Every Trivia

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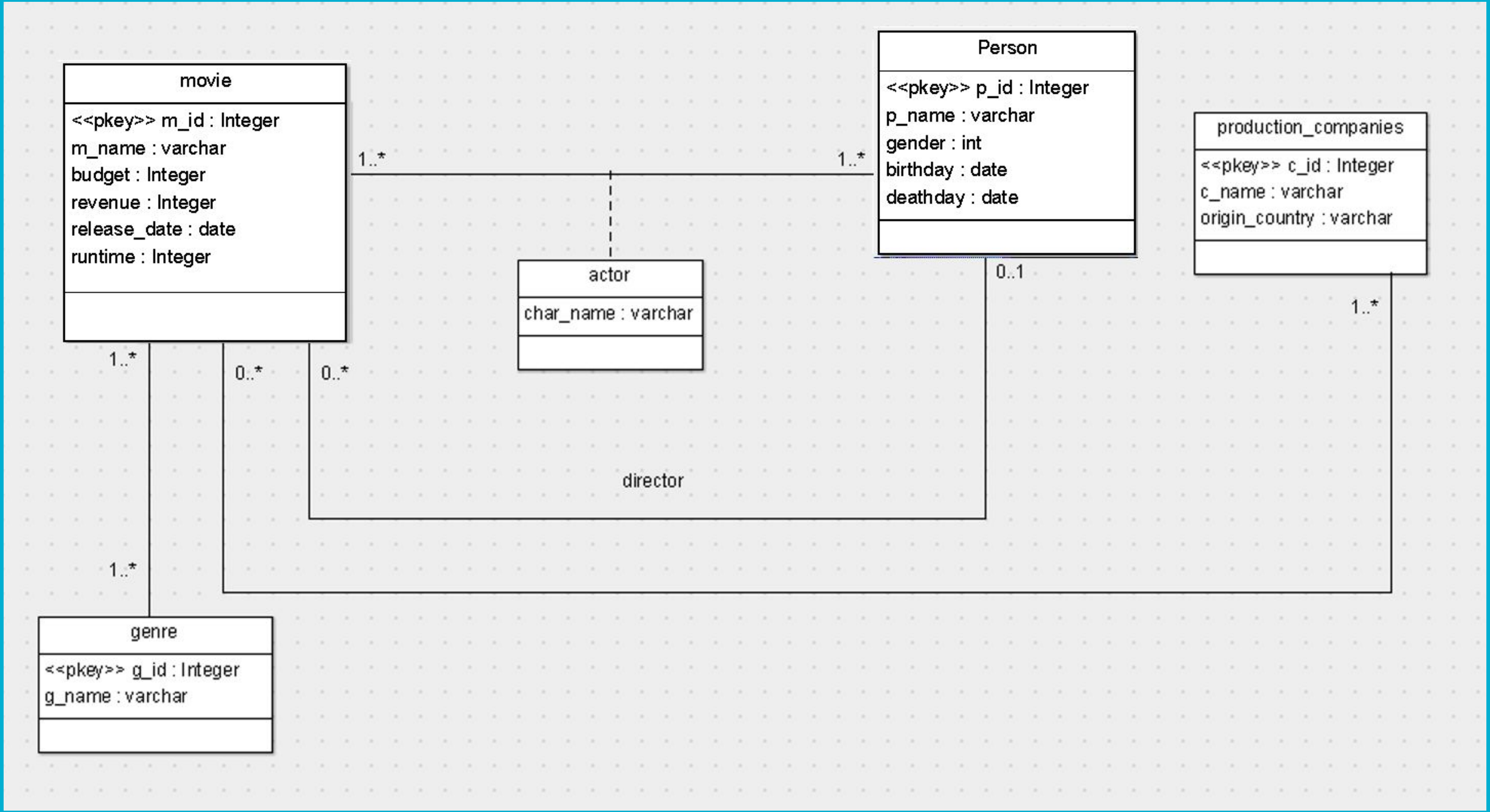
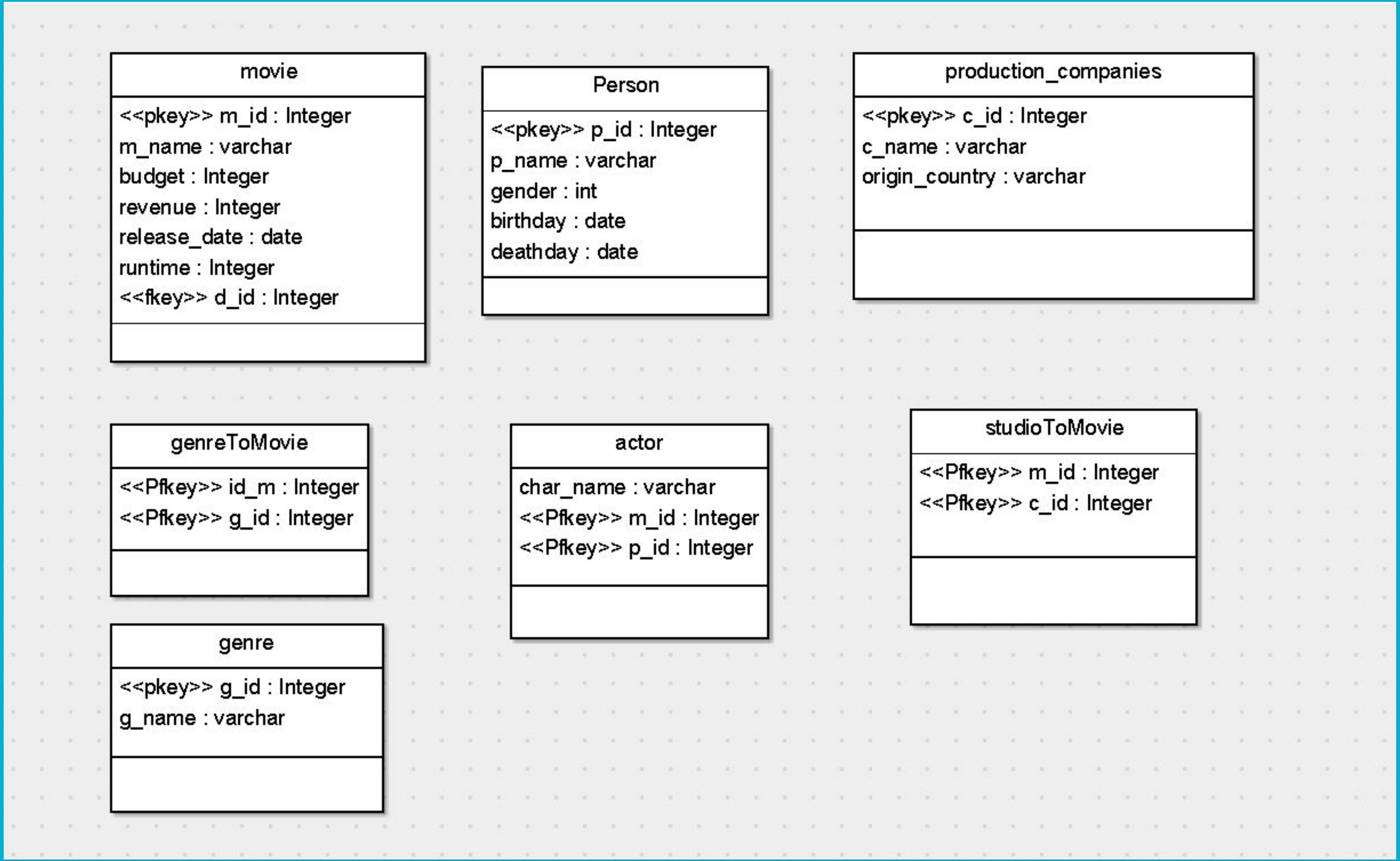
