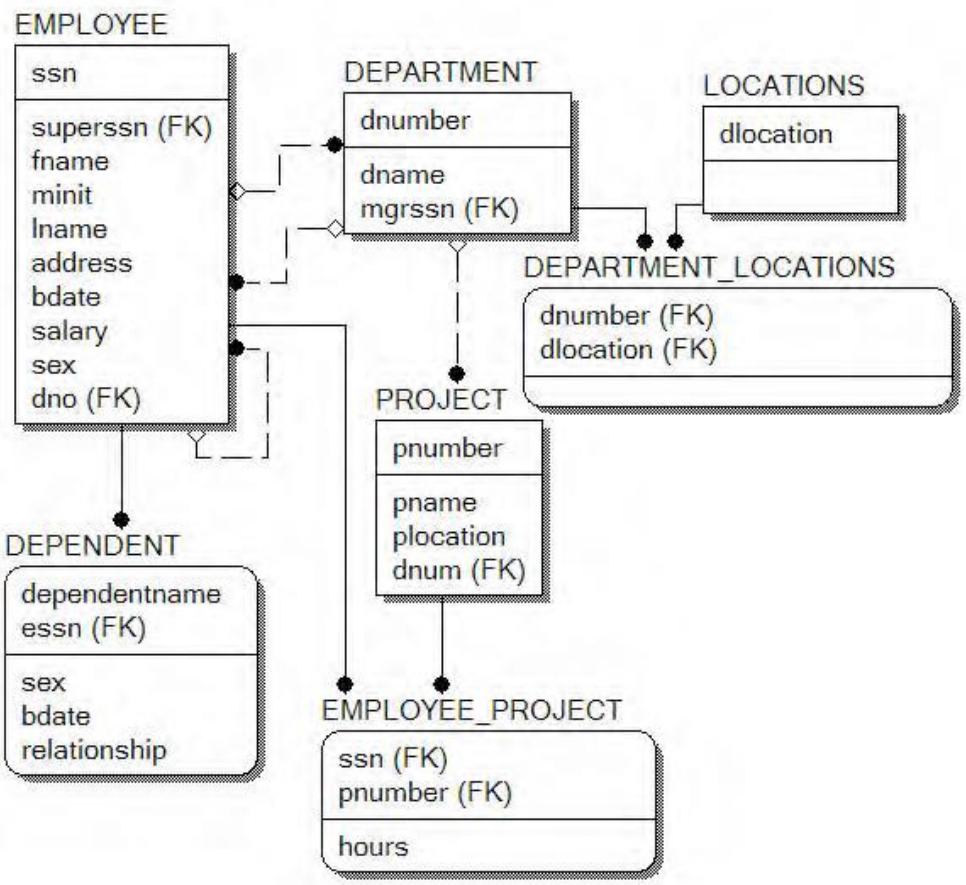
HOMEWORK 2	ER Diagram and database schema
Due Wed, Sep 16 at 11:30 pm	**Objectives:** To be able to create and manipulate database schema using a tool

What to turn in:
pdf version of the ER diagram
database scheme

Download a desktop or use a tool online to generate an ER diagram for the following questions. Also, perform forward engineering to convert the ER design into a schema generation SQL script for one or more target relational databases.

Example Solution:



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CREATE TABLE DEPARTMENT(dname VARCHAR2(20) NOT NULL, dnumber INTEGER NOT
NULL, mgrssn NUMBER(9) NULL);

ALTER TABLE DEPARTMENT ADD PRIMARY KEY (dnumber);

CREATE TABLE DEPARTMENT_LOCATIONS(dnumber INTEGER NOT NULL, dlocation
VARCHAR2(20) NOT NULL);

ALTER TABLE DEPARTMENT_LOCATIONS
ADD PRIMARY KEY (dnumber,dlocation);

