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3.2,4-7, 12, 15, 16
Hw 2

3.2) There are 22 distinct tuples if the cardinality is 22.

3.4) Primary key is a selected key from the set of candidate keys which uniquely identifies tuples. A super key is a set of attributes that contains one or more candidate keys

3.5) 1) name or age alone could not be a candidate key.

2) Sid appears to be a valid candidate key but we can't be sure from just this instance. However, we could take all the attributes and that would be a garunteed candidate or super key.

3.6) foreign key means that an attribute resides in another table as a key. This is important to make sure we are refering to the correct data from the foreign table. Referential integrity means that certain foreign key constrains are enforced to protect the data.

3.7) 1) In Enrolled, Sid and cid should have foreign key constraints.

In Teaches, fid and cid should have foreign key constraints.

In "Meets_In" cid and rno should have foreign key constraints.

2) You could add domain Constraints to keep the data within certain expected ranges.

3.12) Create table Professor_teaches (
SSN Char (10),
CourseId Integer,
Semester VarChar (10),
Primary Key (SSN),
Foreign key (CourseId)
references Course)

Merge teaches
and professor
into one
table

Create table Course (courseId Integer,
Primary key (courseId))

3.15) Create Table Musicians (ssn varchar (10),
name Char (30),
Primary key (ssn))

Create Table Instruments (instrId varchar (10),
dname varChar (30),
key Char (5),
Primary key (instrId))

Create Table Plays (ssn varchar (10),
instr Id Integer,
Primary key (ssn, instrId),
Foreign key (ssn) references Musicians,
Foreign key (instrId) references Instruments)

Create Table Songs Appears (songId Integer,
author varChar (30),
title varchar (30),
album Identifier Integer Not Null,
Primary key (SongId),
Foreign key (album Identifier)
references Album Producer,

Create Table Telephone - Home (phone varchar (4)
address varchar (30)
Primary key (phone)
foreign key (address) references Place)

```
Create Table Lives ( ssn varchar(10),
                      phone varchar(11),
                      address varchar(30),
                      Primary key (ssn, address),
                      Foreign key (phone, address)
                      references Telephone_Home,
                      Foreign key (ssn) references
                      musicians)

Create Table    Place ( address Varchar(30))

Create Table Perform ( SongId Integer,
                        ssn    varchar(10),
                        Primary key (ssn, SongId),
                        Foreign key (Song Id)
                        references Songs,
                        Foreign key (ssn) references
                        musicians)

Create Table Album_Producer ( ssn varchar(10),
                              album Identifier Integer,
                              Copyright Date    Date,
                              speed             Integer,
                              title             varchar(30),
                              Primary key (album Identifier),
                              Foreign key (ssn) references
                              Musicians)
```

3.16) Create Table Expert(ssn Varchar(11),
        Model_no Integer,
        Primary key (ssn, Model_no)
        Foreign Key (ssn) references Technician,
        Foreign Key (model_no) references Models)

Create Table Models (Model_no Integer,
        Capacity Integer,
        weight Integer,
        Primary Key (Model_no)

Create Table Employee (ssn Varchar(11),
        union_man_no Integer,
        Primary Key (ssn),

Create Table Technician_emp (ssn Varchar(11),
        name Varchar(30),
        address Varchar(30),
        phone_no Varchar(14),
        Primary Key (ssn),
        Foreign key (ssn) references employee
        on delete Cascade)

Create Table Plane_Type (reg_no Integer,
        model_no Integer,
        Primary Key (reg_no),
        Foreign key (model_no) references Models

```sql
Create Table Test_info ( FAA_no Integer,
        ssu VarChar(4),
        reg_no Integer,
        hours Integer,
        date Date,
        Score Integer,
        Primary key ( ssu, reg_no FAA_no),
        Foreign key (reg_no) references Plane-Type,
        Foreign key (FAA_no) references test,
        Foreign key (ssu) references Employees)

Create Table Traffic-Control-emp ( ssn VarChar(11),
        exam_date Date,
        Primary key (ssn),
        Foreign Key (ssn) references Employees
        on Delete Cascade)
```

- Can add a check to Test_info
  to add a constraint for expert only
  tests

- Expert participation can't be expressed
as a constraint in the