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Week 3 Assignment

Discuss the following types of database relationships, One-to-One, One-to-Many, and Many-to-Many relationships.

Answer

1. **One-to-One Relationship**: This type of relationship occurs when one record in a table is associated with one and only one record in another table. For example, if each employee in a company has a unique employee profile, the Employees table and the EmployeeProfiles table would have a one-to-one relationship, where each employee’s record in the Employees table is linked to a single corresponding record in the EmployeeProfiles table.
2. **One-to-Many Relationship**: This is the most common relationship, where a single record in one table can be associated with one or more records in another table. For instance, a Customer table and an Orders table would have a one-to-many relationship if each customer can place multiple orders. Here, one customer record in the Customer table is linked to many order records in the Orders table.
3. **Many-to-Many Relationship**: This relationship allows for each record in one table to be associated with many records in another table, and vice versa. An example would be a Students table and a Courses table, where students can enroll in multiple courses, and each course can have multiple students enrolled. This relationship is often implemented using a junction table (also known as a linking or associative table) to handle the associations between the two tables.

These relationships are crucial for designing a database schema as they determine how data is linked across different tables, which affects the integrity, performance, and ease of data retrieval within the database system.