Name: Payal Sharma

Date: 4ᵗʰ April' 2014

Assignment 8: Normalization 2

You have been hired as a database consultant by EON productions to work in the casting department or the next James Bond Film. They need a new Bond because he---who--- must---not---be---named is clearly not working out. They want a database of actors, the movies in which they have appeared, and the director of those movies. They have collected the following data for your use:

Actor Data: Name, address, birth date, hair color, eye color, height in inches, weight, screen actors guild anniversary date
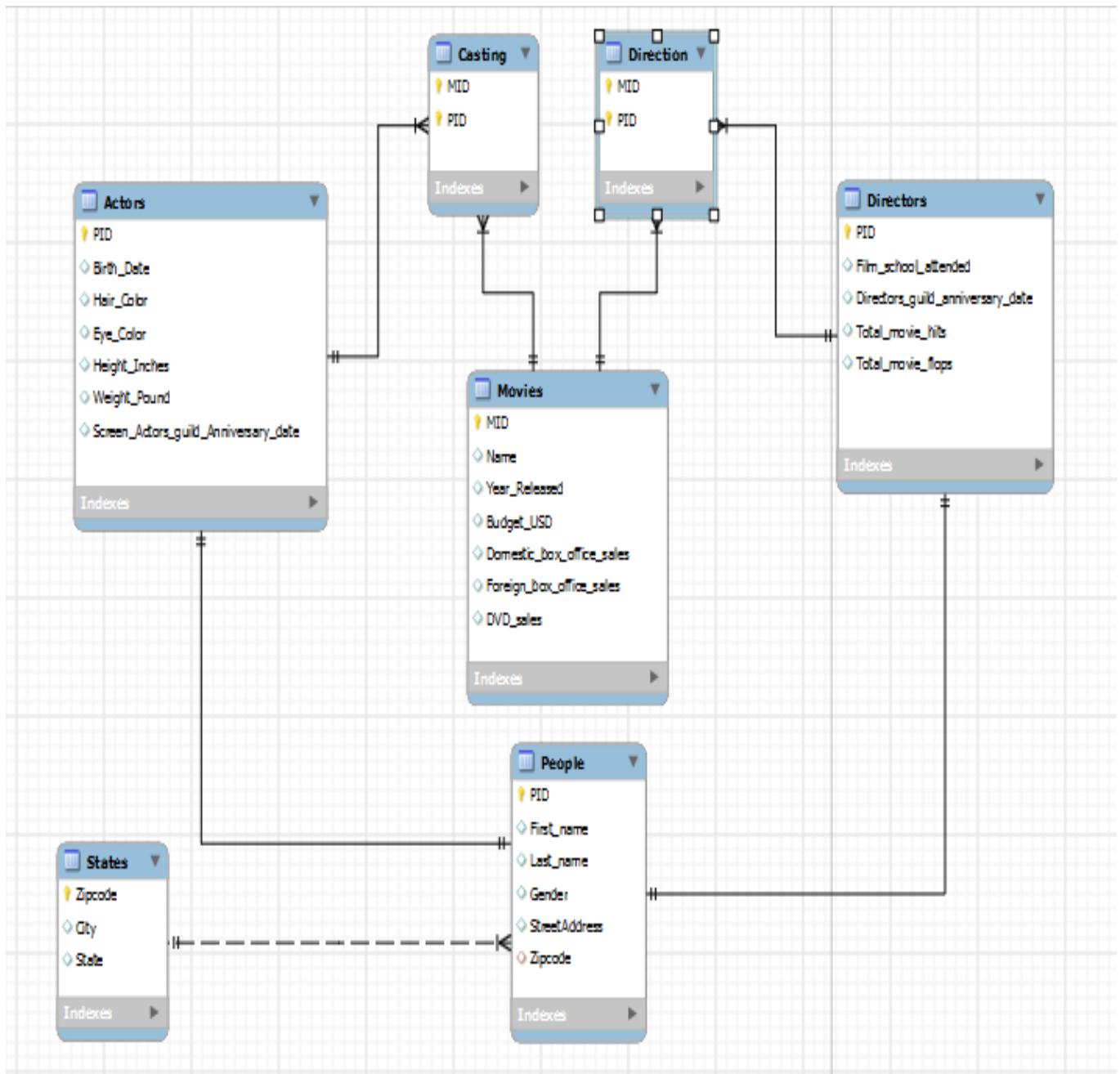
Movie Data: Name, year released, domestic box office sales, foreign box office sales, DVD/Blue ray sales

Director Data: Name, address, Film school attended, directors' guild anniversary date

Build this database. You may add or rename any Fields you like. You must create a relational database in Boyce-Codd normal form (BCNF). Document your database with . . .

