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5F2 PES1UG19CS380

DBMS LAB

Week #3

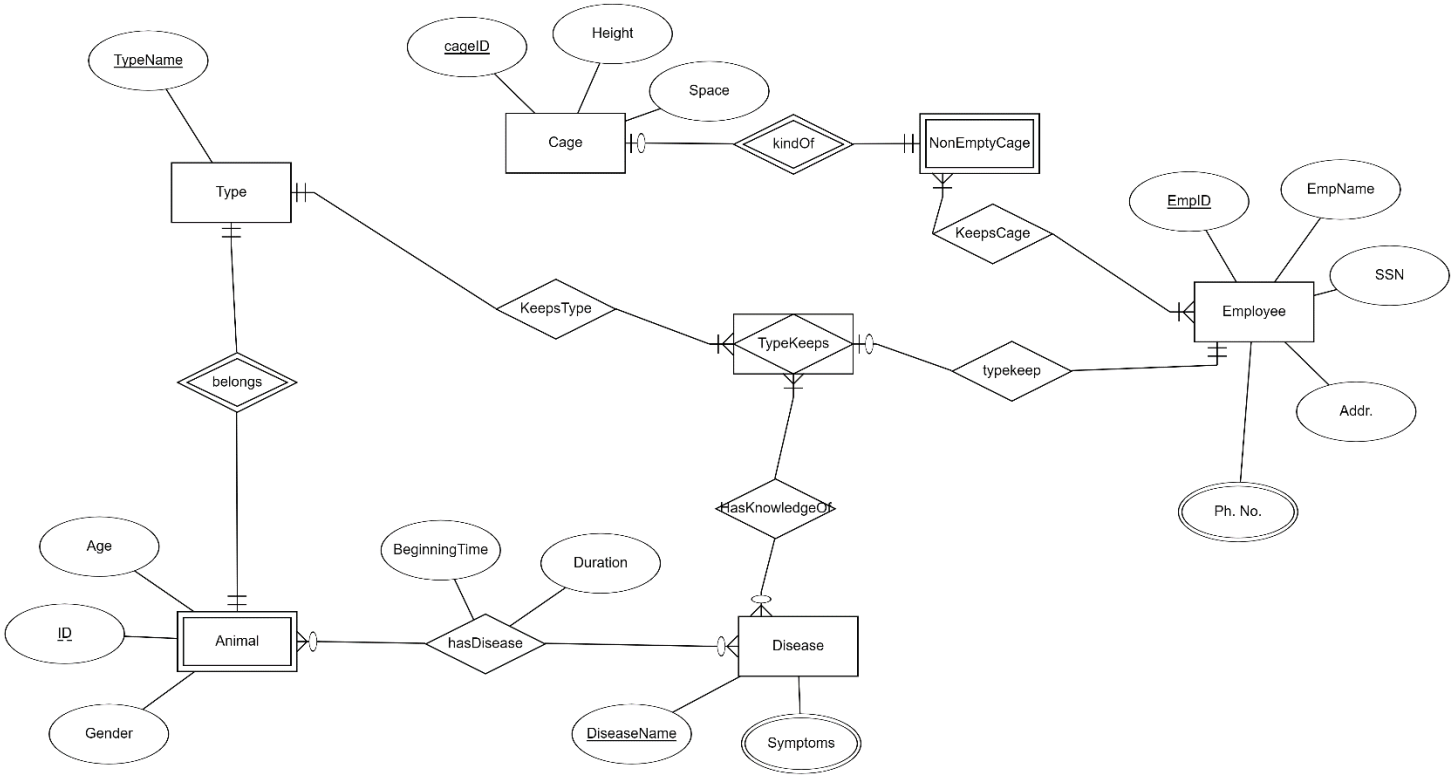
Draw ER Diagram for the following: 10 marks

The Bannerghatta Biological Zoo has many types of animals. Every type has a unique name. Every animal of the same type has a unique animal ID. Animals in two types may have the same animal ID. Animals also have age and gender. Animals may have diseases. The beginning time and the duration of a disease need to be recorded. A disease has a unique name. A type keeper takes care of only one type of animals. Every type may have many type keepers. A type keeper may or may not be familiar with diseases. But every disease must be handled by at least one type keeper. Type keepers have name, employee ID, ssn, address and phone number. All animals are in cages. Some cage may be empty. Every cage has a cage ID, space and height. A cage keeper may take care of many cages. Every non-empty cage must have at least one cage keeper. Empty cages don't need any cage keepers. Cage keepers have name, employee ID, ssn, address and phone number.

