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Normalization 2

1.

Persons
PK	pid
	first_name
	last_name
	address

Actors
PK	aid
	birth_date
	hair_color
	eye_color
	height_inches
	weight_lbs
	sag_anniversary

Directors
PK	did
	dg_anniversary
	film_school_attended

actors_movies
PK, FK	aid
PK, FK	mid

directors_movies
PK, FK	did
PK, FK	mid

Movies
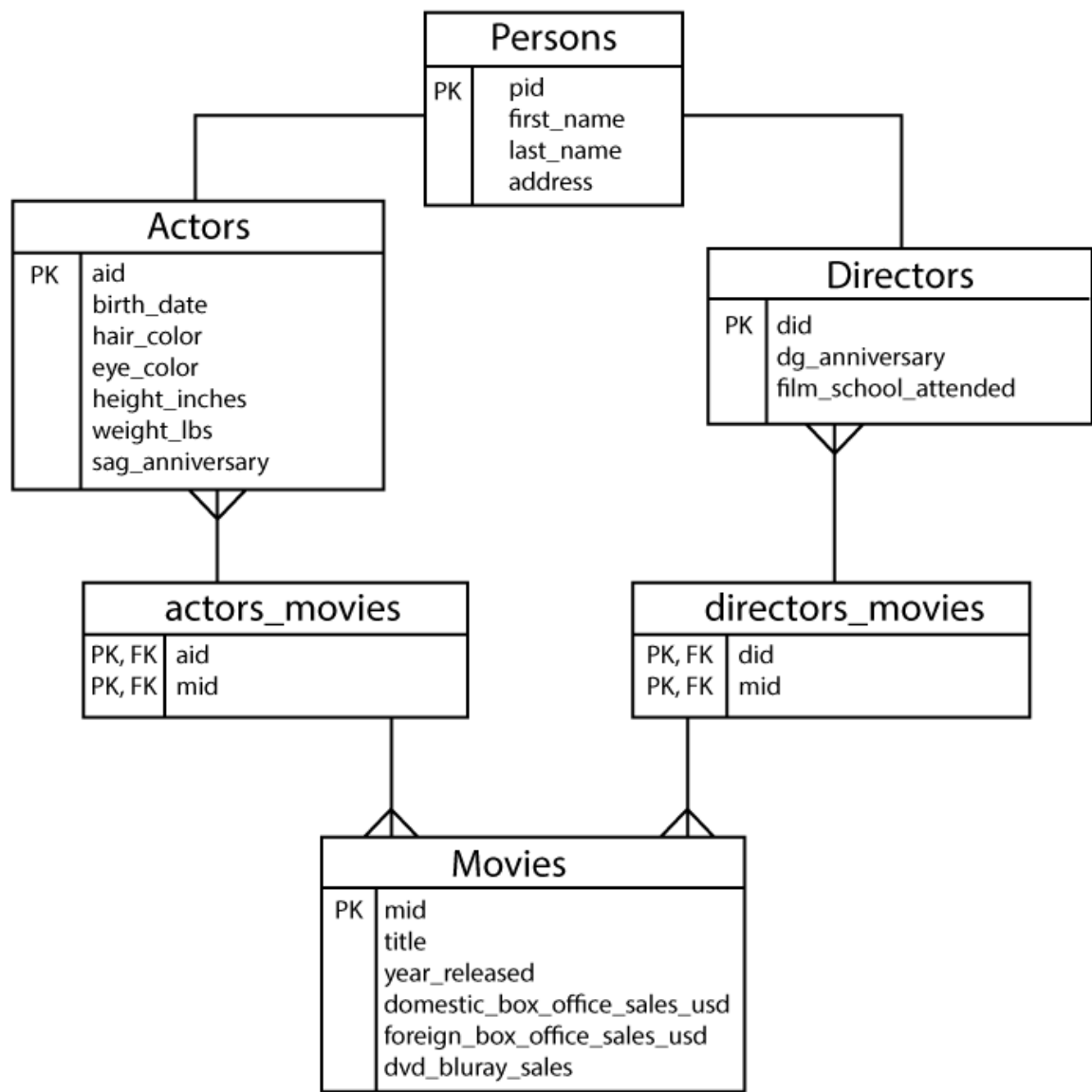| PK	mid
	title
	year_released
	domestic_box_office_sales_usd
	foreign_box_office_sales_usd
	dvd_bluray_sales

