Database Management Systems

*Project 2*

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| COURSE | Database Management Systems |
| SECTION | 001 |
| SEMESTER | Fall 2015 |
| INSTRUCTOR | Dr. Le Gruenwald |
| GROUP PROJECT NUMBER | 4 |
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| SCORE |  |

Problem 1.

a)

* There are Universities each with a unique name and location, which also have a president.
* Universities may be anyone of the types: undergrad, research, or minority. Undergrad universities also have a type, which need not be unique.
* One university may lead any number of other universities in a given year.
* Companies exist which have a unique name, as well as a location and a website.
* Government agencies also have a unique name, as well as an address.
* Any number of companies, government agencies, and universities may engage in a “funding” relationship, which has an attached date and amount.
* Any number of both companies and undergrad universities may engage in a hiring relationship.
* Any number of both government agencies and minority universities may engage in a support relationship.
* Any one undergrad university may exchange with any one research university.
* Groups have a non-unique identifier, name, and a date founded, and are formed by one given undergrad university. One university may found many groups, but every group must be founded by one undergrad university.
* Faculty have a unique attribute called an id, as well as a name, which is composed of a first name and last name. They also have a specialty and some number of degrees which are made up of a school, name and year.
* Every research university has some number of faculty, all faculty must have one and only one research university.
* Projects have a unique name as well as a start-date and end-date.
* Any number of faculty may work on any number of projects. This is a many to many relationship.
* Faculty working on projects may receive stipends from government agencies. Any number of agencies may give stipends to any number of project/faculty groups.

1. b) Relational Database:

company (name, location, website)

government agency (name, address)

undergrad university (name, location, president, type)

research university (name, location, president)

minority university (name, location, president)

faculty (id, fname, lname, specialty)

faculty\_degree (faculty\_id, name, school, year)

project (name, start\_date, end\_date)

formed\_group (undergrad\_univ\_name, group\_name, date\_found)

funding (company\_name, university\_name, university\_location, gov\_ag\_name, date, amount)

support (minority\_univ\_name, gov\_ag\_name)

hire (company\_name, undergrad\_univ\_name)

exchange (undergrad\_univ\_name, research\_univ\_name)

lead (univ\_name, lead\_univ\_name, year)

research\_univ\_faculty (faculty\_id, research\_univ\_name)

faculty\_project (faculty\_id, project\_name)

received\_stipend (faculty\_id, project\_name, gov\_ag\_name)

1. c) Schema diagram: