | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

SELECT Command:

| FID     | DUEBILLS | PAIDFEELETTERS | TAXINFO | SEMESTER | SCHOLARSHIPID |
|---------|----------|----------------|---------|----------|---------------|
| 121654  | 6        | 78457          | 2.5%    | 4        | 24896         |
| 121655  | 2        | 8724           | 3%      | 2        | 24897         |
| 84268   | 1        | 35798          | 2.5%    | 7        | 24898         |
| 84279   | 0        | 264957         | 2.5%    | 8        | 24899         |
| 9555689 | 3        | 92584          | 5%      | 5        | 248100        |
| 258478  | 3        | 96357          | 1.2%    | 1        | 248101        |



## Advisor table:

DESC Command:

| Table   | Column      | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|---------|-------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ADVISOR | ADVISORID   | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|         | ADVISORNAME | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|         | CONTACT     | VARCHAR2  | 20     | -         | -     | -           | ✓        | -       | -       |

SELECT Command:

| ADVISORID | ADVISORNAME  | CONTACT    |
|-----------|--------------|------------|
| 153       | KANG         | 5735641234 |
| 126       | SAIRA        | 5732126740 |
| 193       | NAIRA        | 5739763521 |
| 121       | LILLI        | 5732021264 |
| 111       | SEO          | 5731621456 |
| 1         | Dr. Jane Doe | 1234567890 |

## Student table

DESC Command:

|         |            |          |    |   |   |   |   |   |   |
|---------|------------|----------|----|---|---|---|---|---|---|
| STUDENT | STUDENTID  | NUMBER   | 22 | - | - | 1 | - | - | - |
|         | FIRSTNAME  | VARCHAR2 | 50 | - | - | - | - | - | - |
|         | LASTNAME   | VARCHAR2 | 50 | - | - | - | - | - | - |
|         | SECTION    | VARCHAR2 | 10 | - | - | - | ✓ | - | - |
|         | CONTACT1   | VARCHAR2 | 20 | - | - | - | ✓ | - | - |
|         | CONTACT2   | VARCHAR2 | 20 | - | - | - | ✓ | - | - |
|         | PARENT_NO  | VARCHAR2 | 20 | - | - | - | ✓ | - | - |
|         | STREETNO   | VARCHAR2 | 10 | - | - | - | ✓ | - | - |
|         | CITY       | VARCHAR2 | 50 | - | - | - | ✓ | - | - |
|         | STATE      | VARCHAR2 | 50 | - | - | - | ✓ | - | - |
|         | ZIPCODE    | VARCHAR2 | 10 | - | - | - | ✓ | - | - |
|         | DEPARTMENT | VARCHAR2 | 50 | - | - | - | ✓ | - | - |
|         | EMAIL      | VARCHAR2 | 50 | - | - | - | ✓ | - | - |
|         | FID        | NUMBER   | 22 | - | - | - | ✓ | - | - |
|         | ADVISORID  | NUMBER   | 22 | - | - | - | ✓ | - | - |

## SELECT Command:

| STUDENTID | FIRSTNAME  | LASTNAME | SECTION | CONTACT1   | CONTACT2   | PARENT_NO  | STREETNO   | CITY    | STATE | ZIPCODE | DEPARTMENT | EMAIL              | FID    | ADVISORID |
|-----------|------------|----------|---------|------------|------------|------------|------------|---------|-------|---------|------------|--------------------|--------|-----------|
| 121       | SASIDHAR   | REDDY    | A       | 5735375678 | 5732024567 | 5731224567 | 16THSTREET | ROLLA   | MO    | 65401   | CSE        | SVDFY@UMSYSTEM.EDU | 121654 | 111       |
| 122       | GAFARUDDIN | SHAIK    | B       | 5735378907 | 5732128456 | 5731486690 | VIENNA     | ROLLA   | MO    | 65401   | ECE        | GS9CB@UMSYSTEM.EDU | 121655 | 111       |
| 123       | MOKSHA     | N        | A       | 5735372468 | 5738553679 | 5731258887 | 13THSTREET | STLOUIS | MO    | 65401   | CSE        | VNQRD@UMSYSTEM.EDU | 258478 | 111       |
| 124       | JHANSIMALA | SILLA    | B       | 5735371459 | 5738559368 | 5732128887 | VICHY      | STJAMES | MO    | 67548   | ECE        | JS6P6@UMSYSTEM.EDU | 66536  | 153       |
| 125       | TANGA      | AMULYA   | C       | 5735378458 | 2064683790 | 5731289588 | WHITECOL   | ROLLA   | MO    | 65401   | MECH       | ATGBV@UMSYSTEM.EDU | 94778  | 153       |
| 126       | SHALINI    | K        | C       | 5732622468 | 5738547679 | 5739999999 | 18THSTREET | STLOUIS | MO    | 65651   | ELECTRICAL | GASCB@UMSYSTEM.EDU | 467885 | 126       |

## Internship table

### DESC Command:

| Table      | Column      | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|------------|-------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| INTERNSHIP | INTERNID    | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|            | STARTDATE   | DATE      | 7      | -         | -     | -           | ✓        | -       | -       |
|            | ENDDATE     | DATE      | 7      | -         | -     | -           | ✓        | -       | -       |
|            | TITLE       | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|            | DESCRIPTION | VARCHAR2  | 500    | -         | -     | -           | ✓        | -       | -       |

