- L3 MIASHS/Ingémath/METIS
- Université Paris Cité
- Année 2024-2025
- Course Homepage
- Moodle



 \triangle Toutes les questions portent sur les schémas pagila et world rappelés ci-dessous. Pour chaque question, proposer une requête écrite en algèbre relationnelle OU en SQL.

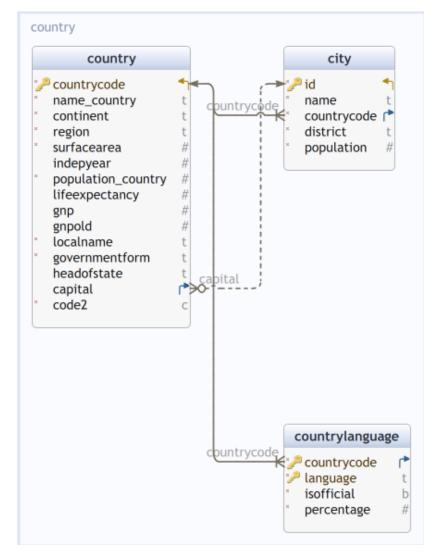


Fig. 1 : Schéma world

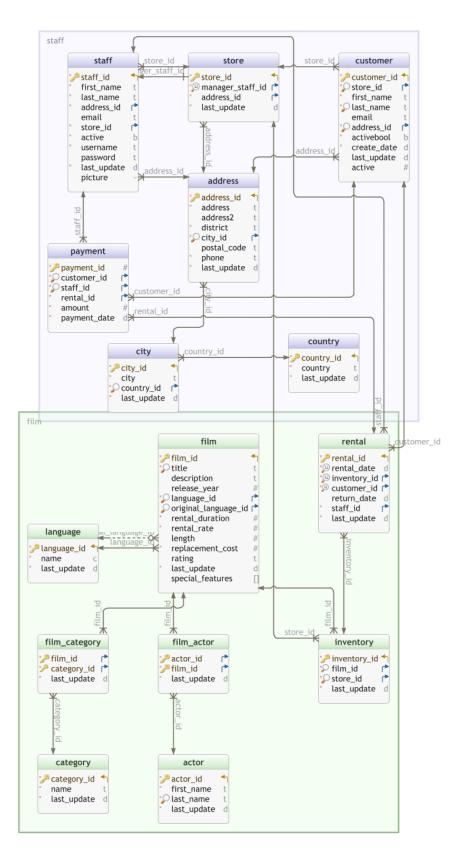


Fig. 2 : Schéma pagila, films

Schéma pagila 🖺

1. Lister la somme des paiments encaissés par année et par magasin.

En PostgreSQL, on obtient le (numéro du) mois à partir d'une valeur de type timestamp avec la fonction EXTRACT(). On peut extraire les autres éléments de l'estampille de façon semblable, par exemple :
SELECT
EXTRACT(YEAR FROM rental_date) AS annee
FROM
pagila.rental;

```
Solution

SELECT
    st.store_id,
    EXTRACT(YEAR FROM pay.payment_date) AS annee,
    SUM(amount) AS payments

FROM
    pagila.payment pay
    JOIN
    pagila.staff st USING(staff_id)
GROUP BY
    st.store_id,
    EXTRACT(YEAR FROM pay.payment_date)
;
```

2. Lister l'identifiant, le nom, le prénom, de chaque employé ainsi que le total des paiements perçus par cet employé, et sa part dans le revenu de son magasin.

```
SELECT

st.store_id,
st.staff_id,
SUM(pay.amount) AS encaisse

FROM

pagila.staff st

JOIN

pagila.payment pay USING(staff_id)

GROUP BY ROLLUP(st.store_id, st.staff_id);
```

3. Lister par catégorie de film, les cinq titres qui ont engendré le plus gros chiffre d'affaire/revenu (somme des paiements perçus)

```
Solution
WITH film_payment AS (
   SELECT
     film_id,
     fi.title,
     SUM(amount) AS caffaires
     pagila.payment pay
   JOIN
     pagila.rental re USING(rental_id)
   JOIN
     pagila.inventory inv USING(inventory_id)
   JOIN
     pagila.film fi USING(film_id)
   GROUP BY
     film_id, fi.title
), rank_per_cat AS (
  SELECT
    category_id,
    ca.name,
    film_id,
    title,
    caffaires,
    RANK() OVER win AS rnk
  FROM
    film_payment fp
  JOIN
    pagila.film_category fc USING(film_id)
  JOIN
    pagila.category ca USING(category_id)
  WINDOW win AS (PARTITION BY category_id ORDER BY caffaires DESC)
SELECT
 name,
 title,
 caffaires,
 rnk
FROM rank_per_cat
WHERE rnk <= 5
ORDER BY name, rnk
```

Schéma world

4. Lister pour chaque pays, la proportion de la population qui utilise l'une des deux langues les plus populaires du pays,

Solution WITH ranking AS (SELECT countrycode, name_country, language, percentage, RANK() OVER win AS rnk world.country co world.countrylanguage cl USING(countrycode) win AS (PARTITION by countrycode ORDER BY percentage DESC)) **SELECT** countrycode, name_country, SUM(percentage) AS prop FROM ranking WHERE rnk <= 2 GROUP BY countrycode, name_country ORDER BY prop DESC;

Solution

5. Lister pour chaque région (attribut region de country) les 10 villes les plus peuplées.

```
Solution
WITH R AS (
   SELECT
     co.countrycode, co.name_country,
     ci.name,
    RANK() OVER win AS rnk
   FROM
     world.country co
     world.city ci USING(countrycode)
   WINDOW win AS (PARTITION BY co.countrycode ORDER BY ci.population DESC)
 )
SELECT
  name_country,
  string_agg(name, ', ')
FROM
  R.
WHERE rnk <= 2
GROUP BY countrycode, name_country
```

6. Lister pour chaque langue, les deux pays où on trouve le plus grand nombre d'utilisateurs.

```
Solution
WITH R AS (
  SELECT
    language,
    name_country,
    percentage*population_country/100.0 AS pop_loc,
    RANK() OVER win AS rnk
     world.countrylanguage cl
   NATURAL JOIN
    world.country
   WHERE
     population_country IS NOT NULL
  WINDOW win AS (PARTITION BY language ORDER BY percentage*population_country DESC)
)
SELECT
 language,
 string_agg(name_country, ', ') AS pays, SUM(pop_loc) AS loc
FROM
WHERE rnk <= 2
GROUP BY language;
```

7. Lister les pays en donnant leur rang par gnp (pnb) par habitant décroissant et leur rang par espérance de vie à la naissance (lifeexpectancy) décroissante.

```
Solution
SELECT
 name_country,
 lifeexpectancy,
 RANK() OVER win_gnp AS rnk_gnppercap,
 RANK() OVER win_life AS rnk_lifeexp
FROM
  world.country
WHERE
 gnp IS NOT NULL AND
 population_country IS NOT NULL AND
 lifeexpectancy IS NOT NULL
WINDOW
  win_gnp AS (ORDER BY gnp/population_country DESC),
  win_life AS (ORDER BY lifeexpectancy DESC)
ORDER BY lifeexpectancy DESC;
```