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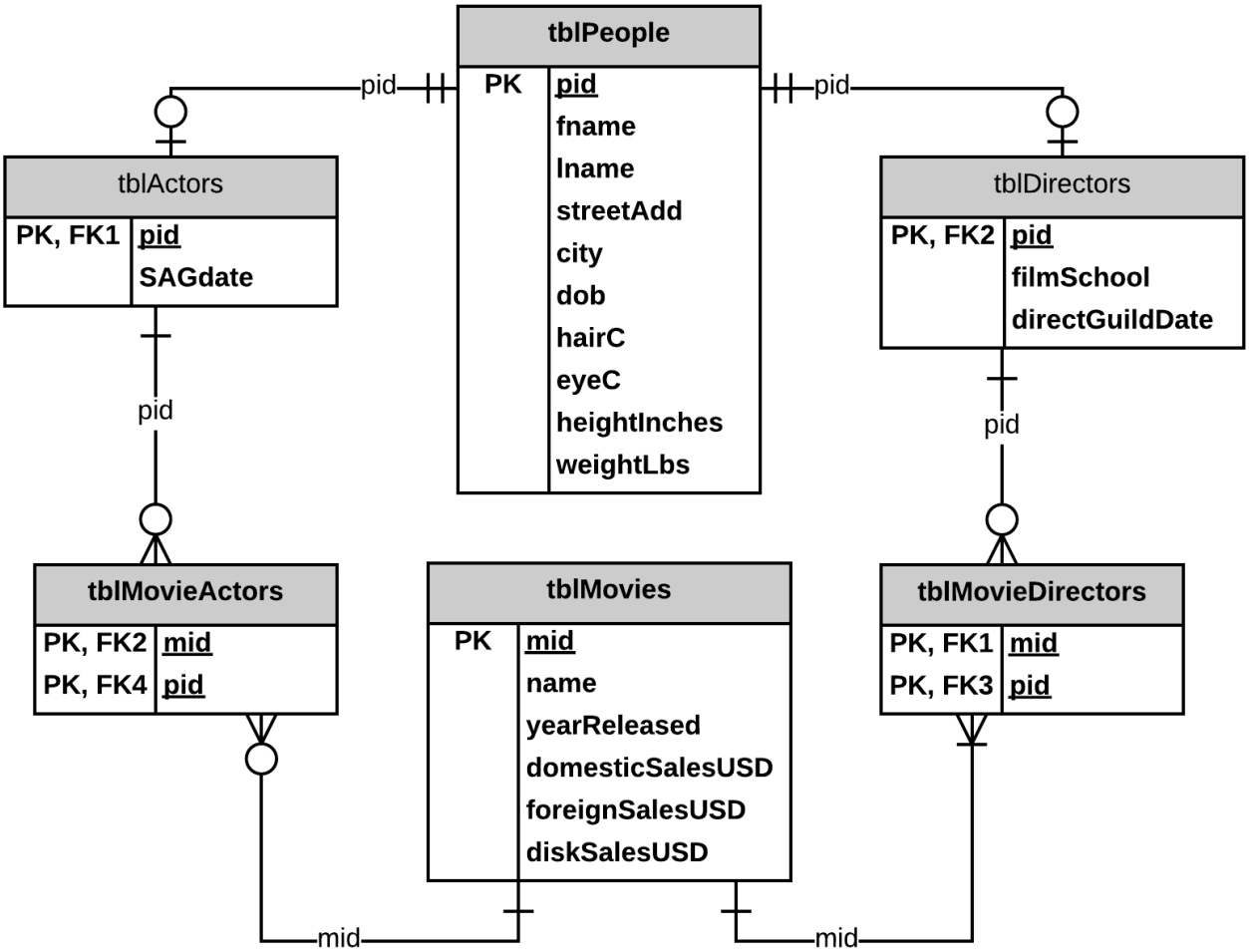
Lab 8 Normalization

1. **E/R DIAGRAM**



2. **SQL CREATE STATEMENTS**

```
-- People --
CREATE TABLE people (
  pid            char(4) not null unique,
  fName          text,
  lName          text,
  streetAdd      text,
  city           text,
  dob            date,
  hairC          text,
  eyeC           text,
  heightInches   integer,
  weightLbs      integer,
 primary key(pid)
);


-- Actors --
CREATE TABLE actors (
  pid              char(4) not null references people(pid),
  SAGdate          date,
 primary key(pid),
 foreign key(pid) references people(pid)
);


-- Directors --
CREATE TABLE directors (
  pid             char(4) not null references people(pid),
  filmSchool      text,
  directGuildDate date,
 primary key(pid),
 foreign key(pid) references people(pid)
);


-- Movies --
CREATE TABLE movies (
  mid              char(4) not null,
  name             text,
  yearReleased     integer,
  domesticSalesUSD numeric(12,2),
  foreignSalesUSD  numeric(12,2),
  diskSalesUSD     numeric(12,2),
 primary key(mid)
);

-- This table establishes the associative entity between movies and
actors --
-- MovieActors --
CREATE TABLE movieActors (
  mid    char(4) not null references movies(mid),
  pid    char(4) not null references people(pid),
 primary key(mid, pid),
 foreign key(mid) references movies(mid),
 foreign key(pid) references people(pid)
);
```

```
-- This table establishes the associative entity between movies and
directors --
-- MovieDirectors --
CREATE TABLE movieDirectors (
  mid    char(4) not null references movies(mid),
  pid    char(4) not null references people(pid),
 primary key(mid, pid),
 foreign key(mid) references movies(mid),
 foreign key(pid) references people(pid)
);
```

