Projeto Final em Engenharia Informática

Projeto de Data Warehouse

IMPLEMENTAÇÃO E ANÁLISE

MANUAL DE UTILIZAÇÃO DA IMPLEMENTAÇÃO DA DATA WAREHOUSE

Pedro Miguel Sequeira Narciso

Professor Luís Cavique

Lisboa 10 de Dezembro de 2020

Descreve-se neste manual a implementação das instruções de SQL realizadas durante a implementação da Datawarehouse resultante do Projeto Final de Engenharia Informática elaborado no âmbito da Licenciatura em Engenharia Informática da Universidade Aberta.

1.Extração de tabelas

1.1 Tabela dim_actor

Extração de dados da tabela ***actor*** da base de dados ***sakila***

```
INSERT INTO 101_dim_actor (
  actor_id,
  first_name,
  last_name,
  last_update,
  extract_date )
SELECT
  actor.actor_id,
  actor.first_name,
  actor.last_name,
  actor.last_update,
  Now() AS extract_date
FROM actor ;
```

1.2 Tabela dim_customers

Extração de dados da tabela ***customers*** da base de dados ***sakila***

```
INSERT INTO 102_dim_customers (
   customer_id,
   first_name,
   last_name,
   city,
   store,
   active,
   create_date,
   last_update,
   extract_date )
SELECT
   CST.customer_id,
   CST.first_name,
   CST.last_name,
   CT1.city AS city,
   CT.city AS store,
   CST.active,
   CST.create_date,
   CST.last_update, Now() AS [extract]
FROM (city AS CT
INNER JOIN (address AS AD1
INNER JOIN store AS STR ON AD1.address_id = STR.address_id) ON CT.city_id =
AD1.city_id)
INNER JOIN ((address AS ADR
INNER JOIN city AS CT1 ON ADR.city_id = CT1.city_id)
```

```
INNER JOIN customer AS CST ON ADR.address_id = CST.address_id) ON STR.store_id =
CST.store_id ;
```

1.3 Tabela dim_film

Extração de dados da tabela ***movies*** da base de dados ***suppliers***

```
INSERT INTO 103_dim_film (
    movie_id,
    title,
    release_year,
   origin,
   last_update,
   extract_date )
SELECT
    movie_id,
    title,
    release_year,
    'supp_aquisitions' AS tabela,
    last_update,
    Now() AS Extract_date
FROM movies ;
```

Extração de dados das tabelas ***film e language*** da base de dados ***sakila***

```
 INSERT INTO 103_dim_film (
    film_id,
    title,
    release_year,
    name,
    origin,
    last_update,
    extract_date )
SELECT
    F.film_id,
    F.title,
    F.release_year,
    L.name,
    'Sakila_film' AS origin,
    F.last_update,
    Now() AS extract_date
FROM [language] AS L
INNER JOIN film AS F ON L.language_id = F.language_id ;
```

1.4 Tabela dim_staff

Extração de dados das tabelas ***employees e department*** da base de dados ***employees***

```
INSERT INTO 104_dim_staff (
   employee_id,
   first_name,
   last_name,
```

```
    hire_date,
    exit_date,
    department_name,
    last_update,
    extract_date )
SELECT
    E.employee_id,
    E.first_name,
    E.last_name,
    E.hire_date,
    E.exit_date,
    D.department_name,
    E.last_update,
    Now() AS extract_date
FROM departments AS D
INNER JOIN (employees AS E
INNER JOIN department_employee AS DE
    ON E.employee_id = DE.employee_id)
    ON D.department_id = DE.department_id ;
```

Extração de dados da tabela ***staff*** da base de dados ***sakila***

```
INSERT INTO 104_dim_staff (
    staff_id,
    first_name,
    last_name,
    last_update,
    extract_date )
SELECT
    staff_id,
    first_name,
    last_name,
    last_update,
    Now() AS extract_date;
FROM staff
```

1.5 Tabela dim_suppliers

Extração de dados da tabela ***suppliers*** da base de dados ***suppliers***

```
INSERT INTO 105_dim_suppliers (
    supplier_id,
    name,
    supplier_type,
    last_update,
    extract_date )
SELECT
    supplier_id,
    name,
    supplier_type,
```

```
    last_update,
    Now() AS extract_date
FROM suppliers ;
```

1.6 Tabela dim_rental

Extração de dados da tabela ***rental*** da base de dados ***sakila***

```
INSERT INTO 106_dim_rentals (
    rental_id,
    rental_date,
    return_date,
    last_update,
    extract_date )
SELECT
    rental_id,
    rental_date,
    return_date,
    last_update,
    Now() AS extract_date
FROM rental ;
```

1.7 Tabela dim_category

Extração de dados da tabela ***category*** da base de dados ***sakila***

```
INSERT INTO 108_dim_category (
    category_id,
    category_name,
    last_update,
    extract_date )
SELECT
    category_id,
    name,
    last_update,
    Now() AS extract_date
FROM category ;
```

