**Assignment 2**

1. Consider the following information about a university database.

* Professors have an SSN, a name, an age, a rank, and a research specialty.
* Projects have a project number, a sponsor name (e.g., NSF), a starting date, an ending date, and a budget.
* Graduate students have an SSN, a name, an age, and a degree program (e.g., M.S.or Ph.D.).
* Each project is managed by one professor (known as the project’s principal investigator).
* Each project is worked on by one or more professors (known as the project’co-investigators).
* Professors can manage and/or work on multiple projects.
* Each project is worked on by one or more graduate students (known as the project’s research assistants).
* When graduate students work on a project, a professor must supervise their work on the project. Graduate students can work on multiple projects, in which case they will have a (potentially different) supervisor for each one.
* Departments have a department number, a department name, and a main office.
* Departments have a professor (known as the chairman) who runs the department.
* Professor’s work in one or more departments and for each department that they work in, a time percentage is associated with their job.
* Graduate students have one major department in which they are working on their degree.
* Each graduate student has another, more senior graduate student (known as a student advisor) who advises him or her on what courses to take.

Design and draw an ER diagram that captures the information about the university. Use only the basic ER model here; that is, entities, relationships, and attributes. Be sure to indicate any key and participation constraints.

1. Design an ER schema for keeping track of information about votes taken in the U.S. House of Representatives 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 includes the Region of the state (whose domain is {Northeast, Midwest, Southeast, Southwest, West}). Each CONGRESSPERSON in the House of Representatives is described by their Name, and includes 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 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 the above application. State clearly any assumptions you make.