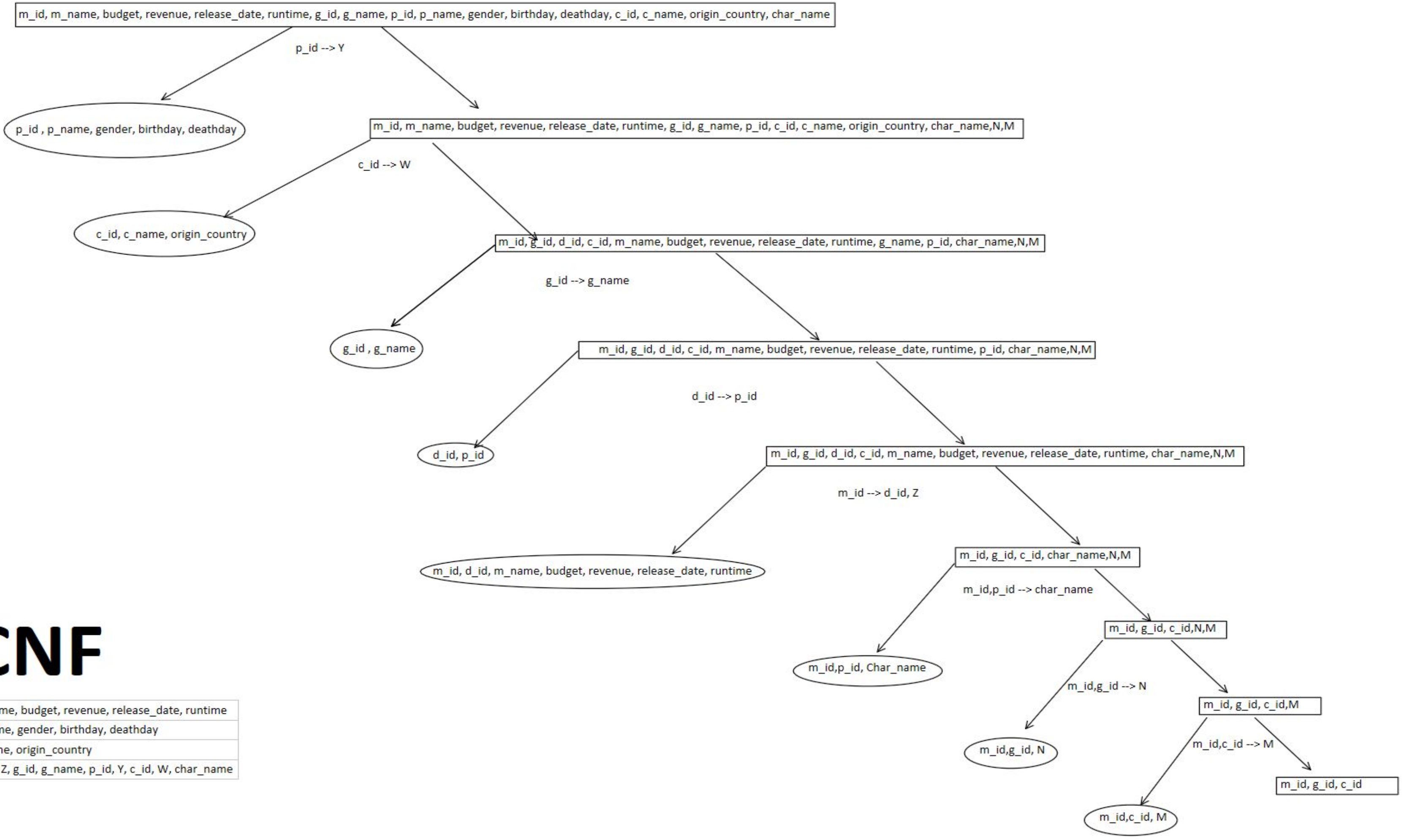
UML Diagram