2.

```sql
DROP TABLE if exists Directors_Movies;
DROP TABLE if exists Actors_Movies;
DROP TABLE if exists Movies;
DROP TABLE if exists Directors;
DROP TABLE if exists Actors;
DROP TABLE if exists Persons;

CREATE TABLE Persons (
     pid        serial not null,
     first_name char(30) not null,
     last_name  char(30) not null,
     address    char(80),
primary key(pid)
);

CREATE TABLE Actors (
     aid             int not null references Persons(pid),
     birth_date      char(20) not null,
     eye_color       char(20),
     hair_color      char(20),
     height_inches   int,
     weight_lbs      int,
     sag_anniversary date,

primary key(aid)
);

CREATE TABLE Directors (
     did                 int not null references Persons(pid),
     film_school_attended  char(30),
     dg_anniversary        date,

     primary key(did)
);

CREATE TABLE Movies (
     mid             serial not null,
     title           char(50),
     year_released   int,
     domestic_box_office_sales_usd    int,
     foreign_box_office_sales_usd     int,
     dvd_bluray_sales                 int,
 primary key(mid)
);
```

```sql
CREATE TABLE Actors_Movies (
      aid int not null references Actors(aid),
      mid int not null references Movies(mid),

      primary key(aid, mid)
);

CREATE TABLE Directors_Movies (
      did int not null references Directors(did),
      mid int not null references Movies(mid),

      primary key(did,mid)
);

insert into Persons (first_name, last_Name, address)
      values ('Sean', 'Connery', '2000 Star Avenue, Los Angeles, CA');
insert into Persons (first_name, last_Name, address)
      values ('Sandy ', 'Cheeks', '201 Ocean Ave, Dallas, TX');
insert into Persons (first_name, last_Name, address)
      values ('Squidward', 'Tennisballs', '155 Beach St, Bikini Bottom,
TX');
insert into Persons (first_name, last_Name, address)
      values ('Tom', 'Hanks', '1994 Gump Street, Santa Monica, CA');

SELECT * FROM Persons;

-- Actors --
insert into Actors (aid, birth_date, hair_color, eye_color, height_inches,
weight_lbs, sag_anniversary)
      values (1, '8/25/1930', 'brown', 'green', 74, 180, '5/21/2007');
insert into Actors (aid, birth_date, hair_color, eye_color, height_inches,
weight_lbs, sag_anniversary)
      values (2, '5/1/1937', 'brown', 'blue', 70, 175, '11/15/2005');

SELECT * FROM Actors;




-- Directors --
insert into Directors (did, film_school_attended, dg_anniversary)
      values (3, 'American Film Institute', '11/24/1962');
insert into Directors (did, film_school_attended, dg_anniversary)
      values (4, 'Wesleyan University', '5/30/1840');
```

```
SELECT * FROM Directors;

insert into Movies (title, year_released, domestic_box_office_sales_usd,
foreign_box_office_sales_usd, dvd_bluray_sales)
    values ('Forrest Gump', 1994, 64000000, 15000000, 8675309);
insert into Movies (title, year_released, domestic_box_office_sales_usd,
foreign_box_office_sales_usd, dvd_bluray_sales)
values ('Dr. No', 1962, 31000000, 18000000, 8675301);

SELECT * FROM Movies;

insert into Actors_Movies (aid, mid) values (1, 1);
insert into Actors_Movies (aid, mid) values (1, 2);
insert into Actors_Movies (aid, mid) values (2, 2);
SELECT * FROM Actors_Movies;

insert into Directors_Movies (did, mid) values (3, 1);
insert into Directors_Movies (did, mid) values (4, 2);
SELECT * FROM Directors_Movies;
```

3. Functional dependencies

pid → first_name
pid → last_name
pid → address
aid → birth_date
aid → hair_color
aid → eye_color
aid → height_inches
aid → weight_lbs
aid → sag_anniversary
did → film_school_attended
did → dg_anniversary
mid → title
mid → year_released
mid → domestic_box_office_sales_usd
mid → foreign_box_office_sales_usd
mid → dvd_bluray_sales

5.

```sql
SELECT distinct p.first_name, p.last_name
FROM Directors d, Directors_Movies dm, Persons p
WHERE d.did = p.pid
AND d.did = dm.did
AND dm.mid in
      (SELECT distinct am.mid
      FROM Actors a, Actors_Movies am, Persons p, Movies m
      WHERE a.aid = p.pid
      AND p.first_name = 'Sean'
      AND p.last_name = 'Connery'
      AND am.aid = a.aid
      AND am.mid = m.mid);
```