1.8 Tabela fact_aquisitions

Extração de dados da tabela ***aquisitions*** da base de dados ***suppliers***

```
INSERT INTO 120_fact_aquisitions (
    aquisition_id,
    movie_id,
    supplier_id,
    staff_id,
    unit_price,
    quantity,
    aquisition_date,
    extract_date )
SELECT
```

```
    aquisition_id,
    movie_id,
    supplier_id,
    staff_id,
    price AS unit_price,
    quantity,
    aquisition_date,
    Now() AS [extract]
FROM aquisitions ;
```

1.9 Tabela fact_communications

Extração de dados da tabela ***communication, contacts*** e ***suppliers*** da base de dados ***suppliers***

```
INSERT INTO 121_fact_communication (
    comm_id,
    supplier_id,
    staff_id, type,
    comm_date,
    extract_date )
SELECT
    CM.comm_id,
    S.supplier_id,
    CM.staff_id,
    CM.type,
    CM.comm_date,
    Now() AS [extract]
FROM suppliers AS S
INNER JOIN (contacts AS C
INNER JOIN communications AS CM
    ON C.contact_id = CM.contact_id)
    ON S.supplier_id = C.supplier_id ;
```

1.10 Tabela fact_film_actor

Extração de dados da tabela ***film_actor*** da base de dados ***sakila***

```
INSERT INTO 122_fact_film_actor (
    actor_id,
    film_id,
    last_update,
    extract_date )
SELECT
    actor_id,
    film_id,
    last_update,
    Now() AS extract_date
FROM film_actor;
```

1.10 Tabela fact_payment

Extração de dados das tabelas ***inventory, rental e payment*** da base de dados ***sakila***

```
INSERT INTO 123_fact_payment (
    payment_id,
    staff_id,
    amount,
    payment_date,
    last_update,
    customer_id,
    rental_id,
    film_id,
    extract_date )
SELECT
    P.payment_id,
    P.staff_id,
    P.amount,
    P.payment_date,
    P.last_update,
    P.customer_id,
    P.rental_id, I.film_id,
    Now() AS [extract]
FROM (inventory AS I
INNER JOIN rental AS R ON I.inventory_id = R.inventory_id)
INNER JOIN payment AS P ON R.rental_id = P.rental_id ;
```

1.11 Tabela fact_relatives

Extração de dados das tabelas ***relatives*** da base de dados ***employee***

```
INSERT INTO 124_fact_relatives (
    relative_id,
    employee_id,
    relantionship_id,
    first_name,
    last_name,
    gender,
    birth_date,
    last_update, extract_date )
SELECT
    relative_id,
    employee_id,
    relationship_id,
    first_name,
    last_name,
    gender,
    birth_date,
    last_update,
    Now() AS [extract]
FROM relatives;
```

1.12 Tabela fact_salaries

Extração de dados das tabelas ***titles e salaries*** da base de dados ***employee***

```
INSERT INTO 125_fact_salaries (
    employee_id,
    title,
    salary,
    start_date,
    extract_date )
SELECT
    salaries.employee_id,
    titles.title,
    salaries.salary,
    salaries.start_date,
    Date() AS [extract]
FROM titles
INNER JOIN salaries ON titles.title_id = salaries.title_id;
```

1.13 Tabela film_category

Extração de dados da tabela ***film_category*** da base de dados ***sakila***

```
INSERT INTO 126_fact_film_category (
    film_id,
    category_id,
    last_update,
    extract_date )
SELECT
    film_id,
    category_id,
    last_update,
    Now() AS extract_date
FROM film_category ;
```

1.14 Tabela dim_calendar

Extração de dados da tabela ***120_fact_aquisitions***

```
INSERT INTO 107_dim_calendar (
    calendar,
    tbl_origem )
SELECT DISTINCT
    aquisition_date,
    '120_fact_aquisitions' AS tabela
FROM 120_fact_aquisitions
GROUP BY aquisition_date;
```

Extração de dados da tabela ***121_fact_communications***

```
INSERT INTO 107_dim_calendar (
    calendar,
    tbl_origem )
SELECT
```

```
    comm_date AS calendar,
    'ETL_fact_communications' AS tbl_origem
FROM 121_fact_communication
GROUP BY comm_date;
```

Extração de dados da tabela ***123_fact_payment***

```
INSERT INTO 107_dim_calendar (
calendar,
tbl_origem )
SELECT DISTINCT
payment_date AS calendar,
'123_fact_payment' AS tbl_origem
FROM 123_fact_payment
GROUP BY payment_date;
```

Extração de dados da tabela ***124_fact_relatives***

```
INSERT INTO 107_dim_calendar (
    calendar,
    tbl_origem )
SELECT DISTINCT
    birth_date,
    '124_fact_relatives' AS tbl_origem
FROM 124_fact_relatives
GROUP BY birth_date;
```

Extração de dados da tabela ***125_fact_salaries***

```
INSERT INTO 107_dim_calendar (
    calendar,
    tbl_origem )
SELECT DISTINCT
    start_date AS calendar,
    '125_fact_salaries' AS tbl_origem
FROM 125_fact_salaries
GROUP BY start_date;
```