1. A fully decorated and aesthetically beautiful E/R diagram.

2. SQL create statements (one for each table).

3. SQL insert statements for test data (not a lot, but enough to validate the query results).

4. The functional dependencies for each table.

5. Write a SQL query to return all the directors with whom actor "Sean Connery" has worked.

Solution 1:

Casting
- MID
- PID
- Indexes

Direction
- MID
- PID
- Indexes

Actors
- PID
- Birth_Date
- Hair_Color
- Eye_Color
- Height_Inches
- Weight_Pound
- Screen_Actors_guild_Anniversary_date
- Indexes

Movies
- MID
- Name
- Year_Released
- Budget_USD
- Domestic_box_office_sales
- Foreign_box_office_sales
- DVD_sales
- Indexes

Directors
- PID
- Film_school_attended
- Directors_guild_anniversary_date
- Total_movie_hits
- Total_movie_flops
- Indexes

People
- PID
- First_name
- Last_name
- Gender
- StreetAddress
- Zipcode
- Indexes

States
- Zipcode
- City
- State
- Indexes

Solution 2:

-- States table

```
create table States(
        Zipcode         integer not null,
        City            text,
        State           text,
  Primary key(Zipcode)
);
```

-- People table

```
create table People(
        PID             char(3) not null,
        First_name      text not null,
        Last_name       text not null,
        Gender          char(1) check (Gender='M' or Gender='F'),
        StreetAdress    text,
        Zipcode         integer not null references States(Zipcode),
  Primary key(PID)
);
```

-- Actors table

```
create table Actors(
        PID                             char(3) not null references People(PID),
        Birth_Date                      date,
        Hair_Color                      text,
        Eye_Color                       text,
        Height_Inches                   integer,
        Weight_Pound                    integer,
        Screen_Actor_Guild_Anniversary_Date  date,
  Primary key(PID)
);
```

-- Directors table

```
create table Directors(
        PID                             char(3) not null references People(PID),
        Film_school_Attended            text,
        Total_movie_hits                integer,
        Total_movie_flops               integer,
        Director_Guild_Anniversary_Date date,
    Primary key(PID)
);
```

-- Movies table

```
create table Movies(
        MID                             char(3) not null,
        Name                            text,
        Year_Released                   integer,
        Budget_USD                      integer,
        Domestic_Box_office_Sales       integer,
        Foreign_Box_office_Sales        integer,
        DVD_Sales                       integer,
  Primary key(MID)
);
```

-- Casting table

```
create table Casting (
        MID             char(3) not null references Movies(MID),
        PID             char(3) not null references Actors(PID),
         Primary key(MID,PID)
);
```

-- Direction table

```
create table Direction(
        MID             char(3) not null references Movies(MID),
        PID             char(3) not null references Directors(PID),
  Primary key(MID,PID)
);
```

Solution 3:

--States:

INSERT INTO States(Zipcode, City, State)
  VALUES('12601', 'Poughkeepsie', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('12203', 'Albany', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('12533', 'Hopewell junction', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('12540', 'Orange', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('10006', 'Manhattan', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('12538', 'Hyde Park', 'NY');

INSERT INTO States(Zipcode, City, State)
  VALUES('12569', 'Pleasant Valley', 'NY');

select * from States;

	zipcode integer	city text	state text
1	12601	Poughkeepsie	NY
2	12203	Albany	NY
3	12533	Hopewell junction	NY
4	12540	Orange	NY
5	10006	Manhattan	NY
6	12538	Hyde Park	NY
7	12569	Pleasant Valley	NY

--People:
INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
  VALUES('P01', 'Jackson' , 'Brown', 'M' , '27 Main Street', '12601');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
  VALUES('P02', 'Gus' , 'Frein', 'M' , '17 Deer Creek Way', '12203');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P03', 'Georgy' , 'Black', 'F' , '255 Sunny Pl', '12533');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P04', 'Harrison' , 'Ford', 'M' , '1024 South Rd', '12601');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P05', 'Jason' , 'Alexander', 'M' , '14 Wallaby Way', '12538');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P06', 'Catherine' , 'Harper', 'F' , '1628 Fairway Dr', '10006');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P07', 'Deborah' , 'Goddard', 'F' , '118 Franklin Ave', '12533');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P08', 'Sean' , 'Connery', 'M' , '128 Front St', '12569');

INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P09', 'Martin' , 'Stanford', 'F' , '185 Willis Ave', '12540');
INSERT INTO People(PID, First_name, Last_name, Gender, StreetAdress, Zipcode)
   VALUES('P10', 'Elle' , 'Morrison', 'F' , '189 Willis Ave', '12540');

select * from People;

	pid character(3)	first_name text	last_name text	gender character(1)	streetadress text	zipcode integer
1	P01	Jackson	Brown	M	27 Main Street	12601
2	P02	Gus	Frein	M	17 Deer Creek Way	12203
3	P03	Georgy	Black	F	255 Sunny Pl	12533
4	P04	Harrison	Ford	M	1024 South Rd	12601
5	P05	Jason	Alexander	M	14 Wallaby Way	12538
6	P06	Catherine	Harper	F	1628 Fairway Dr	10006
7	P07	Deborah	Goddard	F	118 Franklin Ave	12533
8	P08	Sean	Connery	M	128 Front St	12569
9	P09	Martin	Stanford	F	185 Willis Ave	12540
10	P10	Elle	Morrison	F	189 Willis Ave	12540

--Actors:

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
   VALUES('P01', '25-Dec-1985' ,'Black', 'Black', '68', '170', '25-Dec-1995');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)

VALUES('P02', '19-June-1981' ,'Brown', 'Hazel', '67', '172', '21-Dec-2000');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
 VALUES('P04', '16-July-1990' ,'Blond', 'Blue', '66', '190', '20-Aug-2001');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
 VALUES('P05', '15-Mar-1999' ,'Auburn', 'Green Blue', '65', '184', '22-Nov-2005');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
 VALUES('P07', '25-Dec-1979' ,'Black', 'Green', '66', '180', '25-Dec-1999');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
 VALUES('P08', '20-Sep-1980' ,'Red', 'Brown', '69', '190', '18-Oct-1995');

INSERT INTO Actors(PID, Birth_date, Hair_Color, Eye_Color, Height_Inches, Weight_pound, Screen_Actor_Guild_Anniversary_Date)
 VALUES('P09', '15-Oct-1991' ,'Grey&White', 'Amber', '70', '198', '20-Oct-2014');

select * from Actors;

	pid character(3)	birth_date date	hair_color text	eye_color text	height_inches integer	weight_pound integer	screen_actor_guild_anniversary_date date
1	P01	1985-12-25	Black	Black	68	170	1995-12-25
2	P02	1981-06-19	Brown	Hazel	67	172	2000-12-21
3	P04	1990-07-16	Blond	Blue	66	190	2001-08-20
4	P05	1999-03-15	Auburn	Green Blue	65	184	2005-11-22
5	P07	1979-12-25	Black	Green	66	180	1999-12-25
6	P08	1980-09-20	Red	Brown	69	190	1995-10-18
7	P09	1991-10-15	Grey&White	Amber	70	198	2014-10-20

--Directors:

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
 VALUES('P01', 'New York Film Academy', '15-Oct-2000', '5', '2');

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
 VALUES('P03', 'South Carolina University', '25-Dec-1999', '2', '1');

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
  VALUES('P04', 'Arizona State University', '20-Aug-2001','3', '1');

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
  VALUES('P06', 'American Film Institute', '18-Oct-1995', '1', '0');

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
  VALUES('P07', 'University of California', '14-July-2007', '2', '0');