CREATE TABLE DEPENDENT(dependentname VARCHAR2(20) NOT NULL, sex CHAR NULL ,
bdate DATE NULL, relationship VARCHAR2(20) NULL, essn NUMBER(9) NOT NULL);

ALTER TABLE DEPENDENT ADD PRIMARY KEY (dependentname,essn);

CREATE TABLE EMPLOYEE (ssn NUMBER(9) NOT NULL ,superssn NUMBER(9) NULL, fname
VARCHAR2(20) NULL, minit CHAR NULL, lname VARCHAR2(20) NOT NULL ,
address VARCHAR2(50) NULL, bdate DATE NULL, salary NUMBER(8) NULL, sex CHAR
NULL, dno INTEGER NULL);

ALTER TABLE EMPLOYEE ADD PRIMARY KEY (ssn);

CREATE TABLE EMPLOYEE_PROJECT(ssn NUMBER(9) NOT NULL, pnumber INTEGER NOT
NULL, hours NUMBER(3) NULL);

ALTER TABLE EMPLOYEE_PROJECT ADD PRIMARY KEY (ssn,pnumber);

CREATE TABLE LOCATIONS(dlocation VARCHAR2(20) NOT NULL);

ALTER TABLE LOCATIONS ADD PRIMARY KEY (dlocation);

CREATE TABLE EMPLOYEE_PROJECT (ssn NUMBER(9) NOT NULL , pnumber INTEGER NOT
NULL , hours NUMBER(3) NULL);

ALTER TABLE EMPLOYEE_PROJECT ADD PRIMARY KEY (ssn,pnumber);

CREATE TABLE LOCATIONS(dlocation VARCHAR2(20) NOT NULL);

ALTER TABLE LOCATIONS ADD PRIMARY KEY (dlocation);

CREATE TABLE PROJECT(pnumber INTEGER NOT NULL , pname VARCHAR2(20) NULL ,
plocation VARCHAR2(20) NULL , dnum INTEGER NULL);

ALTER TABLE PROJECT ADD PRIMARY KEY (pnumber);

ALTER TABLE DEPARTMENT ADD ( FOREIGN KEY (mgrssn) REFERENCES EMPLOYEE(ssn) ON
DELETE SET NULL);

ALTER TABLE DEPARTMENT_LOCATIONS ADD ( FOREIGN KEY (dnumber) REFERENCES
DEPARTMENT(dnumber));

ALTER TABLE DEPARTMENT_LOCATIONS ADD ( FOREIGN KEY (dlocation) REFERENCES
LOCATIONS(dlocation));

ALTER TABLE DEPENDENT ADD ( FOREIGN KEY (essn) REFERENCES EMPLOYEE(ssn));
```

```
ALTER TABLE EMPLOYEE ADD ( FOREIGN KEY (superssn) REFERENCES EMPLOYEE(ssn) ON
DELETE SET NULL);

ALTER TABLE EMPLOYEE ADD ( FOREIGN KEY (dno) REFERENCES DEPARTMENT(dnumber)
ON DELETE SET NULL);

ALTER TABLE EMPLOYEE_PROJECT ADD ( FOREIGN KEY (ssn) REFERENCES
EMPLOYEE(ssn));