### SELECT Command:

| INTERNID | STARTDATE   | ENDDATE     | TITLE                   | DESCRIPTION  |
|----------|-------------|-------------|-------------------------|--|
| 516      | 25-Apr-2020 | 26-Jul-2020 | DATA MANAGEMENT         | DESIGNING ER DAIGRAM AND DEVELOPING SQL QUERY  |
| 578      | 26-Sep-2020 | 14-Jan-2021 | BUSINESS ANALYTICS      | EXCEL SHEET DEVELOPMENT  |
| 590      | 19-Jan-2021 | 08-Apr-2021 | AI AND ML               | INTRODUCTION TO ARTIFICAL INTELIGENCE AND MACHINE LEARNING CONCEPTS                              |
| 585      | 18-Jul-2021 | 26-Dec-2021 | SAP ABAP                | BASIC DATA INSERTION AND STORING DATA IN HANA DATABASE   |
| 592      | 07-Nov-2021 | 18-Mar-2022 | CLOUD COMPUTING         | LEARN ABOUT COMPUTING SERVICES INCLUDING SERVERS, STORAGE, DATABASE, NETWORKING AND INTELLIGENCE |
| 596      | 16-Apr-2022 | 19-Sep-2020 | ANDROID APP DEVELOPMENT | DEVELOPING A BASIC APP   |

### Student Organization table

#### DESC Command:

| Table               | Column           | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default |
|---------------------|------------------|-----------|--------|-----------|-------|-------------|----------|---------|
| STUDENTORGANIZATION | ORGANIZATIONID   | NUMBER    | 22     | -         | -     | 1           | -        | -       |
|                     | ORGANIZATIONNAME | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       |

**SELECT Command:**

| ORGANIZATIONID | ORGANIZATIONNAME             |
|----------------|------------------------------|
| 18             | STUDENT WELL BEING           |
| 98             | ADVISOR RESOURCES            |
| 56             | STUDENT ACTIVITY FEE FUNDING |
| 54             | Co-Curricular Transcripts    |
| 67             | Student Activity Fee Funding |
| 88             | SILC Cubicle Policies        |
| 89             | Policies and Procedures      |
| 5              | Forms                        |

## Events table

DESC Command:

| Table  | Column           | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|--------|------------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| EVENTS | EVENTID          | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|        | EVENTNAME        | VARCHAR2  | 100    | -         | -     | -           | ✓✓       | -       | -       |
|        | LOCATION         | VARCHAR2  | 100    | -         | -     | -           | ✓✓       | -       | -       |
|        | EVENTDESCRIPTION | VARCHAR2  | 500    | -         | -     | -           | ✓✓       | -       | -       |
|        | STARTDATE        | DATE      | 7      | -         | -     | -           | ✓✓       | -       | -       |
|        | ENDDATE          | DATE      | 7      | -         | -     | -           | ✓✓       | -       | -       |
|        | TIME             | VARCHAR2  | 20     | -         | -     | -           | ✓✓       | -       | -       |
|        | ORGANIZATIONID   | NUMBER    | 22     | -         | -     | -           | ✓✓       | -       | -       |
|        | STUDENTID        | NUMBER    | 22     | -         | -     | -           | ✓✓       | -       | -       |

### SELECT Command:

| EVENTID | EVENTNAME      | LOCATION                         | EVENTDESCRIPTION             | STARTDATE   | ENDDATE     | TIME                | ORGANIZATIONID | STUDENTID |
|---------|----------------|----------------------------------|------------------------------|-------------|-------------|---------------------|----------------|-----------|
| 1       | WELL BEING     | HAVENER CENTER                   | STUDENT WELL BEING ACTIVITES | 05-Feb-2022 | 05-Mar-2022 | 12:01 TO 3:00       | 18             | 121       |
| 2       | SEXUAL ASSAULT | HAVENER CENTER AND INOVATION LAB | SEXUAL WELL BEING            | 14-Mar-2022 | 15-Mar-2022 | 11:00 AM TO 1:00 PM | 18             | 122       |
| 3       | ADVISOR WEEK   | IN DEPARTMENT                    | ADVISING HOLD REMOVEAL       | 19-Jul-2020 | 26-Jul-2020 | 9:00 AM TO 4:00 PM  | 98             | 123       |
| 4       | FUNDING        | PARKER HALL                      | SCHOLARSHIP FUNDS            | 09-Jul-2023 | 09-Jul-2023 | 9:00 AM TO 4:00 PM  | 56             | 124       |
| 5       | DOCUMENTATION  | HAVENER CENTER                   | WELL DOCUMENTATION           | 22-Nov-2021 | 23-Nov-2021 | 12:01 TO 3:00       | 54             | 125       |
| 6       | MENTOR         | INOVATION LAB                    | ADVISING                     | 09-Dec-2020 | 10-Dec-2020 | 12:01 TO 2:00       | 67             | 126       |
| 7       | DOG THERAPY    | FITNESS CENTER                   | WELL BEING DOG               | 10-Mar-2022 | 12-Mar-2022 | 1:01 TO 2:00        | 88             | 127       |
| 8       | RESEARCH       | TOMMEY HALL                      | PRESENTING INOVATIONS        | 29-Apr-2019 | 30-Apr-2019 | 12:01 TO 1:00       | 89             | 128       |
| 9       | SPRING DAY     | NARWOOD HALL                     | SPREADING THE HAPPYNESS      | 20-Apr-2019 | 23-Apr-2019 | 12:01 TO 2:00       | 5              | 129       |
| 10      | GAMES          | COMPUTER SCIENCE BLOCK           | COME AND PLAY GAMES          | 25-Apr-2021 | 29-Apr-2021 | 4:00 TO 8:00        | 67             | 130       |