INSERT INTO Directors(PID, Film_school_attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops)
  VALUES('P08', 'California Institute of Arts', '18-June-2005', '1', '1');

select * from Directors;

	pid character(3)	film_school_attended text	total_movie_hits integer	total_movie_flops integer	director_guild_anniversary_date date
1	P01	New York Film Academy	5	2	2000-10-15
2	P03	South Carolina University	2	1	1999-12-25
3	P04	Arizona State University	3	1	2001-08-20
4	P06	American Film Institute	1	0	1995-10-18
5	P07	University of California	2	0	2007-07-14
6	P08	California Institute of Arts	1	1	2005-06-18

--Movies:

INSERT INTO Movies(MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales, Foreign_box_office_sales, DVD_sales)
  VALUES('M01', 'The Hunger Games', '2012', '50000','10000','856933','780000');

INSERT INTO Movies(MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales, Foreign_box_office_sales, DVD_sales)
  VALUES('M02', 'The Avengers', '2012', '60000','12000','856933','650000');

INSERT INTO Movies(MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales, Foreign_box_office_sales, DVD_sales)
  VALUES('M03', 'Inception', '2010', '75000','10000','456933','700000');

INSERT INTO Movies(MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales, Foreign_box_office_sales, DVD_sales)
  VALUES('M04', 'Tangled', '2010', '89000','50000','846933','650000');

```
INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M05','Easy A','2010', '100000','10000','856933','780000' );

INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M06', 'Frozen','2013', '90000','30000','456287','790000' );

INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M07', 'The Wolf of Wall Street', '2013', '80000','10000','856933','780000' );

INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M08', 'The Pokeman', '2000', '90000','30000','856933','580000' );

INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M09', 'Resident Evil', '2009', '80000','10000','856933','780000' );
INSERT INTO Movies( MID, Name, Year_Released, Budget_USD, Domestic_box_office_sales,
Foreign_box_office_sales, DVD_sales)
  VALUES('M10', 'Bad Boys', '2009', '60000','20000','556933','590000' );
```

select * from Movies;

	mid character(3)	name text	year_released integer	budget_usd integer	domestic_box_office_sales integer	foreign_box_office_sales integer	dvd_sales integer
1	M01	The Hunger Games	2012	50000	10000	856933	780000
2	M02	The Avengers	2012	60000	12000	856933	650000
3	M03	Inception	2010	75000	10000	456933	700000
4	M04	Tangled	2010	89000	50000	846933	650000
5	M05	Easy A	2010	100000	10000	856933	780000
6	M06	Frozen	2013	90000	30000	456287	790000
7	M07	The Wolf of Wall Street	2013	80000	10000	856933	780000
8	M08	The Pokeman	2000	90000	30000	856933	580000
9	M09	Resident Evil	2009	80000	10000	856933	780000
10	M10	Bad Boys	2009	60000	20000	556933	590000

--Casting:

```
INSERT INTO Casting( MID, PID)
  VALUES('M01', 'P01' );

INSERT INTO Casting( MID, PID)
```

```
          VALUES('M01', 'P08');

INSERT INTO Casting( MID, PID)
 VALUES('M02', 'P02');

INSERT INTO Casting( MID, PID)
 VALUES('M02', 'P09' );

INSERT INTO Casting( MID, PID)
 VALUES('M02', 'P07' );

INSERT INTO Casting( MID, PID)
 VALUES('M03', 'P05' );

INSERT INTO Casting( MID, PID)
 VALUES('M03', 'P08');

INSERT INTO Casting( MID, PID)
 VALUES('M04', 'P04' );

INSERT INTO Casting( MID, PID)
 VALUES('M04', 'P05' );

INSERT INTO Casting( MID, PID)
 VALUES('M04', 'P07');

INSERT INTO Casting( MID, PID)
 VALUES('M05', 'P08' );

INSERT INTO Casting( MID, PID)
 VALUES('M05', 'P04' );

INSERT INTO Casting( MID, PID)
 VALUES('M05', 'P07' );

INSERT INTO Casting( MID, PID)
 VALUES('M06', 'P09' );

INSERT INTO Casting( MID, PID)
 VALUES('M06', 'P08');

INSERT INTO Casting( MID, PID)
 VALUES('M07', 'P02');

INSERT INTO Casting( MID, PID)
 VALUES('M07', 'P09' );

INSERT INTO Casting( MID, PID)
```

```sql
    VALUES('M07', 'P04' );

INSERT INTO Casting( MID, PID)
  VALUES('M08', 'P05' );

INSERT INTO Casting( MID, PID)
  VALUES('M08', 'P04');

INSERT INTO Casting( MID, PID)
  VALUES('M09', 'P01' );

INSERT INTO Casting( MID, PID)
  VALUES('M09', 'P08' );

INSERT INTO Casting( MID, PID)
  VALUES('M09', 'P07');

INSERT INTO Casting( MID, PID)
  VALUES('M10', 'P02' );

INSERT INTO Casting( MID, PID)
  VALUES('M10', 'P04' );

INSERT INTO Casting( MID, PID)
  VALUES('M10', 'P01' );

    select * from Casting;
```