Ans:

Assumptions:

- Animal is a weak entity
- TypeKeeps is a ternary relationship
- Uses Crow Foot notation
- NonEmptyCage is a weak entity
- Type keepers take care of only one type. It is a function and total participate.
- All non-empty cages must have at least one cage keeper. It is a total participate.



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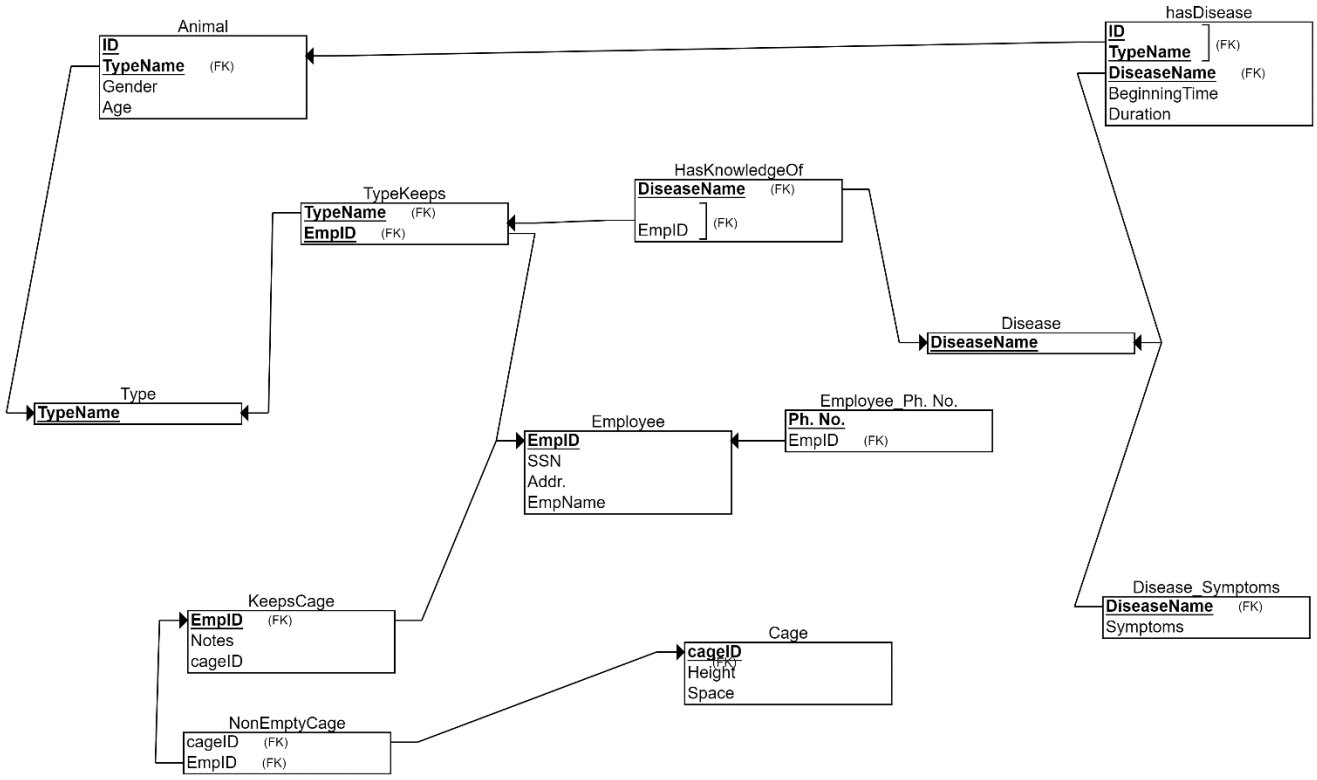
Convert the ER diagram of zoo into Relational table 10 marks



Write create statements for following considering constraints appropriately. Insert 5 values suitably 10marks

Ans:

- **Creating tables:**

```
dbmslab3=# create table Doctor(d_id varchar(4), d_name text, d_phone int);
CREATE TABLE
dbmslab3=# \d
        List of relations
 Schema |  Name  | Type  |  Owner
--------+--------+-------+----------
 public | doctor | table | postgres
(1 row)


dbmslab3=# \d doctor
          Table "public.doctor"
 Column  |         Type          | Modifiers
---------+-----------------------+-----------
 d_id    | character varying(4) |
 d_name  | text                  |
 d_phone | integer               |
```

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```
dbmslab3=# create table Patient(p_id varchar(4), p_name text, diagnosis text, age int);
CREATE TABLE
dbmslab3=# create table Medicine(med_id varchar(4), med_name text);
CREATE TABLE
dbmslab3=# create table Prescription(p_id varchar(4), d_id varchar(4), med_id varchar(4), qty int);
CREATE TABLE
dbmslab3=# create table Bed(B_id varchar(4), ward_no int);
CREATE TABLE
dbmslab3=# create table Bed_Patient(p_id varchar(4), B_id varchar(4), in_date varchar(10), out_date varchar(10));
CREATE TABLE
dbmslab3=# \d
           List of relations
 Schema |     Name     | Type  |  Owner
--------+--------------+-------+----------
 public | bed          | table | postgres
 public | bed_patient  | table | postgres
 public | doctor       | table | postgres
 public | medicine     | table | postgres
 public | patient      | table | postgres
 public | prescription | table | postgres
(6 rows)
```

- **Tables:**

```
dbmslab3=# \d Prescription
        Table "public.prescription"
 Column |         Type         | Modifiers
--------+----------------------+-----------
 p_id   | character varying(4) |
 d_id   | character varying(4) |
 med_id | character varying(4) |
Foreign-key constraints:
    "fk1" FOREIGN KEY (d_id) REFERENCES doctor(d_id)
    "fk11" FOREIGN KEY (med_id) REFERENCES medicine(med_id)
    "fk2" FOREIGN KEY (p_id) REFERENCES patient(p_id)


dbmslab3=# \d doctor
            Table "public.doctor"
 Column  |         Type          | Modifiers
---------+-----------------------+-----------
 d_id    | character varying(4)  | not null
 d_name  | text                  |
 d_phone | character varying(10) |
Indexes:
    "pk" PRIMARY KEY, btree (d_id)
Referenced by:
    TABLE "prescription" CONSTRAINT "fk1" FOREIGN KEY (d_id) REFERENCES doctor(d_id)


dbmslab3=# \d medicine
           Table "public.medicine"
  Column  |         Type         | Modifiers
----------+----------------------+-----------
 med_id   | character varying(4) | not null
 med_name | text                 |
Indexes:
    "pk3" PRIMARY KEY, btree (med_id)
Referenced by:
    TABLE "prescription" CONSTRAINT "fk11" FOREIGN KEY (med_id) REFERENCES medicine(med_id)
```

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```
dbmslab3=# \d bed
            Table "public.bed"
 Column  |         Type         | Modifiers
---------+----------------------+-----------
 b_id    | character varying(4) | not null
 ward_no | integer              |
Indexes:
    "pk4" PRIMARY KEY, btree (b_id)
Referenced by:
    TABLE "bed_patient" CONSTRAINT "fk4" FOREIGN KEY (b_id) REFERENCES bed(b_id)


dbmslab3=# \d patient
           Table "public.patient"
  Column   |         Type         | Modifiers
-----------+----------------------+-----------
 p_id      | character varying(4) | not null
 p_name    | text                 |
 diagnosis | text                 |
 age       | integer              |
Indexes:
    "pk2" PRIMARY KEY, btree (p_id)
Referenced by:
    TABLE "prescription" CONSTRAINT "fk2" FOREIGN KEY (p_id) REFERENCES patient(p_id)
    TABLE "bed_patient" CONSTRAINT "fk3" FOREIGN KEY (p_id) REFERENCES patient(p_id)


dbmslab3=# \d bed_patient
          Table "public.bed_patient"
  Column  |         Type          | Modifiers
----------+-----------------------+-----------
 p_id     | character varying(4)  |
 b_id     | character varying(4)  |
 in_date  | character varying(10) |
 out_date | character varying(10) |
Foreign-key constraints:
    "fk3" FOREIGN KEY (p_id) REFERENCES patient(p_id)
    "fk4" FOREIGN KEY (b_id) REFERENCES bed(b_id)
```

- **Setting primary and foreign key:**

```
dbmslab3=# alter table doctor add constraint pk PRIMARY KEY(d_id);
ALTER TABLE
dbmslab3=# alter table patient add constraint pk PRIMARY KEY(p_id);
ERROR:  relation "pk" already exists
dbmslab3=# alter table patient add constraint pk2 PRIMARY KEY(p_id);
ALTER TABLE
dbmslab3=# alter table Medicine add constraint pk3 PRIMARY KEY(med_id);
ALTER TABLE
dbmslab3=# alter table bed add constraint pk4 PRIMARY KEY(B_id);
ALTER TABLE
dbmslab3=# alter table Prescription add constraint fk1 FOREIGN KEY(d_id) reference doctor(d_id);
ERROR:  syntax error at or near "reference"
LINE 1: ...Prescription add constraint fk1 FOREIGN KEY(d_id) reference ...
                                                             ^
dbmslab3=# alter table Prescription add constraint fk1 FOREIGN KEY(d_id) references doctor(d_id);
ALTER TABLE
dbmslab3=# alter table Prescription add constraint fk2 FOREIGN KEY(p_id) references patient(p_id);
ALTER TABLE
dbmslab3=# alter table Bed_Patient add constraint fk3 FOREIGN KEY(p_id) references patient(p_id);
ALTER TABLE
dbmslab3=# alter table Bed_Patient add constraint fk4 FOREIGN KEY(B_id) references patient(B_id);
ERROR:  column "b_id" referenced in foreign key constraint does not exist
dbmslab3=# alter table Bed_Patient add constraint fk4 FOREIGN KEY(B_id) references bed(B_id);
ALTER TABLE
dbmslab3=# \d
           List of relations
 Schema |     Name     | Type  |  Owner
--------+--------------+-------+----------
 public | bed          | table | postgres
 public | bed_patient  | table | postgres
 public | doctor       | table | postgres
 public | medicine     | table | postgres
 public | patient      | table | postgres
 public | prescription | table | postgres
(6 rows)
```

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- **Inserting values:**

```
dbmslab3=# alter table doctor alter column d_phone type varchar(10);;
ALTER TABLE
dbmslab3=# insert into doctor values('dr01','Dr. ABC', '9021002991');
INSERT 0 1
dbmslab3=# \d doctor
           Table "public.doctor"
 Column  |         Type          | Modifiers
---------+-----------------------+-----------
 d_id    | character varying(4)  | not null
 d_name  | text                  |
 d_phone | character varying(10) |
Indexes:
    "pk" PRIMARY KEY, btree (d_id)
Referenced by:
    TABLE "prescription" CONSTRAINT "fk1" FOREIGN KEY (d_id) REFERENCES doctor(d_id)


dbmslab3=# \d
           List of relations
 Schema |     Name     | Type  |  Owner
--------+--------------+-------+----------
 public | bed          | table | postgres
 public | bed_patient  | table | postgres
 public | doctor       | table | postgres
 public | medicine     | table | postgres
 public | patient      | table | postgres
 public | prescription | table | postgres
(6 rows)


dbmslab3=# table doctor
dbmslab3-# table doctor;
ERROR:  syntax error at or near "table"
LINE 2: table doctor;
        ^
dbmslab3=# table doctor;
 d_id | d_name  |  d_phone
------+---------+------------
 dr01 | Dr. ABC | 9021002991
(1 row)


dbmslab3=# insert into doctor values('dr02','Dr. DEF', '7011548672');
INSERT 0 1
```

```
dbmslab3=# insert into prescription values('pt01','dr01', 'md03');
INSERT 0 1
dbmslab3=# insert into prescription values('pt02','dr01', 'md03');
INSERT 0 1
dbmslab3=# insert into prescription values('pt02','dr01', 'md04');
INSERT 0 1
dbmslab3=# insert into prescription values('pt04','dr05', 'md02');
INSERT 0 1
dbmslab3=# insert into prescription values('pt03','dr05', 'md02');
INSERT 0 1
dbmslab3=# insert into bed_patient values('pt03','bd01', '01-02-2012','05-02-2012');
INSERT 0 1
dbmslab3=# insert into bed_patient values('pt01','bd02', '05-09-2012','05-09-2012');
INSERT 0 1
dbmslab3=# insert into bed_patient values('pt04','bd03', '05-09-2012','09-09-2012');
INSERT 0 1
dbmslab3=# insert into bed_patient values('pt04','bd04', '05-10-2012','09-10-2012');
INSERT 0 1
dbmslab3=# insert into bed_patient values('pt01','bd05', '05-10-2012','19-10-2012');
INSERT 0 1
```

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```
DETAIL:  Key (d_id)=(dr02) already exists.
dbmslab3=# insert into doctor values('dr03','Dr. GEH', '7011548778');
INSERT 0 1
dbmslab3=# insert into doctor values('dr04','Dr. HGH', '7111548778');
INSERT 0 1
dbmslab3=# insert into doctor values('dr05','Dr. PHGH', '71311548778');
ERROR:  value too long for type character varying(10)
dbmslab3=# insert into doctor values('dr05','Dr. PHGH', '7131154877');
INSERT 0 1
dbmslab3=# insert into Patient values('pt01','Mr. PHGH', 'Pneumonia', 10);
INSERT 0 1
dbmslab3=# insert into Patient values('pt02','Mr. PPPH', 'Covid', 39);
INSERT 0 1
dbmslab3=# insert into Patient values('pt03','Mr. SSH', 'Diabetes', 49);
INSERT 0 1
dbmslab3=# insert into Patient values('pt04','Mr. SPPLH', 'NA', 48);
INSERT 0 1
dbmslab3=# insert into Patient values('pt05','Mrs. SPPL', 'NA', 78);
INSERT 0 1
dbmslab3=# insert into Medicine values('md01', 'PlkSP-520');
INSERT 0 1
dbmslab3=# insert into Medicine values('md02', 'PLLP');
INSERT 0 1
dbmslab3=# insert into Medicine values('md03', 'PLLP#44');
INSERT 0 1
dbmslab3=# insert into Medicine values('md04', 'LLGP-234');
INSERT 0 1
dbmslab3=# insert into Medicine values('md05', 'LGP-440');
INSERT 0 1
dbmslab3=# insert into Bed values('bd01',1);
INSERT 0 1
dbmslab3=# insert into Bed values('bd02',1);
INSERT 0 1
dbmslab3=# insert into Bed values('bd03',2);
INSERT 0 1
dbmslab3=# insert into Bed values('bd04',2);
INSERT 0 1
dbmslab3=# insert into Bed values('bd05',3);
INSERT 0 1
dbmslab3=# \d Prescription
```

- **Values:**

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```
dbmslab3=# table doctor
dbmslab3-# ;
 d_id |  d_name  |  d_phone
------+----------+------------
 dr01 | Dr. ABC  | 9021002991
 dr02 | Dr. DEF  | 7011548672
 dr03 | Dr. GEH  | 7011548778
 dr04 | Dr. HGH  | 7111548778
 dr05 | Dr. PHGH | 7131154877
(5 rows)


dbmslab3=# table patient;
 p_id |  p_name   | diagnosis | age
------+-----------+-----------+-----
 pt01 | Mr. PHGH  | Pneumonia |  10
 pt02 | Mr. PPPH  | Covid     |  39
 pt03 | Mr. SSH   | Diabetes  |  49
 pt04 | Mr. SPPLH | NA        |  48
 pt05 | Mrs. SPPL | NA        |  78
(5 rows)


dbmslab3=# table medicine;
 med_id | med_name
--------+-----------
 md01   | PlkSP-520
 md02   | PLLP
 md03   | PLLP#44
 md04   | LLGP-234
 md05   | LGP-440
(5 rows)


dbmslab3=# table prescription;
 p_id | d_id | med_id
------+------+--------
 pt01 | dr01 | md03
 pt02 | dr01 | md03
 pt02 | dr01 | md04
 pt04 | dr05 | md02
 pt03 | dr05 | md02
(5 rows)

dbmslab3=# table bed;
 b_id | ward_no
------+---------
 bd01 |       1
 bd02 |       1
 bd03 |       2
 bd04 |       2
 bd05 |       3
(5 rows)


dbmslab3=# table bed_patient;
 p_id | b_id |  in_date   |  out_date
------+------+------------+------------
 pt03 | bd01 | 01-02-2012 | 05-02-2012
 pt01 | bd02 | 05-09-2012 | 05-09-2012
 pt04 | bd03 | 05-09-2012 | 09-09-2012
 pt04 | bd04 | 05-10-2012 | 09-10-2012
 pt01 | bd05 | 05-10-2012 | 19-10-2012
(5 rows)


dbmslab3=#
```

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