### Academic Records table

### DESC Command:

| Table           | Column            | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|-----------------|-------------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ACADEMICRECORDS | ACADEMICRECORDSNO | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|                 | STUDENTSTARTDATE  | DATE      | 7      | -         | -     | -           | ✓        | -       | -       |
|                 | STUDENTENDDATE    | DATE      | 7      | -         | -     | -           | ✓        | -       | -       |
|                 | YEAROFPASSOUT     | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|                 | GRADE             | VARCHAR2  | 10     | -         | -     | -           | ✓        | -       | -       |
|                 | TRANSCRIPTS       | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|                 | BLACKLOGS         | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|                 | STUDENTID         | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

## SELECT Command:

| ACADEMICRECORDSNO | STUDENTSTARTDATE | STUDENTENDDATE | YEAROFPASSOUT | GRADE | TRANSCRIPTS   | BLACKLOGS | STUDENTID |
|-------------------|------------------|----------------|---------------|-------|---------------|-----------|-----------|
| 101               | 25-May-2018      | 19-Apr-2022    | 2022          | A     | ALL SEMESTERS | NILL      | 121       |
| 102               | 25-May-2018      | 19-Apr-2022    | 2022          | A     | ALL SEMESTERS | NILL      | 122       |
| 103               | 12-Apr-2017      | 19-Apr-2021    | 2021          | B     | ALL SEMESTERS | NILL      | 123       |
| 104               | 15-May-2018      | 15-May-2022    | 2022          | B     | ALL SEMESTERS | NILL      | 124       |
| 105               | 10-Jun-2016      | 20-May-2020    | 2020          | A     | ALL SEMESTERS | NILL      | 125       |
| 106               | 28-Apr-2017      | 19-Apr-2021    | 2021          | B     | ALL SEMESTERS | NILL      | 126       |
| 107               | 14-Jun-2018      | 19-Jun-2022    | 2022          | A     | ALL SEMESTERS | NILL      | 127       |
| 108               | 05-Apr-2016      | 19-Apr-2020    | 2020          | A     | ALL SEMESTERS | NILL      | 128       |
| 109               | 25-May-2016      | 19-Apr-2020    | 2020          | B     | ALL SEMESTERS | NILL      | 129       |
| 110               | 25-May-2018      | 19-Apr-2022    | 2022          | A     | ALL SEMESTERS | NILL      | 130       |

## Department table



**DESC Command:**

| Table      | Column         | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|------------|----------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| DEPARTMENT | DEPARTMENTID   | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|            | DEPARTMENTNAME | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|            | LOCATION       | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |

**SELECT Command:**

| DEPARTMENTID | DEPARTMENTNAME | LOCATION    |
|--------------|----------------|-------------|
| 501          | CSE            | 13TH STREET |
| 502          | ECE            | 14TH STREET |
| 503          | MECH           | 15TH STREET |
| 504          | ELECTRICAL     | 16TH STREET |

**Faculty table**

**DESC Command:**

| Table   | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|---------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| FACULTY | FACULTYID    | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|         | NAME         | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|         | DEPARTMENTID | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

**SELECT Command:**

| FACULTYID | NAME                 | DEPARTMENTID |
|-----------|----------------------|--------------|
| 11        | KANG SEONJUN         | 501          |
| 12        | LEA BHI-RU           | 501          |
| 13        | YU-HSIEN             | 501          |
| 14        | WANG DAWEI           | 502          |
| 15        | SCHOLL DAVID         | 502          |
| 16        | HELTON-GEORGE TRICIA | 503          |
| 17        | TIM FALEY            | 503          |
| 18        | SHARON               | 503          |
| 19        | MADELINE             | 504          |
| 20        | LEA                  | 504          |

**Courses table**

### DESC Command:

| Table   | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|---------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| COURSES | COURSEID     | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|         | COURSENAME   | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|         | CREDITHOURS  | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|         | DEPARTMENTID | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|         | FID          | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

### SELECT Command:

| COURSEID | COURSENAME              | CREDITHOURS | DEPARTMENTID | FID     |
|----------|-------------------------|-------------|--------------|---------|
| 5453     | DATA MANAGEMENT         | 45          | 501          | 121654  |
| 5454     | BUSINESS ANALYTICS      | 45          | 501          | 121655  |
| 5455     | INFO VISUALIZATION      | 45          | 501          | 84268   |
| 5456     | ARITIFICAL INTELLIGENCE | 40          | 502          | 84279   |
| 5457     | ROBOTICS                | 50          | 502          | 9555689 |
| 5458     | MACHINE LEARNING        | 45          | 503          | 258478  |
| 5459     | ERP                     | 40          | 503          | 84378   |
| 5460     | ERP SAP                 | 48          | 503          | 94778   |
| 5400     | ERP ABAP                | 42          | 504          | 467885  |
| 6400     | BIO SCIENCE             | 53          | 504          | 66536   |

## Enrollment Office table

DESC Command:

| Table            | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|------------------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ENROLLMENTOFFICE | ENROLLMENTID | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|                  | SEMESTER     | VARCHAR2  | 20     | -         | -     | -           | ✓        | -       | -       |
|                  | YEAR         | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|                  | STUDENTID    | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|                  | COURSEID     | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