	mid character(3)	pid character(3)
1	M01	P01
2	M01	P08
3	M02	P02
4	M02	P09
5	M02	P07
6	M03	P05
7	M03	P08
8	M04	P04
9	M04	P05
10	M04	P07
11	M05	P08
12	M05	P04
13	M05	P07
14	M06	P09
15	M06	P08
16	M07	P02
17	M07	P09
18	M07	P04
19	M08	P05
20	M08	P04
21	M09	P01
22	M09	P08
23	M09	P07
24	M10	P02
25	M10	P04
26	M10	P01

--Direction:

INSERT INTO Direction(MID, PID)
  VALUES('M01','P03');

INSERT INTO Direction(MID, PID)
  VALUES('M02', 'P01');

INSERT INTO Direction(MID, PID)
  VALUES('M03', 'P03');

INSERT INTO Direction(MID, PID)
  VALUES('M03', 'P04');

INSERT INTO Direction(MID, PID)
  VALUES('M04', 'P07');

INSERT INTO Direction(MID, PID)
  VALUES('M05', 'P08');

INSERT INTO Direction(MID, PID)
  VALUES('M06', 'P01');

```
INSERT INTO Direction( MID, PID)
  VALUES('M06', 'P07' );

INSERT INTO Direction( MID, PID)
  VALUES('M07', 'P04' );

INSERT INTO Direction( MID, PID)
  VALUES('M08', 'P07' );

INSERT INTO Direction( MID, PID)
  VALUES('M09', 'P06' );

INSERT INTO Direction( MID, PID)
  VALUES('M09', 'P03' );

INSERT INTO Direction( MID, PID)
  VALUES('M09', 'P01' );

INSERT INTO Direction( MID, PID)
  VALUES('M10', 'P06' );
```

select * from Direction;

	mid character(3)	pid character(3)
1	M01	P03
2	M02	P01
3	M03	P03
4	M03	P04
5	M04	P07
6	M05	P08
7	M06	P01
8	M06	P07
9	M07	P04
10	M08	P07
11	M09	P06
12	M09	P03
13	M09	P01
14	M10	P06

Solution 4:

Functional Dependencies on above tables are given below:

States:

Zipcode→ City, State

People:

PID→ First_name, Last_name, Gender, StreetAddress, Zipcode

Actors:

PID→ Birth_Date, Hair_Color, Eye_Color, Height_Inches, Weight_Pound, Screen_Actor_Guild_Anniversary_Date

Directors:

PID→ Film_School_Attended, Director_Guild_Anniversary_Date, Total_movie_hits, Total_movie_flops

Movies:

MID→ Name, Year_Released, Budget_USD, Domestic_Box_Office_Sales, Foreign_Box_Office_Sales, DVD_Sales

Casting:

MID, PID →

Direction:

MID, PID →

Solution 5:

```sql
select  PID,First_name, Last_name
from    People
where  PID  in  (select PID
         from   Direction
          where MID in (select   MID
                          from    Casting
                          where  PID = (select  PID
                                          from    People
                                          where  First_name='Sean'
                                          and     Last_name='Connery')));
```

	pid character(3)	first_name text	last_name text
1	P01	Jackson	Brown
2	P03	Georgy	Black
3	P04	Harrison	Ford
4	P06	Catherine	Harper
5	P07	Deborah	Goddard
6	P08	Sean	Connery