- **L3 MIASHS/Ingémath/METIS**
- **Université Paris Cité**
- Année 2023-2024
- Course Homepage

- Moodle

Toutes les questions portent sur le schéma `world` rappelé ci-dessous.

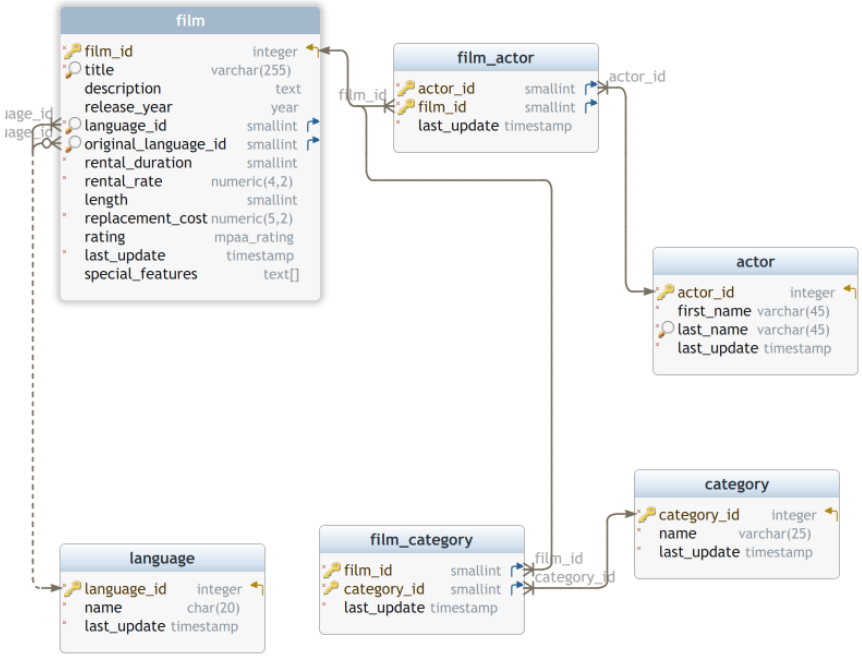

FIG. 1 : Schéma `pagila`, films

⚠ ...

Pour chaque question, proposer une requête écrite en algèbre relationnelle *ou* en `SQL`.

1. Donner pour chaque film au catalogue, le titre et les prénoms des acteurs qui jouent dans ce film.

Solution

```
SELECT fi.title, string_agg(DISTINCT a.first_name, ', ') AS casting
 FROM
   pagila.film fi  JOIN
   pagila.film_actor fa ON (fi.film_id=fa.film_id)  Join
   pagila.actor a ON (fa.actor_id=a.actor_id)
 GROUP BY fi.film_id;
```

2. Lister les titres de films qui ne sont disponibles que dans une seule langue

Solution

```
SELECT fi.title
FROM
  pagila.film fi
GROUP BY fi.title
HAVING COUNT (DISTINCT fi.language_id)=1 ;
```

3. Pour chaque langue originale (`original_language_id`), chaque langue de diffusion (`language_id`), compter le nombre de titres tournés dans la langue originale et traduits dans la langue de diffusion (sans doublons).

Solution

```
SELECT
  original_language_id,
  language_id,
  count(title)
from pagila.film
group by original_language_id,language_id ;
```

4. Liste des acteurs/actrices qui ont toujours joué avec les mêmes acteurs/actrices

Solution

```sql
WITH ActorFilmPartners AS (
    SELECT
        fa1.actor_id,
        fa1.film_id,
        array_agg(fa2.actor_id ORDER BY fa2.actor_id) AS partners
    FROM
        film_actor fa1
    JOIN
        film_actor fa2
    ON
        fa1.film_id = fa2.film_id
        AND fa1.actor_id <> fa2.actor_id
    GROUP BY fa1.actor_id, fa1.film_id
)

SELECT
  actor_id
FROM
  ActorFilmPartners
GROUP BY
  actor_id
HAVING COUNT(DISTINCT partners) = 1;
```

5. Lister pour chaque catégorie les 5 films dont le prix de location est le plus élevé.

Solution

```sql
WITH RankedFilms AS (
    SELECT
        c.name AS category_name,
        f.title AS film_title,
        f.rental_rate,
        ROW_NUMBER() OVER (PARTITION BY c.name ORDER BY f.rental_rate DESC) AS rank
    FROM
        film f
    JOIN
        film_category fc ON f.film_id = fc.film_id
    JOIN
        category c ON fc.category_id = c.category_id
)
SELECT
    category_name,
    film_title,
    rental_rate
FROM
    RankedFilms
WHERE
    rank <= 5
ORDER BY
    category_name,
    rank;
```

Solution

6. Donner pour chaque catégorie (de film), les noms des acteurs qui apparaissent dans le nombre maximal de films de la catégorie.

