IEOR 215: Homework 1

ER Diagram

Prof. Stewart Liu

Student Name: Arnaud Minondo

Student ID: 3038637565

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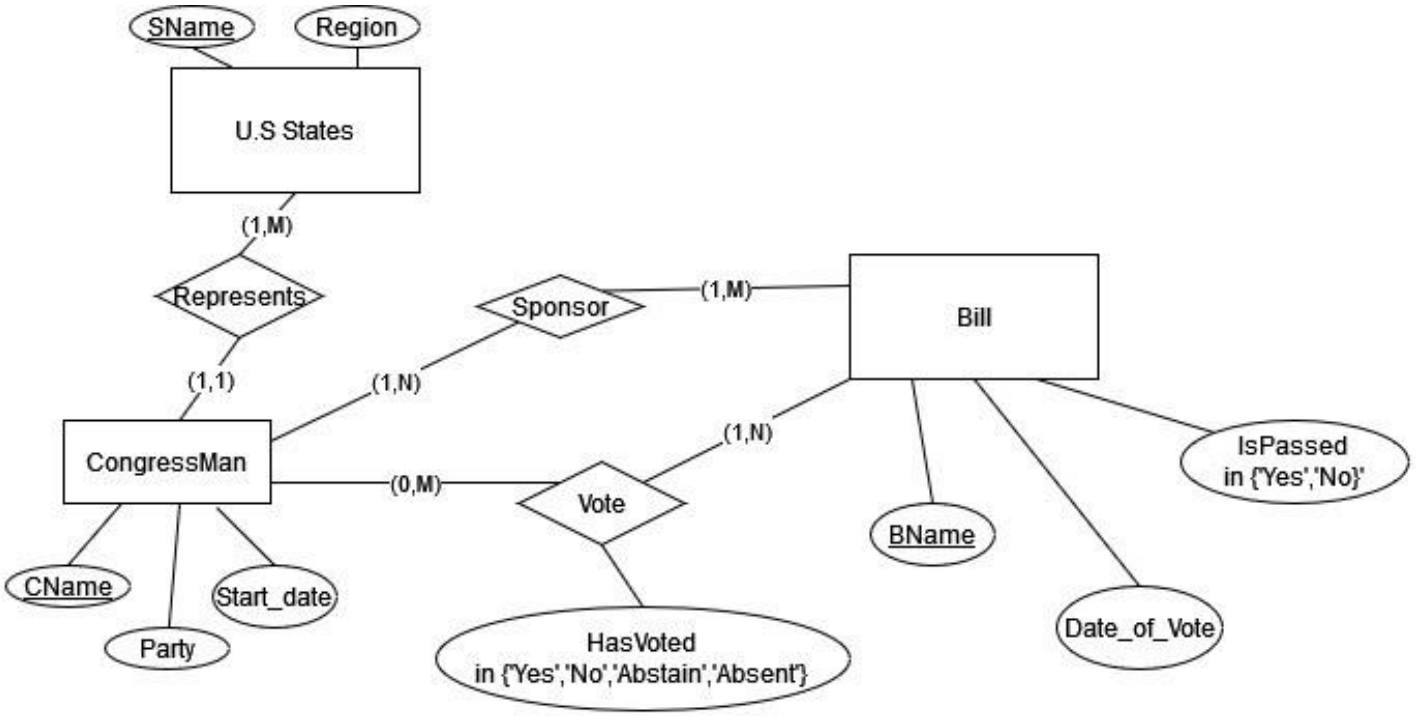
Problem 1

Consider the US_HOUSE_OF_REPRESENTATIVE database for keeping track of information about votes in the U.S. House of Representatives taken during the current two-year congressional session. 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 in class notation. State clearly any assumptions you make.

Solution:

I assumed that each CongressMan could be identified by his full name, instead of adding an artificial key to the entity CongressMan. Each CongressMan has to represent only one U.S State. A congressMan does not have to Sponsor any bill. A congressMan does not have to vote on any bill.State can be represented by one or more than one CongressMan.A bill has at least one sponsor, and one vote. A bill has to receive at least a vote.



Problem 2

Consider a CONFERENCE_REVIEW database in which researchers submit their research papers for consideration. Reviews by reviewers are recorded for use in the paper selection process. The database system caters primarily to reviewers who record answers to evaluation questions for each paper they review and make recommendations regarding whether to accept or reject the paper. The data requirements are summarized as follows:

- Authors of papers are uniquely identified by e-mail ID. First and last names are also recorded.
- Each paper is assigned a unique identifier by the system and is described by a title, abstract, and the name of the electronic file containing the paper.
- A paper may have multiple authors, but one of the authors is designated as the contact author.
- Reviewers of papers are uniquely identified by e-mail address. Each reviewer's first name, last name, phone number, affiliation, and topics of interest are also recorded.
- Each paper is assigned between two and four reviewers. A reviewer rates each paper assigned to him or her on a scale of 1 to 10 in four categories: technical merit, readability, originality, and relevance to the conference. Finally, each reviewer provides an overall recommendation regarding each paper.
- Each review contains two types of written comments: one to be seen by the review committee only and the other as feedback to the author(s).

Design an ER schema diagram for the CONFERENCE_REVIEW database in class notation. State clearly any assumptions you make.

Solution:

I assumed : A Review is a weak identity identified by the paper it relates to, that's why evaluates is an identifying relation.A Reviewer can have many interests. Each reviewer is assigned to a paper by the review itself, that's why there's no direct relation between Reviewer and Papers as Review is weak identity directly identified by the paper.Authors can be the contact for 0 or more Papers. Authors have to have written at least one paper otherwise they are not authors. Papers have exactly one author contact. And a Paper can be written by at least one author.