Tutorial 1
ICT 206 1.5

Submission date 10th June 8 am.

1. Explain the differences between data, information, and a database.
2. Define the term "Meta Data".
3. Explain why database design is important.
4. List and briefly describe the basic building blocks of a data model.
5. Briefly explain the importance of data models.
6. A college relational diagram given below shows the initial entity types of the college. Identify each relationship type and write down all the business rules.
7. Describe the three-schema architecture.
8. Describe difference attribute types in an ER diagram.
9. Following is the problem we discussed in class. Draw the ER schema diagram for it and include the (min, max) notation.

- The company is organized into DEPARTMENTs. Each department has a unique name (first_name, mid_name, last_name), unique number and an employee who manages the department. We keep track of the start date of the department manager. A department may have several locations.
- Each department controls a number of PROJECTs. Each project has a unique name, unique number and is located at a single location.
- We store each EMPLOYEE's name, social security number, address, salary, sex, and birthdate.
    - Each employee works for one department but may work on several projects.
    - We keep track of the number of hours per week that an employee currently works on each project.
    - We also keep track of the direct supervisor of each employee.
- Each employee may have a number of DEPENDENTs.
    - For each dependent, we keep track of their name, sex, birthdate, and relationship to the employee.

10. Design an ER schema for keeping track of information about votes taken in the U.S. House of Representatives during the current two-year congressionalsession.

- The database needs to keep track of each U.S. STATE's Name (e.g., 'Texas', 'New York', 'California') and include the Region of the state (whose domain is {'Northeast', 'Midwest', 'Southeast', 'Southwest', 'West'}).
- Each CONGRESS_PERSON in the House of Representatives is described by his or her Name, plus the District represented, the Start_date when the congressperson was first

elected, and the political Party to which he or she belongs (whose domain is {‘Republican’, ‘Democrat’, ‘Independent’, ‘Other’}).

- The database keeps track of each BILL (i.e., proposed law), including the Bill_name, the Date_of_vote on the bill, whether the bill Passed_or_failed (whose domain is {‘Yes’, ‘No’}),
- and the Sponsor (the congressperson(s) who sponsored—that is, proposed—the bill). The database also keeps track of how each congressperson voted on each bill (domain of Vote attribute is {‘Yes’, ‘No’, ‘Abstain’, ‘Absent’}). Draw an ER schema diagram for this application. State clearly any assumptions you make.