Solution

```sql
WITH ActorFilmCount AS (
    SELECT
        c.name AS category_name,
        a.actor_id,
        a.first_name || ' ' || a.last_name AS actor_name,
        COUNT(fa.film_id) AS film_count
    FROM
        actor a
    JOIN
        film_actor fa ON a.actor_id = fa.actor_id
    JOIN
        film f ON fa.film_id = f.film_id
    JOIN
        film_category fc ON f.film_id = fc.film_id
    JOIN
        category c ON fc.category_id = c.category_id
    GROUP BY
        c.name, a.actor_id, a.first_name, a.last_name
),
RankedActors AS (
    SELECT
        category_name,
        actor_name,
        film_count,
        DENSE_RANK() OVER (PARTITION BY category_name ORDER BY film_count DESC) AS rank
    FROM
        ActorFilmCount
)
SELECT
    category_name,
    actor_name,
    film_count
FROM
    RankedActors
WHERE
    rank = 1
ORDER BY
    category_name;
```

Solution

Erreur commune

7. Lister sans doublons les paires d'acteurs qui n'ont jamais joué dans un même film.

Solution

```sql
WITH ActorPairs AS (
    -- Generate all possible actor pairs (excluding pairing an actor with themselves)
    SELECT
        a1.actor_id AS actor1_id,
        a2.actor_id AS actor2_id,
        a1.first_name || ' ' || a1.last_name AS actor1_name,
        a2.first_name || ' ' || a2.last_name AS actor2_name
    FROM
        actor a1
    JOIN
        actor a2 ON a1.actor_id < a2.actor_id  -- Ensure actor1_id < actor2_id to avoid duplic
),
ActorsTogether AS (
    -- Find all actor pairs who have acted together in at least one film
    SELECT
        fa1.actor_id AS actor1_id,
        fa2.actor_id AS actor2_id
    FROM
        film_actor fa1
    JOIN
        film_actor fa2 ON fa1.film_id = fa2.film_id
    WHERE
        fa1.actor_id < fa2.actor_id  -- Same condition to avoid duplicates
),
ActorsNotTogether AS (
    -- Left join all possible pairs with the pairs that acted together
    SELECT
        ap.actor1_name,
        ap.actor2_name
    FROM
        ActorPairs ap
    LEFT JOIN
        ActorsTogether at ON ap.actor1_id = at.actor1_id AND ap.actor2_id = at.actor2_id
    WHERE
        at.actor1_id IS NULL  -- Only return pairs that do not exist in the ActorsTogether res
)
-- Final result
SELECT
    actor1_name,
    actor2_name
FROM
    ActorsNotTogether
ORDER BY
    actor1_name, actor2_name;
```

Solution

Erreur commune

8. Lister les acteurs (prénom, nom) qui ont joué dans des films tournés dans au moins deux langues différentes (langue de tournage : `original_language_id`)

Solution

```sql
SELECT
    a.actor_id,
    a.first_name || ' ' || a.last_name AS actor_name,
    STRING_AGG(DISTINCT l.name, ', ') AS languages
FROM
    actor a
JOIN
    film_actor fa ON a.actor_id = fa.actor_id
JOIN
    film f ON fa.film_id = f.film_id
JOIN
    language l ON f.original_language_id = l.language_id
GROUP BY
    a.actor_id, a.first_name, a.last_name
HAVING
    COUNT(DISTINCT f.original_language_id) > 1
ORDER BY
    actor_name;
```

9. Lister les films disponibles dans toutes les langues répertoriées dans la table `language`.

Solution

```sql
WITH TotalLanguages AS (
    -- Count the total number of languages in the language table
    SELECT COUNT(*) AS total_languages
    FROM language
),
FilmLanguages AS (
    -- Count the number of distinct languages each film is available in
    SELECT
        f.title,
        COUNT(DISTINCT f.language_id) AS film_language_count
    FROM
        film f
    JOIN
        language l ON f.language_id = l.language_id
    WHERE
        f.language_id IS NOT NULL
    GROUP BY
        f.title
)
-- Compare the film's language count with the total number of languages
SELECT
    fl.title
FROM
    FilmLanguages fl, TotalLanguages tl
WHERE
    fl.film_language_count = tl.total_languages
ORDER BY
    fl.title;
```

10. Pour chaque magasin (désigné par `store_id`), chaque langue, donnez le nombre de DVDs (physiques) disponibles dans cette langue, dans ce magasin.

Solution

```sql
SELECT
    s.store_id,
    l.name AS language_name,
    COUNT(i.inventory_id) AS inventory_count
FROM
    store s
JOIN
    inventory i ON s.store_id = i.store_id
JOIN
    film f ON i.film_id = f.film_id
JOIN
    language l ON f.language_id = l.language_id
WHERE
    f.language_id IS NOT NULL
GROUP BY
    s.store_id, l.name
ORDER BY
    s.store_id, l.name;
```