## 3. SQL INSERT STATEMENTS

```
-- People --
INSERT INTO people( pid, fname, lname, streetAdd, city, dob, hairC,
eyeC, heightInches, weightLbs )
  VALUES( 'p001', 'Sean', 'Connery', '007 Agent Lane', 'London', '1945-
03-05', 'white', 'blue', 72, 175 ),
        ( 'p002', 'Ewan', 'McGregor', '66 Scag Way', 'Glasgow', '1970-
05-22', 'brown', 'blue', 69, 150 ),
        ( 'p003', 'Quentin', 'Tarantino', '77 Honey Bunny Circle', 'Los
Angeles', '1972-06-11', 'brown', 'brown', 74, 140 ),
        ( 'p004', 'Clint', 'Eastwood', '101 Lucky Punk Road', 'El
Paso', '1950-07-11', 'white', 'green', 74, 158 ),
        ( 'p005', 'Mel', 'Gibson', '21 Passion street', 'Los Angeles',
'1962-10-20', 'brown', 'green', 67, 140 ),
        ( 'p006', 'Steven', 'Spielberg', '34 Coconut Drive',
'Sarasota', '1955-03-04', 'brown', 'green', 70, 168 ),
        ( 'p007', 'Michael', 'Bay', '12 Explosions Avenue',
'Hollywood', '1978-11-08', 'brown', 'blue', 69, 155 );

-- Actors --
INSERT INTO actors( pid, SAGdate )
  VALUES( 'p001', '2001-05-22' ),
        ( 'p002', '2006-07-11' ),
        ( 'p003', '2011-02-06' ),
        ( 'p004', '1988-05-04' ),
        ( 'p005', '2000-11-12' );

-- Directors --
INSERT INTO directors( pid, filmSchool, directGuildDate )
  VALUES( 'p003', 'Tisch', '2001-07-06' ),
        ( 'p004', 'Juliard', '2005-09-22' ),
        ( 'p005', 'SVA', '2008-02-17' ),
        ( 'p006', 'Chicago', '1988-04-10' ),
        ( 'p007', 'Ringling', '2004-11-10' );
-- Movies --
INSERT INTO movies( mid, name, yearReleased, domesticSalesUSD,
foreignSalesUSD, diskSalesUSD )
  VALUES( 'm001', 'The Revengening', 2013, 35.00, 85.00, 20.00 ),
        ( 'm002', '007 REDUX', 2014, 200.00, 500.00, 45.00 ),
        ( 'm003', 'The Hunt for Blue November', 1985, 350000.00,
120000.00, 3.00 ),
        ( 'm004', 'Trainspotting', 1990, 45000000.00, 36000.00,
1034555.00 ),
        ( 'm005', 'Explosions 2', 2015, 0.00, 0.00, 0.00 );
```

```
-- MovieActors --
INSERT INTO movieActors( mid, pid )
  VALUES( 'm001', 'p001' ),
        ( 'm001', 'p002' ),
        ( 'm002', 'p001' ),
        ( 'm002', 'p004' ),
        ( 'm003', 'p001' ),
        ( 'm004', 'p002' ),
        ( 'm005', 'p005' );

-- MovieDirectors --
INSERT INTO movieDirectors( mid, pid )
  VALUES( 'm001', 'p004' ),
        ( 'm002', 'p006' ),
        ( 'm003', 'p005' ),
        ( 'm004', 'p003' ),
        ( 'm005', 'p007' );
```

## 4. FUNCTIONAL DEPENDENCIES

| **People** | **Actors** |
|---|---|
| pid → everything | pid → everything except SAGdate |
| **Directors** | **Movies** |
| pid → everything except filmSchool and directGuildDate | mid → everything |
| **MovieActors** | **MovieDirectors** |
| none | none |

## 5. SQL QUERY

```
WITH MovieCount as (SELECT mid
                    FROM movieActors
                    WHERE pid = (SELECT pid
                                 FROM people
                                 WHERE (fname, lname) = ('Sean',
'Connery')
                                )
                    GROUP BY(mid)
                    )
SELECT people.fname, people.lname, people.pid
FROM people
INNER JOIN directors
ON people.pid = directors.pid
WHERE directors.pid in (SELECT pid
                        FROM movieDirectors
                        WHERE mid in (SELECT mid
                                      FROM MovieCount
                                       )
                        )
```