SELECT Command:

| ENROLLMENTID | SEMESTER | YEAR | STUDENTID | COURSEID |
|--------------|----------|------|-----------|----------|
| 1            | 6TH      | 2022 | 121       | 5453     |
| 2            | 4TH      | 2020 | 122       | 5454     |
| 3            | 6TH      | 2020 | 123       | 5455     |
| 4            | 4TH      | 2020 | 124       | 5456     |
| 5            | 8TH      | 2020 | 125       | 5457     |
| 6            | 6TH      | 2020 | 126       | 5458     |

## Alumni table

### DESC Command:

| Table  | Column           | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|--------|------------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ALUMNI | ALUMINIID        | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|        | GRADUATIONYEAR   | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|        | EMPLOYMENTSTATUS | VARCHAR2  | 20     | -         | -     | -           | ✓        | -       | -       |
|        | DEGREESOBTAINED  | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|        | STUDENTID        | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |

### SELECT Command:

| ALUMINIID | GRADUATIONYEAR | EMPLOYMENTSTATUS | DEGREESOBTAINED | STUDENTID |
|-----------|----------------|------------------|-----------------|-----------|
| 91        | 2022           | HIGHER STUDIES   | YES             | 121       |
| 92        | 2022           | ENTREPRENEUR     | YES             | 122       |
| 93        | 2021           | COMPANY          | YES             | 123       |
| 94        | 2022           | HIGHER STUDIES   | YES             | 124       |
| 95        | 2020           | COMPANY          | YES             | 125       |
| 96        | 2021           | HIGHER STUDIES   | YES             | 126       |
| 97        | 2022           | COMPANY          | YES             | 127       |

### Company table

### DESC Command:

| Table   | Column      | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|---------|-------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| COMPANY | ALUMINIID   | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|         | COMPANYNAME | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|         | DESIGNATION | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |
|         | STREETNO    | VARCHAR2  | 10     | -         | -     | -           | ✓        | -       | -       |
|         | CITY        | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |
|         | STATE       | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |
|         | COUNTRY     | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |
|         | ZIP         | VARCHAR2  | 10     | -         | -     | -           | ✓        | -       | -       |

### SELECT Command:

| ALUMINIID | COMPANYNAME | DESIGNATION     | STREETNO | CITY           | STATE      | COUNTRY                  | ZIP   |
|-----------|-------------|-----------------|----------|----------------|------------|--------------------------|-------|
| 93        | AUTOMOBILES | ASSISTANT       | 9        | JEFFERSON CITY | MISSOURI   | UNITED STATES OF AMERICA | 65039 |
| 95        | TCS         | SYSTEM ENGINEER | 18       | AUSTIN         | TEXAS      | UNITED STATES OF AMERICA | 73301 |
| 97        | TESLA       | MANAGER         | 2        | LINCOLN NE     | NEBRASKA   | UNITED STATES OF AMERICA | 68336 |
| 98        | BMW         | SALES EXECUTIVE | 196      | SANTA FE       | NEW MEXICO | UNITED STATES OF AMERICA | 87501 |

### Higher Studies Table

### DESC Command:

| Table          | Column         | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|----------------|----------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| HIGHER_STUDIES | ALUMINIID      | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|                | ADMISSION_YEAR | NUMBER    | 22     | -         | -     | -           | ✓        | -       | -       |
|                | UNIVERSITY     | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|                | CONTINENT      | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |
|                | DEGREE         | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |


### SELECT Command:

| ALUMINIID | ADMISSION_YEAR | UNIVERSITY          | CONTINENT     | DEGREE  |
|-----------|----------------|---------------------|---------------|---------|
| 91        | 2022           | MISSOURI S&T        | UNITED STATES | MASTERS |
| 94        | 2022           | STLOUIS UNIVERSITY  | UNITED STATES | MASTERS |
| 96        | 2021           | MISSOURI UNIVERSITY | UNITED STATES | MASTERS |

### Entrepreneur Table



**DESC Command:**

| Table        | Column    | Data Type | Length | Precision | Scale | Primary Key | Nullable  | Default | Comment |
|--------------|-----------|-----------|--------|-----------|-------|-------------|---|---------|---------|
| ENTREPRENEUR | ALUMINIID | NUMBER    | 22     | -         | -     | 1           | -   | -       | -       |
|              | BTYPE     | VARCHAR2  | 100    | -         | -     | -           |  | -       | -       |

**SELECT Command:**

| ALUMINIID | BTYPE   |
|-----------|---------|
| 92        | COTTON  |
| 99        | HOUSING |
| 100       | FOOD    |

**CSE Table**

**DESC Command:**

| Table | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|-------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| CSE   | DEPARTMENTID | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|       | LOCATION     | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |
|       | LAB          | VARCHAR2  | 50     | -         | -     | -           | ✓        | -       | -       |

**SELECT Command:**

| DEPARTMENTID | LOCATION    | LAB          |
|--------------|-------------|--------------|
| 501          | 13TH STREET | COMPUTER LAB |

**ECE Table**

**DESC Command:**


| Table | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|-------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ECE   | DEPARTMENTID | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|       | LOCATION     | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |

SELECT Command:

| DEPARTMENTID | LOCATION    |
|--------------|-------------|
| 502          | 14TH STREET |

Mech Table

DESC Command:

| Table | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable  | Default | Comment |
|-------|--------------|-----------|--------|-----------|-------|-------------|---|---------|---------|
| MECH  | DEPARTMENTID | NUMBER    | 22     | -         | -     | 1           | -   | -       | -       |
|       | LOCATION     | VARCHAR2  | 100    | -         | -     | -           |  | -       | -       |

