

HW1 Written
Spring 2020 COMS W4111

Questions:

1. What is a database management system? What are 5 reasons people use DBMS?

A database management system (DBMS) is a software package designed to define, manipulate, retrieve and manage data in a database.

Five reasons to use DBMS:

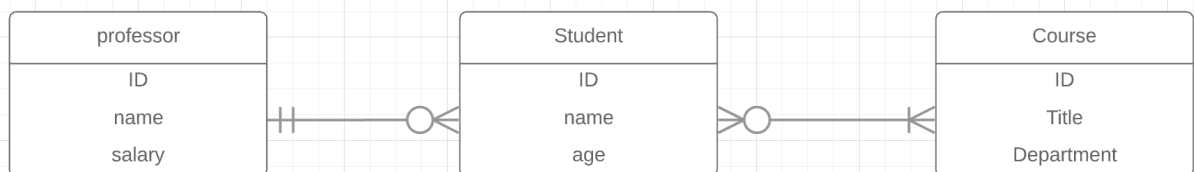
- 1) Avoid data redundancy
- 2) Provide greater data security
- 3) Convenient data sharing
- 4) Better data consistency
- 5) Integrity restrictions

2. How do DBMS ensure atomicity?

To guarantee atomicity, the DBMS software must be able to ensure that all updates within the transaction are committed to the database, or none of the updates are committed to the database.

3. What is an ER model? Draw an example ER model for Columbia classes including students, professors, and course IDs. In this example, explicitly show an example of a one-to-many and many-to-many relationship.

ER model (entity relation model) is a graphically representation of entities and their relationships to each other



4. Insert a table that might occur in the relational database version of your ER diagram. What is an example of a key-constrain in this instance?

ID	name	age
1001	Bob	18
1002	Alex	23
1003	Chris	19

Key constraint: for a given name and age, there's only one student ID

5. What is the difference between a query language and a programming language?

Query language refers to any computer programming language that requests and retrieves data from database and information systems by sending queries. General programming languages are used to instruct the computer which actions to solve problems