movie
<<pkey>> m_id : Integer
m_name : varchar
budget : Integer
revenue : Integer
release_date : date
runtime : Integer
Person
<<pkey>> p_id : Integer
p_name : varchar
gender : int
birthday : date
deathday : date
production_companies
<<pkey>> c_id : Integer
c_name : varchar
origin_country : varchar
actor
char_name : varchar
genre
<<pkey>> g_id : Integer
g_name : varchar
director
1..*
1..*
0..1
1..*
1..*
0..*
0..*
1..*

Relational Model




m_id, m_name, budget, revenue, release_date, runtime, g_id, g_name, p_id, p_name, gender, birthday, deathday, c_id, c_name, origin_country, char_name
p_id --> Y
p_id , p_name, gender, birthday, deathday
m_id, m_name, budget, revenue, release_date, runtime, g_id, g_name, p_id, c_id, c_name, origin_country, char_name,N,M
c_id --> W
c_id, c_name, origin_country
m_id, g_id, d_id, c_id, m_name, budget, revenue, release_date, runtime, g_name, p_id, char_name,N,M
g_id --> g_name
g_id , g_name
m_id, g_id, d_id, c_id, m_name, budget, revenue, release_date, runtime, p_id, char_name,N,M
d_id --> p_id
d_id, p_id
m_id, g_id, d_id, c_id, m_name, budget, revenue, release_date, runtime, char_name,N,M
m_id --> d_id, Z
m_id, d_id, m_name, budget, revenue, release_date, runtime
m_id, g_id, c_id, char_name,N,M
m_id,p_id --> char_name
m_id,p_id, Char_name
m_id, g_id, c_id,N,M
m_id,g_id --> N
m_id,g_id, N
m_id, g_id, c_id,M
m_id,c_id --> M
m_id,c_id, M
m_id, g_id, c_id

BCNF

Z	m_name, budget, revenue, release_date, runtime
Y	p_name, gender, birthday, deathday
W	c_name, origin_country
R	m_id, Z, g_id, g_name, p_id, Y, c_id, W, char_name

3NF

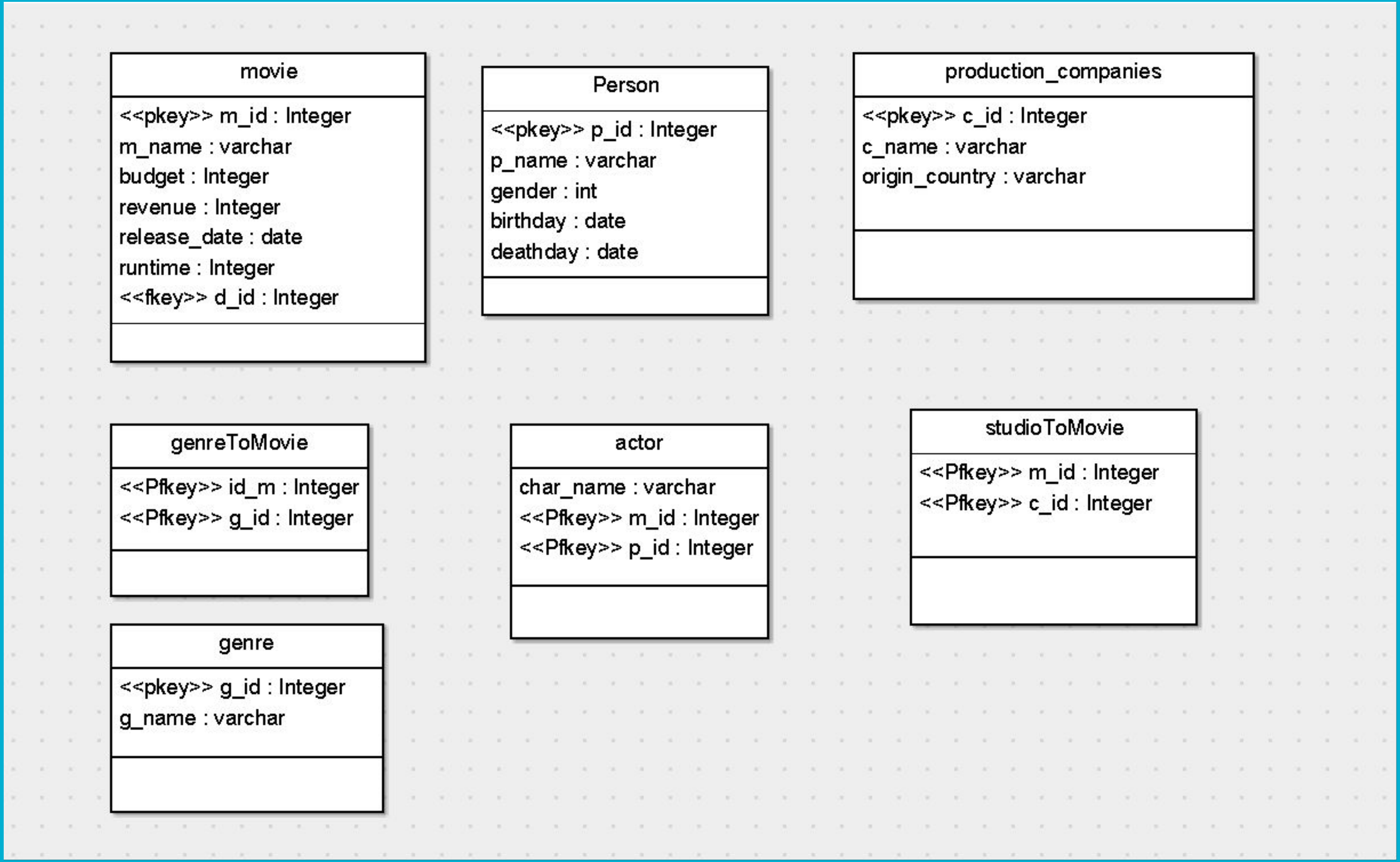
Function Dependencies:

p_id ↠ p_name, gender, birthday, deathday
m_id ↠ m_name, release_date, d_id, budget, revenue, runtime
d_id ↠ p_id
p_id ↠ p_name
↠ gender
↠ birthday
↠ deathday
m_id ↠ m_name
↠ release_date
↠ d_id
↠ budget
↠ revenue
↠ runtime
d_id ↠ p_id
m_id, p_id ↠ character_name
g_id ↠ g_name
g_id, m_id ↠ N
c_id ↠ c_name
↠ origin_country
m_id, c_id ↠ M

Combined FD's

p_id ↠ name, gender, birthday
m_id ↠ m_name, release_date, p_id
m_id, p_id ↠ character_name
g_id ↠ g_name
c_id ↠ c_name, origin_country
g_id, m_id ↠ N
c_id, m_id ↠ M

3NF Tables



movie

<<pkey>> m_id : Integer
m_name : varchar
budget : Integer
revenue : Integer
release_date : date
runtime : Integer
<<fkey>> d_id : Integer

Person

<<pkey>> p_id : Integer
p_name : varchar
gender : int
birthday : date
deathday : date

production_companies

<<pkey>> c_id : Integer
c_name : varchar
origin_country : varchar

genreToMovie

<<Pfkey>> id_m : Integer
<<Pfkey>> g_id : Integer

actor

char_name : varchar
<<Pfkey>> m_id : Integer
<<Pfkey>> p_id : Integer

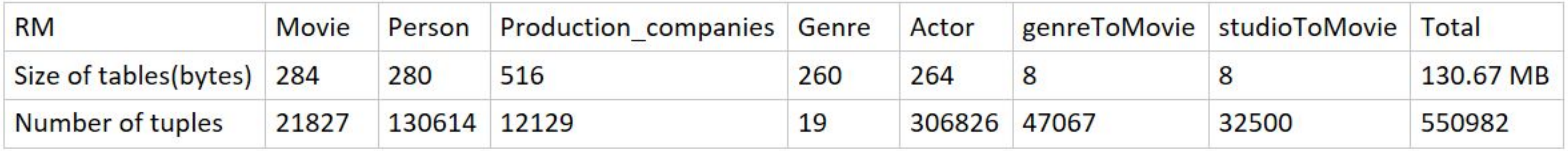
studioToMovie

<<Pfkey>> m_id : Integer
<<Pfkey>> c_id : Integer

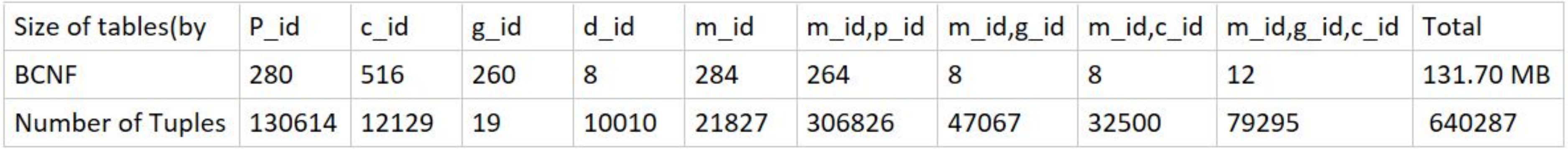
genre

<<pkey>> g_id : Integer
g_name : varchar

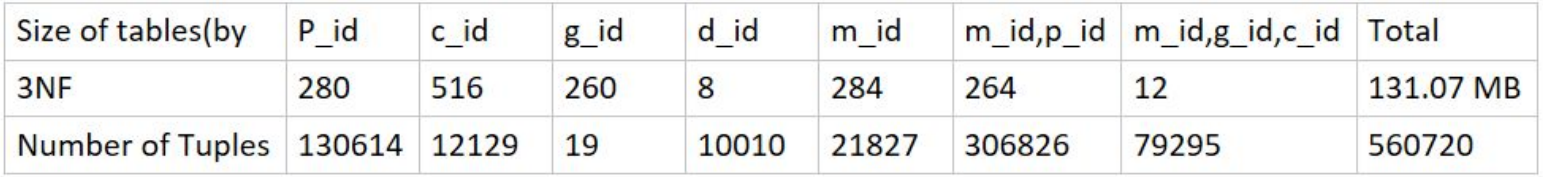
Design Comparison



RM	Movie	Person	Production_companies	Genre	Actor	genreToMovie	studioToMovie	Total
Size of tables(bytes)	284	280	516	260	264	8	8	130.67 MB