SELECT Command:

| DEPARTMENTID | LOCATION    |
|--------------|-------------|
| 503          | 15TH STREET |

Electrical Table

DESC Command:

| Table      | Column       | Data Type | Length | Precision | Scale | Primary Key | Nullable | Default | Comment |
|------------|--------------|-----------|--------|-----------|-------|-------------|----------|---------|---------|
| ELECTRICAL | DEPARTMENTID | NUMBER    | 22     | -         | -     | 1           | -        | -       | -       |
|            | LOCATION     | VARCHAR2  | 100    | -         | -     | -           | ✓        | -       | -       |

SELECT Command:

| DEPARTMENTID | LOCATION    |
|--------------|-------------|
| 504          | 16TH STREET |

**Section 7(The sample SQL queries and screenshots of the results of those queries tested with Oracle Application Express. The queries should include accessing a single table as well as joining multiple tables. You need to include at least about 15 SELECT Queries, including at least 10 multiple tables joins.)**

### **Query-1 (Statement using Projection arithmetic (expressions))**

**Q. Given the SQL command provided, how would you retrieve information about students, including their full names, total credit hours multiplied by three, and a description of their grades categorized as 'Excellent', 'Very Good', 'Good', or 'Average or Below', by joining tables Student, Academic Records, and Courses?**

SELECT

s.StudentID,

s.FirstName || ' ' || s.LastName AS FullName,

c.CreditHours \* 3 AS TotalCreditHours,

CASE

WHEN a.Grade = 'A' THEN 'Excellent'

WHEN a.Grade = 'B' THEN 'very Good'

WHEN a.Grade = 'c' THEN 'Good'

ELSE 'Average or Below'

END AS GradeDescription

FROM

Student s

JOIN

AcademicRecords a ON s.StudentID = a.StudentID

JOIN

Courses c ON s.FID = c.FID;

| Results   | Explain          | Describe         | Saved SQL        | History |
|-----------|------------------|------------------|------------------|---------|
| STUDENTID | FULLNAME         | TOTALCREDITHOURS | GRADEDESCRIPTION |         |
| 121       | SASIDHAR REDDY   | 135              | Excellent        |         |
| 122       | GAFARUDDIN SHAIK | 135              | Excellent        |         |
| 123       | MOKSHA N         | 135              | very Good        |         |
| 124       | JHANSIMALA SILLA | 159              | very Good        |         |
| 125       | TANGA AMULYA     | 144              | Excellent        |         |
| 126       | SHALINI K        | 126              | very Good        |         |
| 127       | KIRAN S          | 135              | Excellent        |         |
| 128       | PRIYANKA TANJU   | 120              | Excellent        |         |
| 129       | MOUNIKA KYA      | 150              | very Good        |         |
| 130       | PRAKESH RODULA   | 120              | Excellent        |         |

10 rows returned in 0.01 seconds [Download](#)

## Query-2(Statement using Alias)

**Q. Give the SQL command to retrieve a list of students' full names alongside their email addresses by using aliases for columns in the student table.**

SELECT

s.FirstName || ' ' || s.LastName AS FullName,

s.Email AS EmailAddress

FROM

Student s;

| FULLNAME   | EMAILADDRESS         |
|--|----------------------|
| SASIDHAR REDDY   | SVDFY@UMSYSTEM.EDU   |
| GAFARUDDIN SHAIK   | GS9CB@UMSYSTEM.EDU   |
| MOKSHA N   | VNQRD@UMSYSTEM.EDU   |
| JHANSIMALA SILLA   | JS6P6@UMSYSTEM.EDU   |
| TANGA AMULYA   | ATGBV@UMSYSTEM.EDU   |
| SHALINI K  | GASCB@UMSYSTEM.EDU   |
| KIRAN S  | NPRAQ@GMAIL.COM      |
| PRIYANKA TANJU   | T.PRIYANKA@GMAIL.COM |
| PRAKESH RODULA   | PRAKESH@GMAIL.COM    |
| MOUNIKA KYA  | MONI@GMAIL.COM       |
| More than 10 rows available. Increase rows selector to view more rows. |                      |

### Query-3(Statement using Concatenation)

**Q. Give the SQL command to construct a SQL statement to display student names concatenated with their last names as 'FullName', and their contact information formatted as 'Contact', combining data from the 'FirstName', 'LastName', and 'Contact1' columns in the Student table?**

```

SELECT
'Student Name: ' || FirstName || ' ' || LastName AS FullName,
'Contact: ' || Contact1 AS Contact
FROM Student;
```

| FULLNAME                       | CONTACT             |
|--------------------------------|---------------------|
| Student Name: SASIDHAR REDDY   | Contact: 5735375678 |
| Student Name: GAFARUDDIN SHAIK | Contact: 5735378907 |
| Student Name: MOKSHA N         | Contact: 5735372468 |
| Student Name: JHANSIMALA SILLA | Contact: 5735371459 |
| Student Name: TANGA AMULYA     | Contact: 5735378458 |
| Student Name: SHALINI K        | Contact: 5732622468 |
| Student Name: KIRAN S          | Contact: 5735378979 |
| Student Name: PRIYANKA TANJU   | Contact: 5739980080 |
| Student Name: PRAKESH RODULA   | Contact: 573456789  |
| Student Name: MOUNIKA KYA      | Contact: 5739279190 |

