Database Course - **Assignment 1** (Summer 2018)                             **Due date: June 6th**

Solve exercise 3.21 from your textbook. The problem description is given to you here for your convenience.

Consider a database for keeping track of information about votes taken in the U.S. House of Representatives during the two-year congressional session. The database needs to keep track of each U.S. state’s Name (e.g. Texas, New York, California) and includes the region of the state (whose domain is {North East, Midwest, Southwest, West}). Each CONGRESSPERSON in the House of Representatives is described by his or her Name, plus the District represented, the StartDate when they were first elected, and the political Party they belong to (whose domain is {Republican, Democrat, Independent, other}). The database keeps track of each BILL (i.e. proposed law), and includes the BillName, the DateOfVote on the bill, whether the bill PassedOrFailed (whose domain is {YES, NO}), and the sponsor (the congressperson(s) who sponsored – i.e., 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}).

(i) [75 points] Design Entity-Relationship diagram for the above database and enter the design using any data modeling tool. Be sure to identify entities, key attributes, mapping cardinalities, participation constraints, and so on. You are free to make any reasonable additional assumptions (*as long as they do not conflict with any stated requirements*.), and if you do, you need to list them in your document.

(ii) [25 points] Identify any constraints that were given in the specifications but you were unable to capture using ER modeling constructs. State them in natural language (plain English). Also, for each constraint, give a brief explanation of why you need the constraint and why you cannot express it in the ER schema.

**Submission:** Zip all your assignment solution files and submit them electronically using [http://d2l.mu.edu](http://d2l.mu.edu/). Please submit your ER model diagram electronic copies in one of the following formats: .png or .jpg.