

Database - Excercise 2 on L^AT_EX

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Question.1

1.1

Select
 count(Movie.mid)
From
 Movie
 Inner join
 Acting on Acting.mid = Movie.mid
Where
 Acting.arid = Movie.did
group by language;

$$\pi_{num}(\rho(1, num)_{language} \exists_{count(Movie.did)} (\sigma_{Movie.did=Acting.arid} (Movie \bowtie_{Movie.mid=Acting.mid} Acting))))$$

1.2

Select
 Title
From
 Movie
 Inner join
 Rating on Movie.mid = Rating.mid
Where
 is adult=true and Movie.start-year \geq 2017 and Movie.end-year \leq 2018 and Rating.avg-ratings
 in (select max from Rating);

$$\pi_{title}(\sigma_{is - adult = true and start - year \geq 2017 and end - year \leq 2018} ((Movie \bowtie_{Movie.mid=Rating.mid} Rating) \bowtie_{Rating-avg-rating=maxRate} \rho(maxRate)(\exists_{max(avg-rating)}(Rating))))$$

1.3

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Select
    sum(year(currdate()) - birth-year)
From
    Artist
    Inner join
    Acting on Artist.arid = Acting.arid
Where
    Death-year = null
Group by arid, mid
    Having count(acid) > 1;
Union
Select
    sum(death-year - birth-year)
From
    Artist
    Inner join
    Acting on Artist.arid = Acting.arid
Where
    Death-year is not null
Group by arid,mid
    Having count(acid)>1;

```

$$\begin{aligned}
 Q &\leftarrow Artist \bowtie Artist.arid = Artist.arid (\pi_{arid} (\sigma_{num>1} (\rho(num)_{(arid,mid)} \mathfrak{Z}_{count(acid)} (Acting)))) \\
 Q_1 &\leftarrow \pi_{sum(year(currdate())-birth-year)} (\sigma_{death-year=null} (Q)) \\
 Q_2 &\leftarrow \pi_{sum(death)-birth-year} (\sigma_{death-year \text{ is not null}} (Q)) \\
 Q_3 &\leftarrow Q_1 \cup Q_2
 \end{aligned}$$

1.4

```

Select
    AVG(avg-ratings)
From
    Rating
    Inner join
    Movie on Rating.mid = Movie.mid
Where
    Movie.genres = 'surreal' or Movie.genres = 'horror';

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$$\pi_{avg(avg-ratings)} (\sigma_{Movie.genres='surreal' \text{ or } Movie.genres='horror'} (Rating \bowtie_{Rating.mid=Movie.mid} Movie))$$

1.5

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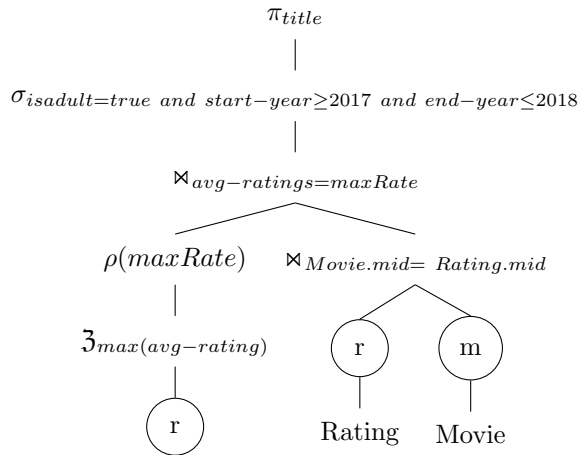
Select
    count(character-name)
From
    Acting
    Inner join
    Artist on Acting.arid = Artist.arid
    Inner join
    Movie on Acting.mid = Movie.mid
Where
    Movie.start-year - birth-year  $\geq$  15 and Movie.start-year - birth-year  $\leq$  20
    And Movie.region=Artist.nationality;

```

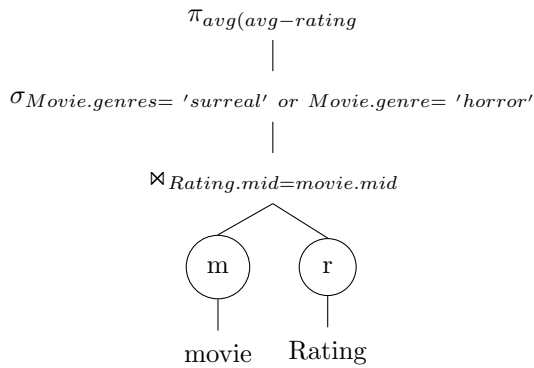
$$\pi_{count(character-name)}(\sigma_{Movie.start-date - birth-year \geq 15 \text{ and } Movie.start-date - birth-year \leq 20 \text{ and } Movie.region=Artist.nationality}((Movie \bowtie_{movie.mid=Acting.mid} Acting) \Join Artist))$$

Question.2

Answer 2.1



2.2



Question.3

3.1

$$\pi_{title,num}(\sigma_{num>5}(\rho(m,title,num))(\textit{Movie.mid} \bowtie_{title,count(\textit{Movie.mid})}(\sigma_{\textit{Artist.gender}='male'}((\textit{Movie} \bowtie_{\textit{Movie.mid}=\textit{Acting.mid}} \textit{Acting}) \bowtie_{acid=arid} \textit{Artist}))))))$$

Answer3.2

$$\begin{aligned} T_1 &\leftarrow \pi_{title} \sigma_{\textit{Movie.genre}='Drama' \textit{and} \textit{Director.Lastname}='Kubrik'} (\textit{Movie} \bowtie_{\textit{Movie.did}=\textit{Director.did}} \textit{Director}) \\ T_2 &\leftarrow \pi_{title} \sigma_{\textit{Movie.genre}='Mystery' \textit{and} \textit{Director.Lastname}='Hitchcock'} (\textit{Movie} \bowtie_{\textit{Movie.did}=\textit{Director.did}} \textit{Director}) \\ T_3 &\leftarrow T_1 \cup T_2 \end{aligned}$$

Answer3.3

$$\pi_{\textit{Artist.firstname}, \textit{Artist.lastname}} \sigma_{\textit{Artist.lastname}=\textit{director.lastname}} ((\textit{Artist} \bowtie_{\textit{Artist.arid}=\textit{Artist.acid}} \textit{ActingMovie}) \bowtie_{\textit{Movie.mid}=\textit{Acting.mid}} \textit{Movie}) \bowtie_{\textit{director.did}=\textit{Movie.did}} \textit{Director})$$