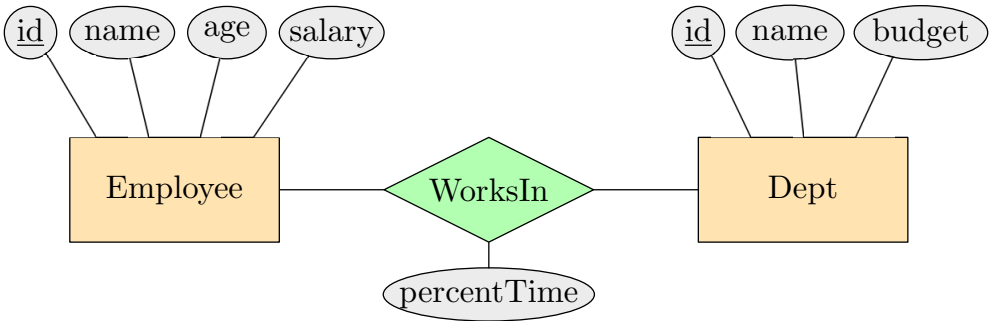
CS 336 Homework 2

1. Write SQL statements to create the relevant tables described by the following ER diagram. Your statements should specify an appropriate data type for each field and include key constraints.



   (The `percentTime` attribute reflects how an employee's time is split between departments if they work in more than one department.)

2. Consider the following schema:

   Suppliers(<u>id</u>, name, address)

   Parts(<u>id</u>, name, color)

   Catalog(<u>sid</u>, <u>pid</u>, cost)

   where underlined field(s) are the primary key for each relation, `sid` is a supplier ID, and `pid` is a part ID. For example, Toshiba (supplier) may produce red battery cases (part) at $1.15 each (cost).

   Write the following queries in SQL. You should not have duplicate values in your results.

   (a) Find the names of suppliers who supply at least one red part.

   (b) Find the IDs of suppliers who supply at least one red part or are located at 123 College Ave.

   (c) Find the IDs of suppliers who supply all red or green parts (i.e., if a part is red or green, that supplier will have it).

   (d) Find the IDs of suppliers who supply all red parts or all green parts (i.e., if a part is red, then an all-red supplier will have it, and similarly for green).

   (e) Find the ID(s) of the most expensive part(s) supplied by Toshiba (there may be multiple parts with the same such price).

3. Consider the following schema:

   Students(<u>id</u>, name, major, level, age)

   Classes(<u>name</u>, startTime, room, pid)

   Takes(<u>sid</u>, <u>cname</u>)

   Profs(<u>id</u>, name, dept)

   Notes:

   - Underlined field(s) are the primary key for each relation.
   - `level` in Students is one of 'FR', 'SO', 'JR', or 'SR', representing what year the student is (freshman, sophomore, junior, or senior).
   - `pid` in Classes is the id of the professor teaching that course.
   - `sid` and `cname` in Takes are the student ID and course name, respectively.

   Write the following queries in SQL. You should not have duplicate values in your results.

   (a) Find the names of all juniors taking a class taught by Marie Curie.

   (b) Find the names of courses either held in Tillett 232 or with at least 5 students enrolled.

   (c) Find the names of professors who teach in every room in which some class is taught.

   (d) For each level, list the level itself and the average age of students for that level.

   (e) For each professor who has taught *only* in Tillett 232, list the professor's name and the total number of classes they've taught.