#### Query-4(Statement using The WHERE Clause)

**Q.Give the SQL command to formulate a SQL query to retrieve the first name, last name, and due bills of students who have due bills greater than 2, by joining the Student and FinancialAid tables and utilizing the WHERE clause?**

```
SELECT Student.FirstName, Student.LastName, FinancialAid.DueBills
```

```
FROM Student
```

```
JOIN FinancialAid ON Student.FID = FinancialAid.FID
```

```
WHERE FinancialAid.DueBills > 2;
```



| FIRSTNAME  | LASTNAME | DUEBILLS |
|------------|----------|----------|
| SASIDHAR   | REDDY    | 6        |
| MOKSHA     | N        | 3        |
| JHANSIMALA | SILLA    | 4        |
| MOUNIKA    | KYA      | 3        |
| John       | Doe      | 5000     |

### Query-5(Statement using Comparison Operators (Greater than...))

**Q. Give the SQL command to retrieve all columns from the Financial Aid table where the value in the 'Due Bills' column exceeds 2, utilizing the greater than comparison operator.**

```
SELECT Student.FirstName, Student.LastName, EnrollmentOffice.Semester
```

```
FROM Student
```

```
JOIN EnrollmentOffice ON Student.StudentID = EnrollmentOffice.StudentID
```

```
WHERE EnrollmentOffice.Semester > '4TH';
```

| FIRSTNAME | LASTNAME | SEMESTER |
|-----------|----------|----------|
| SASIDHAR  | REDDY    | 6TH      |
| MOKSHA    | N        | 6TH      |
| TANGA     | AMULYA   | 8TH      |
| SHALINI   | K        | 6TH      |
| PRIYANKA  | TANJU    | 8TH      |
| MOUNIKA   | KYA      | 8TH      |
| PRAKESH   | RODULA   | 6TH      |

### Query-6(Statement using Logical Operators (AND | OR))

**Q. Give the SQL command to construct a SQL query to extract the student ID, department, and first name from the student table, filtering records where either the department is 'CSE' and the advisor ID is 111, or the department is 'ECE' and the advisor ID is 122, using logical operators (AND, OR)?**

```
SELECT Studentid, department, Firstname FROM Student
```

```
WHERE (Department = 'CSE' AND AdvisorID = 111)
```

```
OR (Department = 'ECE' AND AdvisorID = 122);
```

| STUDENTID | DEPARTMENT | FIRSTNAME |
|-----------|------------|-----------|
| 121       | CSE        | SASIDHAR  |
| 123       | CSE        | MOKSHA    |

2 rows returned in 0.01 seconds   [Download](#)

### Query-7(Statement using Date Functions)

**Q. Give the SQL command to formulate a SQL statement to retrieve all columns from the Events and Internship table where the start date is on or after January 1, 2023, and the end date is on or before December 31, 2023, utilizing date functions.**

```
SELECT * FROM Events
```

```
WHERE StartDate >= DATE '2023-01-01' AND EndDate <= DATE '2023-12-31';
```

| EVENTID | EVENTNAME | LOCATION    | EVENTDESCRIPTION  | STARTDATE   | ENDDATE     | TIME               | ORGANIZATIONID | STUDENTID |
|---------|-----------|-------------|-------------------|-------------|-------------|--------------------|----------------|-----------|
| 4       | FUNDING   | PARKER HALL | SCHOLARSHIP FUNDS | 09-Jul-2023 | 09-Jul-2023 | 9:00 AM TO 4:00 PM | 56             | 124       |

SELECT \* FROM Events

WHERE StartDate > TO\_DATE('01/01/2022', 'MM/DD/YYYY');

| EVENTID | EVENTNAME      | LOCATION                         | EVENTDESCRIPTION             | STARTDATE   | ENDDATE     | TIME                | ORGANIZATIONID | STUDENTID |
|---------|----------------|----------------------------------|------------------------------|-------------|-------------|---------------------|----------------|-----------|
| 1       | WELL BEING     | HAVENER CENTER                   | STUDENT WELL BEING ACTIVITES | 05-Feb-2022 | 05-Mar-2022 | 12:01 TO 3:00       | 18             | 121       |
| 2       | SEXUAL ASSAULT | HAVENER CENTER AND INOVATION LAB | SEXUAL WELL BEING            | 14-Mar-2022 | 15-Mar-2022 | 11:00 AM TO 1:00 PM | 18             | 122       |
| 4       | FUNDING        | PARKER HALL                      | SCHOLARSHIP FUNDS            | 09-Jul-2023 | 09-Jul-2023 | 9:00 AM TO 4:00 PM  | 56             | 124       |
| 7       | DOG THERAPY    | FITNESS CENTER                   | WELL BEING DOG               | 10-Mar-2022 | 12-Mar-2022 | 1:01 TO 2:00        | 88             | 127       |

SELECT \* FROM Internship

WHERE StartDate > TO\_DATE('06/01/2021', 'MM/DD/YYYY');

| INTERNID | STARTDATE   | ENDDATE     | TITLE                   | DESCRIPTION  |
|----------|-------------|-------------|-------------------------|--|
| 585      | 18-Jul-2021 | 26-Dec-2021 | SAP ABAP                | BASIC DATA INSERTION AND STORING DATA IN HANA DATABASE   |
| 592      | 07-Nov-2021 | 18-Mar-2022 | CLOUD COMPUTING         | LEARN ABOUT COMPUTING SERVICES INCLUDING SERVERS, STORAGE, DATABASE, NETWORKING AND INTELLIGENCE |
| 596      | 16-Apr-2022 | 19-Sep-2020 | ANDROID APP DEVELOPMENT | DEVELOPING A BASIC APP   |

