

VIRGINIA COMMONWEALTH UNIVERSITY



ANALSYS & DESIGN OF DATABASE SYSTEM ER DIAGRAM FOR CASE STUDY –

Creating a database for Christ University activities

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Date of Submission: 01-JUL-2023

Entity Types:

1. Student: Represents a student at CHRIST UNIVERSITY.
2. Degrees: Represents the degrees obtained by students.
3. Telephone: Represents the telephone numbers of students.
4. Specialization: Represents the specializations chosen by students for PGDM.
5. Term: Represents the terms in the PGDM program.
6. Course: Represents the catalog of courses offered in the PGDM program.
7. Faculty: Represents the faculty members at CHRIST UNIVERSITY.
8. Book: Represents the books available in the library.
9. Book_Borrowed: Represents the borrowing details of books by students.
10. Research_Paper: Represents the research papers published by students.
11. Paper_Faculty: Represents the association between research papers and faculty.
12. Club: Represents the clubs at CHRIST UNIVERSITY.
13. Club_Membership: Represents the membership details of students in clubs.
14. SIP: Represents the Summer Internship Projects undertaken by students.

Relationships, Cardinalities, and Relationship Types:

1. Student-Degrees:
 - Cardinality: One student can have multiple degrees, but each degree belongs to only one student.
 - Relationship Type: One-to-Many (1:N) relationship.
2. Student-Telephone:
 - Cardinality: One student can have multiple telephone numbers, and each telephone number belongs to only one student.
 - Relationship Type: One-to-Many (1:N) relationship.
3. Student-Specialization:
 - Cardinality: One student can have one specialization, and each specialization belongs to only one student.
 - Relationship Type: One-to-One (1:1) relationship.
4. Student-Term:
 - Cardinality: One student can have multiple terms, and each term belongs to only one student.
 - Relationship Type: One-to-Many (1:N) relationship.
5. Student-Course_Term:

- Cardinality: One student can take multiple course_terms, and each course_term can be taken by multiple students.
 - Relationship Type: Many-to-Many (N:M) relationship.
6. Course-Faculty:
- Cardinality: One faculty member can teach multiple course_terms, and each course_term is taught by only one faculty member.
 - Relationship Type: One-to-Many (1:N) relationship.
7. Student-Book_Borrowed:
- Cardinality: One student can borrow multiple books, and each book can be borrowed by multiple students.
 - Relationship Type: Many-to-Many (N:M) relationship.
8. Student-Research_Paper:
- Cardinality: One student can publish multiple research papers, and each research paper belongs to only one student.
 - Relationship Type: One-to-Many (1:N) relationship.
9. Research_Paper-Paper_Faculty:
- Cardinality: One research paper can have multiple associated faculty members, and each faculty member can be associated with multiple research papers.
 - Relationship Type: Many-to-Many (N:M) relationship.
10. Student-Club_Membership:
- Cardinality: One student can be a member of multiple clubs, and each club can have multiple student members.
 - Relationship Type: Many-to-Many (N:M) relationship.
11. Student-SIP:
- Cardinality: One student can have multiple SIPs, and each SIP belongs to only one student.
 - Relationship Type: One-to-Many (1:N) relationship.

Participation:

- Total Participation (Every student must have these entities): Student, Degrees, Telephone, Specialization, Term, Course_Term, Book_Borrowed, Research_Paper, Club_Membership, SIP.

- Partial Participation (Optional entities for some students): Course, Faculty, Book, Paper_Faculty, Club.

These details describe the relationships between entity types, the cardinalities (how many instances of each entity can be related to another entity), the relationship types (such as one-to-many, many-to-many), and the participation constraints (total or partial) for each entity type in the CHRIST UNIVERSITY database.

ER DIAGRAM

NOTE: Please see the attached pdf for clearer reference.