Number of tuples	21827	130614	12129	19	306826	47067	32500	550982



Size of tables(by	P_id	c_id	g_id	d_id	m_id	m_id,p_id	m_id,g_id	m_id,c_id	m_id,g_id,c_id	Total
BCNF	280	516	260	8	284	264	8	8	12	131.70 MB
Number of Tuples	130614	12129	19	10010	21827	306826	47067	32500	79295	640287



Size of tables(by	P_id	c_id	g_id	d_id	m_id	m_id,p_id	m_id,g_id,c_id	Total
3NF	280	516	260	8	284	264	12	131.07 MB
Number of Tuples	130614	12129	19	10010	21827	306826	79295	560720

Sample Queries

The following is an example of how we get the information when a user requests information about a specific movie:

```
//Get all of the movies with the given name
SELECT m_id, m_name, release_date, budget, revenue, runtime
FROM movie
WHERE m_name = ?

//Get all the actors in each movie
SELECT p_name, character_name
FROM (select p_id, character_name from actor where m_id = ?) as t1 natural join person

//Get all the genres of each movie
SELECT g_name, m_id
FROM (genre natural join genre_to_movie)
WHERE m_id = ?

//Get the director of each movie
SELECT p_name, m_id
FROM person join (select d_id, m_id from movie where m_id = ?) as t1 on(d_id = p_id)
```

System Architecture

We are using:

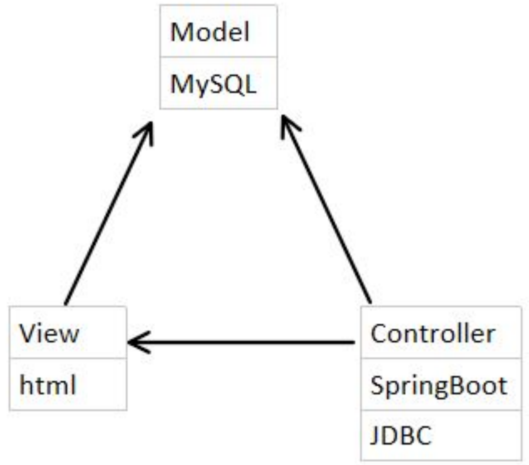
MySQL for database management

Spring Boot for the web interface

OKhttp for gathering data

JDBC for querying the database

ArgoUML for creating UML and RM diagrams


Model
MySQL
View
html
Controller
SpringBoot
JDBC