### Query-8(Statement using IN & subquery)

**Q. Give the SQL command to create a SQL statement to retrieve the first name, last name, and due bills of students who have financial aid with due bills less than 3, by joining the Student and Financial Aid tables and using the IN operator with a subquery.**

```
SELECT Student.FirstName, Student.LastName, FinancialAid.DueBills
FROM Student
JOIN FinancialAid ON Student.FID = FinancialAid.FID
WHERE FinancialAid.FID IN (
    SELECT FID
    FROM FinancialAid
    WHERE DueBills < 3);
```

| FIRSTNAME  | LASTNAME | DUEBILLS |
|------------|----------|----------|
| GAFARUDDIN | SHAIK    | 2        |
| TANGA      | AMULYA   | 0        |
| SHALINI    | K        | 1        |
| KIRAN      | S        | 1        |
| PRIYANKA   | TANJU    | 2        |
| PRAKESH    | RODULA   | 0        |

### Query-9(Statement using LIKE OPERATOR)

**Q. Give the SQL command to construct a SQL query to retrieve all columns from the Events table where the event name contains the word 'WELL' anywhere within it, utilizing the LIKE operator with appropriate wildcards.**

```
SELECT * FROM Events
```

```
WHERE EventName LIKE '%WELL%';
```

| EVENTID | EVENTNAME  | LOCATION       | EVENTDESCRIPTION             | STARTDATE   | ENDDATE     | TIME          | ORGANIZATIONID | STUDENTID |
|---------|------------|----------------|------------------------------|-------------|-------------|---------------|----------------|-----------|
| 1       | WELL BEING | HAVENER CENTER | STUDENT WELL BEING ACTIVITES | 05-Feb-2022 | 05-Mar-2022 | 12:01 TO 3:00 | 18             | 121       |

### Query-10(Statement using AGGREGATION FUNCTIONS & GROUP BY)

**Q. Give the SQL command to generate a SQL statement to calculate the average credit hours of courses within each department, displaying the department name alongside the average credit hours, by joining the Department and Courses tables and utilizing aggregation functions along with the GROUP BY clause?**

```
SELECT Department.DepartmentName, AVG(Courses.CreditHours) AS Avg_CreditHours
```

```
FROM Department
```

```
JOIN Courses ON Department.DepartmentID = Courses.DepartmentID
```

```
GROUP BY Department.DepartmentName;
```



### Query-12(Statement using Conditional Expressions)

**Q. Give the SQL command to construct a SQL statement to retrieve the alumni ID, graduation year, employment status, degrees obtained, and student ID of alumni who pursued higher studies in the United States, by joining the Alumni and Higher\_Studies tables, and filtering the results based on the continent.**

```
SELECT A.AluminiID, A.GraduationYear, A.EmploymentStatus, A.DegreesObtained, A.StudentID
FROM Alumni A
JOIN Higher_Studies HS ON A.AluminiID = HS.AluminiID
WHERE HS.Continent = 'UNITED STATES';
```

| ALUMINIID | GRADUATIONYEAR | EMPLOYMENTSTATUS | DEGREESOBTAINED | STUDENTID |
|-----------|----------------|------------------|-----------------|-----------|
| 91        | 2022           | HIGHER STUDIES   | YES             | 121       |
| 94        | 2022           | HIGHER STUDIES   | YES             | 124       |
| 96        | 2021           | HIGHER STUDIES   | YES             | 126       |

### Query-13(Statement using “Union” & another statement having same results using any JOIN)

**Q. Give the SQL command to formulate a SQL statement using the UNION operator to retrieve academic records' numbers, student start dates, end dates, years of pass out, grades, transcripts, backlogs, and student IDs from the Academic Records table for students who received a grade of 'A' or graduated in or after 2020? Additionally, devise an alternative statement using any JOIN operation to achieve the same result.**

**Using Union:**

```

SELECT AcademicRecordsNo, StudentStartDate, StudentEndDate, YearOfPassout, Grade, Transcripts, Blacklogs, StudentID
FROM AcademicRecords
WHERE Grade = 'A'
UNION
SELECT AcademicRecordsNo, StudentStartDate, StudentEndDate, YearOfPassout, Grade, Transcripts, Blacklogs, StudentID
FROM AcademicRecords
WHERE YearOfPassout >= 2020;

```

| Results           | Explain          | Describe       | Saved SQL     | History |               |           |           |
|-------------------|------------------|----------------|---------------|---------|---------------|-----------|-----------|
| ACADEMICRECORDSNO | STUDENTSTARTDATE | STUDENTENDDATE | YEAROFPASSOUT | GRADE   | TRANSCRIPTS   | BLACKLOGS | STUDENTID |
| 101               | 25-May-2018      | 19-Apr-2022    | 2022          | A       | ALL SEMESTERS | NILL      | 121       |
| 102               | 25-May-2018      | 19-Apr-2022    | 2022          | A       | ALL SEMESTERS | NILL      | 122       |
| 103               | 12-Apr-2017      | 19-Apr-2021    | 2021          | B       | ALL SEMESTERS | NILL      | 123       |
| 104               | 15-May-2018      | 15-May-2022    | 2022          | B       | ALL SEMESTERS | NILL      | 124       |
| 105               | 10-Jun-2016      | 20-May-2020    | 2020          | A       | ALL SEMESTERS | NILL      | 125       |
| 106               | 28-Apr-2017      | 19-Apr-2021    | 2021          | B       | ALL SEMESTERS | NILL      | 126       |

