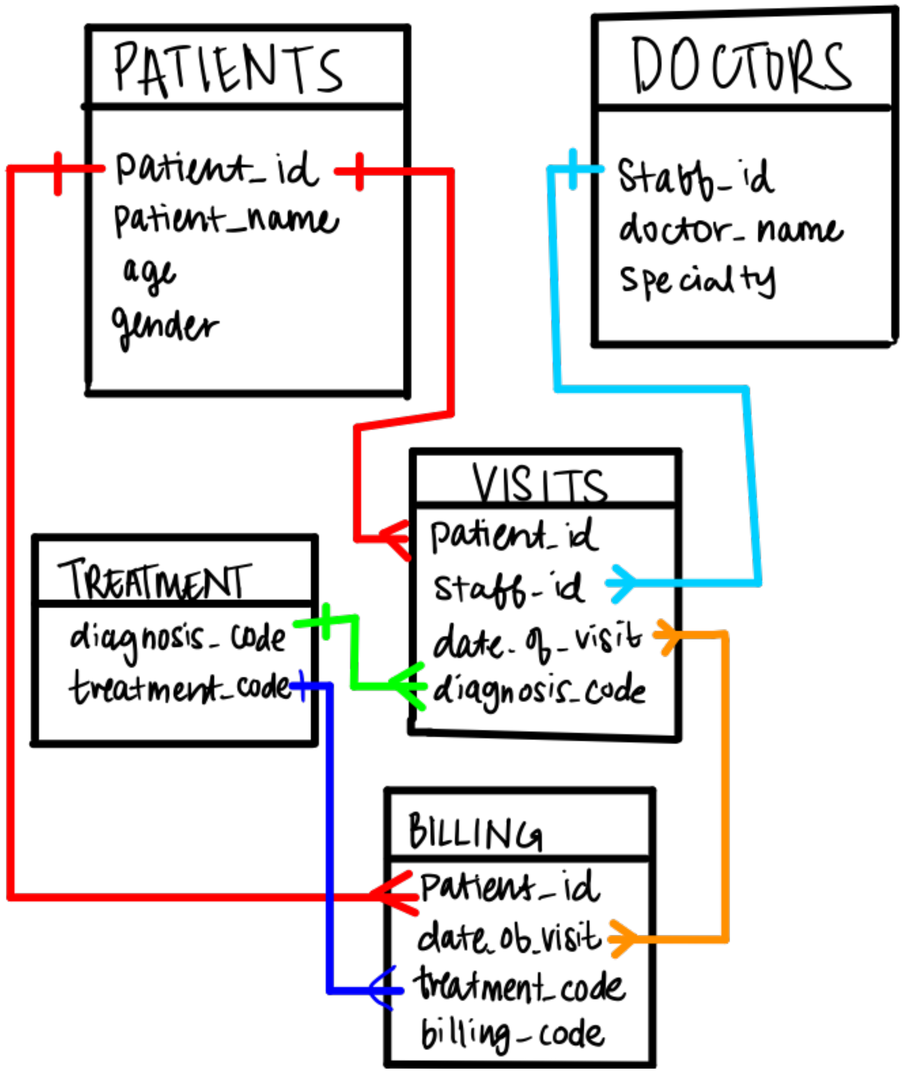
Homework 5

EPPS 6354

Olivia Wilson-Pietrzak

2. Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors.
Associate with each patient a log of the various tests and examinations conducted.`



Question 3

We can convert any weak entity set to a strong entity set by simply adding appropriate attributes.
Why, then, do we have weak entity sets?

- Weak entities allow us to avoid data duplication.
    - If we could use a weak entity to create a relation rather than duplicating data between two tables, it provides fewer places for inconsistencies to enter the db.
- Weak entities can be deleted easily if the strong entity associated with it becomes unnecessary.

Question 4A

Consider the employee database

employee (*ID*, *person_name*, *street*, *city*)
works (*ID*, *company_name*, *salary*)
company (*company_name*, *city*)
manages (*ID*, *manager_id*)

where the primary keys are underlined. Give an expression in SQL for each of the following queries. (*Hint: use from employee as e, works as w, company as c, manages as m*)

i. Find ID and name of each employee who lives in the same city as the location of the company for which the employee works.
ii. Find ID and name of each employee who lives in the same city and on the same street as does her or his manager.
iii. Find ID and name of each employee who earns more than the average salary of all employees of her or his company.

4.a.i

Find ID and name of each employee who lives in the same city as the location of the company for which the employee works

```
Select distinct
  e.id
  , e.name

From employee e
left join works w on e.id = w.id

inner join company c on w.company_name = c.company_name
                    and
                     e.city = c.city
```

4.a.ii

Find ID and name of each employee who lives in the same city and on the same street as does her or his manager.

```
Select distinct
    employee_list.ID
   ,employee_list.name

from
  (Select distinct
      e.*
   from employee
   inner join manages m
              on
              e.id <> m.id
   ) as employee_list

  inner join
     (select distinct
        e.*
      from employee e
       inner join manages m
                  on
                  e.id = m.id
      )as manager_list
      on
      employee_list.city = manager_list.city
      and
      employee_list.street = manager_list.street
```

4.a.iii

Find ID and name of each employee who earns more than the average salary of all
employees of her or his company.

```
Select distinct
  w.id
  , e.name
from works w
 inner join
    (Select
       avg(salary) avg-salary
      , company-name
    from
       works w
     group by company-name
     ) avg-sal
     on
    w.company-name = avg-sal.company-name
       w.salary > avg-sal
  left join
    employee e
    on
    w.id = e.id
```

4b

b) Consider the following SQL query that seeks to find a list of titles of all courses taught in Spring 2017 along with the name of the instructor.

```
select name, title
from instructor natural join teaches natural join section natural join course
where semester = 'Spring' and year = 2017
```

What is wrong with this query? (Hint: check book website)

- We aren't specifying a particular way to join the tables with an ON statement.
- If we have multiple columns that are the same in tables we are trying to join, this could cause a problem— they may not join in the way we want.
- A better solution would be to specify how we want the tables to join with an ON statement.