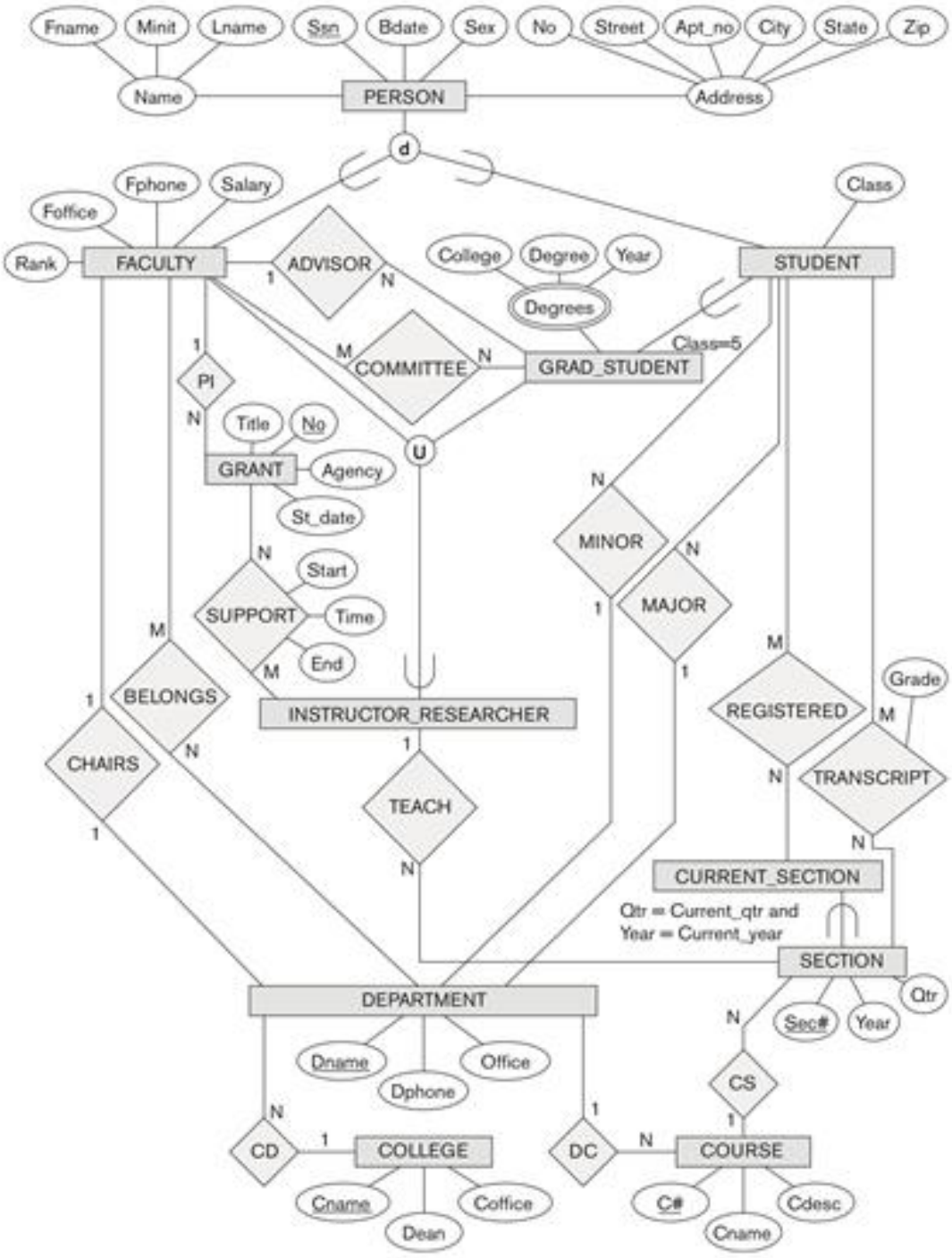
ALTER TABLE EMPLOYEE_PROJECT ADD ( FOREIGN KEY (pnumber) REFERENCES
PROJECT(pnumber));

ALTER TABLE PROJECT ADD ( FOREIGN KEY (dnum) REFERENCES DEPARTMENT(dnumber)
ON DELETE SET NULL);
```

ER Modeling and database schema Problems

1. Consider the *university* database described in Elmasri/Navathe text (Fig 4.9). Enter the ER schema for this database using a data-modeling tool.

   Note: Look at the example solution; you are producing a diagram similar to that, not this. This is an EER diagram to describe the University database.



2. Consider the ER diagram for the small airport database shown in Elmasri/Navathe text (Fig 4.12). Enter this design using a dat.a-modeling tool.

   Note: Look at the example solution; you are producing a diagram similar to that, not this. This is an EER diagram to describe the University database.