### --Using JOIN:

```

SELECT AR.AcademicRecordsNo, AR.StudentStartDate, AR.StudentEndDate, AR.YearOfPassout, AR.Grade, AR.Transcripts, AR.Blacklogs,
AR.StudentID

```



```

FROM AcademicRecords AR
INNER JOIN Student S ON AR.StudentID = S.StudentID
WHERE AR. Grade = 'A' OR AR.YearOfPassout >= 2020;

```

| Results           | Explain          | Describe       | Saved SQL     | History |               |           |           |
|-------------------|------------------|----------------|---------------|---------|---------------|-----------|-----------|
| ACADEMICRECORDSNO | STUDENTSTARTDATE | STUDENTENDDATE | YEAROFPASSOUT | GRADE   | TRANSCRIPTS   | BLACKLOGS | STUDENTID |
| 101               | 25-May-2018      | 19-Apr-2022    | 2022          | A       | ALL SEMESTERS | NILL      | 121       |
| 102               | 25-May-2018      | 19-Apr-2022    | 2022          | A       | ALL SEMESTERS | NILL      | 122       |
| 103               | 12-Apr-2017      | 19-Apr-2021    | 2021          | B       | ALL SEMESTERS | NILL      | 123       |
| 104               | 15-May-2018      | 15-May-2022    | 2022          | B       | ALL SEMESTERS | NILL      | 124       |
| 105               | 10-Jun-2016      | 20-May-2020    | 2020          | A       | ALL SEMESTERS | NILL      | 125       |
| 106               | 28-Apr-2017      | 19-Apr-2021    | 2021          | B       | ALL SEMESTERS | NILL      | 126       |

### Query-14(Statement using “Minus” & another statement having same results using any JOIN)

**Q. Give the SQL command to create a SQL statement using the MINUS operator to retrieve the student ID, first name, last name, course name, and department name of students enrolled in Computer Science Engineering (CSE) courses, and then devise an alternative statement using any JOIN operation to achieve the same result?**

**--Using MINUS:**

```

SELECT s.StudentID, s.FirstName, s.LastName, c.CourseName AS Course, d.DepartmentName AS Department
FROM Student s

```

JOIN EnrollmentOffice eo ON s.StudentID = eo.StudentID

JOIN Courses c ON eo.CourseID = c.CourseID

JOIN Department d ON c.DepartmentID = d.DepartmentID

WHERE d.DepartmentName = 'CSE'

MINUS

SELECT s.StudentID, s.FirstName, s.LastName, c.CourseName AS Course, d.DepartmentName AS Department

FROM Student s

JOIN EnrollmentOffice eo ON s.StudentID = eo.StudentID

JOIN Courses c ON eo.CourseID = c.CourseID

JOIN Department d ON c.DepartmentID = d.DepartmentID

WHERE d.DepartmentName != 'CSE';

| STUDENTID | FIRSTNAME  | LASTNAME | COURSE             | DEPARTMENT |
|-----------|------------|----------|--------------------|------------|
| 121       | SASIDHAR   | REDDY    | DATA MANAGEMENT    | CSE        |
| 122       | GAFARUDDIN | SHAIK    | BUSINESS ANALYTICS | CSE        |
| 123       | MOKSHA     | N        | INFO VISUALIZATION | CSE        |

**--using join**

SELECT s.StudentID, s.FirstName, s.LastName, c.CourseName AS Course, d.DepartmentName AS Department

FROM Student s

JOIN EnrollmentOffice eo ON s.StudentID = eo.StudentID

JOIN Courses c ON eo.CourseID = c.CourseID

JOIN Department d ON c.DepartmentID = d.DepartmentID

WHERE d.DepartmentName = 'CSE';

| STUDENTID | FIRSTNAME  | LASTNAME | COURSE             | DEPARTMENT |
|-----------|------------|----------|--------------------|------------|
| 121       | SASIDHAR   | REDDY    | DATA MANAGEMENT    | CSE        |
| 122       | GAFARUDDIN | SHAIK    | BUSINESS ANALYTICS | CSE        |
| 123       | MOKSHA     | N        | INFO VISUALIZATION | CSE        |

### **Query-15(Statement using “INTERSECT” & another statement having same results using any JOIN)**

**Q. Give the SQL command to formulate a SQL statement using the INTERSECT operator to retrieve the alumni IDs as student IDs from the Alumni table that are also present in the Higher Studies table? Additionally, create an alternative statement using any JOIN operation to achieve the same result.**

#### **--Using Interact**

SELECT AluminiID AS StudentID

FROM Alumni

INTERSECT

SELECT AluminiID AS StudentID

FROM Higher\_Studies;

| STUDENTID |
|-----------|
| 91        |
| 94        |
| 96        |

### - Using JOIN

```
SELECT DISTINCT a.AluminiID AS StudentID
```

```
FROM Alumni a
```

```
JOIN Higher_Studies hs ON a.AluminiID = hs.AluminiID;
```

| STUDENTID |
|-----------|
| 91        |
| 94        |
| 96        |