2. Transformações em tabelas

2.1 Tabela dim_actor

Transformar de dados da tabela ***101_dim_actor***

```
INSERT INTO 201_dim_actor (
    actor_id,
    first_name,
    last_name,
    load_date )
SELECT
    actor_id,
    first_name,
    last_name,
    extract_date
FROM 101_dim_actor ;
```

2.2 Tabela dim_customers

Transformar dados da tabela ***121_dim_customers***
Conversão do campo ***create_date***, originalmente no formato *data/hora* para o formato de *data*.

```
INSERT INTO 202_dim_customers (
    customer_id,
    first_name,
    last_name,
    city, store,
    create_date,
    active,
    load_date )
SELECT
    customer_id,
    first_name,
    last_name,
    city,
    store,
    DateSerial(Year([create_date]),Month([create_date]),Day([create_date])) AS create_dt,
    active,
    extract_date
FROM 102_dim_customers ;
```

2.3 Tabela dim_films

Transformar dados da tabela ***103_dim_films***
Utilização de Group BY de forma a agrupar os filmes cujos títulos e anos de lançamento sejam idênticos;
Utilização da função agregadora MAX de forma a retirar um só valor dos campos cuja origem foi só uma tabela.
Utilização da função agregadora MIN no campo extract_date.

```
INSERT INTO 203_dim_film (
    film_id,
    movie_id,
    title,
    release_year,
    film_language,
    load_date )
SELECT
    Max(film_id) AS max_film_id,
    Max(movie_id) AS max_movie_id,
    title,
    release_year,
    Max(name) AS film_language,
    Min(extract_date) AS load_date
FROM
     103_dim_Film
GROUP BY
    title, release_year;
```

Sobre a tabela resultante deve-se fazer algumas verificações de coerência, por exemplo verificar se o campo title possui um valor “null” ou se os campos movie_id ou film_id não têm referência nas duas tabelas importadas (se tiver valor “zero”). Nesta situação ou o filme só existe numa tabela, ou existe diferença na grafia.

```
SELECT
    film_key,
    title,
    movie_id,
    film_id
FROM 203_dim_film
WHERE (((title) Is Null) OR ((movie_id)=0)) OR (((film_id)=0));
```

2.4 Tabela dim_staff

Transformar dados da tabela ***103_dim_staff***

Utilização de Group BY de forma a agrupar os funcionários como mesmo nome e apelido;
Utilização da função agregadora MAX de forma a retirar um só valor dos campos cuja origem foi só uma tabela.
Utilização da função agregadora MIN no campo extract_date.

```
INSERT INTO 204_dim_staff (
    staff_id,
    employee_id,
    first_name,
    last_name,
    hire_date,
    exit_date,
    department_name,
    load_date )
```

```
SELECT
    Max(staff_id) AS staffid,
    Max(employee_id) AS employeeid,
    first_name,
    last_name,
    Max(hire_date) AS HrDt,
    Max(exit_date) AS ExtDt,
    Max(department_name) AS DepNa,
    Min(extract_date) AS Extract
FROM 104_dim_staff
GROUP BY
    first_name, last_name;
```

2.5 Tabela dim_suppliers

Transformar dados da tabela ***105_dim_suppliers***

```
INSERT INTO 205_dim_suppliers (
    supplier_id,
    supplier_name,
    supplier_type,
    load_date )
SELECT
    supplier_id,
    name,
    supplier_type,
    extract_date
FROM 105_dim_suppliers ;
```

2.6 Tabela dim_rental

Transformar dados da tabela ***106_dim_rental***

Conversão do campo ***rental_date*** e ***return_date***, originalmente no formato *data/hora* para o formato de *data*.

```
INSERT INTO 206_dim_rental (
    rental_id,
    rental_date,
    return_date,
    load_date )
SELECT
    rental_id,
    DateSerial(Year(rental_date),Month(rental_date),Day(rental_date)) AS RenDate,
    DateSerial(Year(return_date),Month(return_date),Day(return_date)) AS RetDate,
extract_date
FROM 106_dim_rental ;
```

2.7 Tabela dim_calendar

Transformar dados da tabela ***107_dim_calendar***
Efetua-se o Group_by de forma a eliminar as datas repetidas

```
INSERT INTO 207_dim_calendar (
    calendar,
    nDay,
    nWeekDay,
    tWeekDay,
    nYearDay,
    nYearWeek,
    nMonth,
    tMonth,
    nQuarter,
    nYear )
SELECT
    DateSerial(Year([calendar]),Month([calendar]),Day([calendar])) AS Calendario,
    Day([calendar]) AS nDay,
    Weekday([calendar]) AS nWeekDay,
    WeekdayName(Weekday([calendar]),True,1) AS tWeekDay,
    Format([calendar],'y') AS nYearDay,
    Format([calendar],'ww') AS nWeekYear,
    Month([calendar]) AS nMonth,
    MonthName(Month([calendar]),True) AS tMonth,
    Format([calendar],'q') AS nQuarter,
    Year([calendar]) AS nYear
FROM 107_dim_calendar
GROUP BY
    DateSerial(Year([calendar]),
    Month([calendar]),
    Day([calendar])),
    Day([calendar]),
    Weekday([calendar]),
    WeekdayName(Weekday([calendar]),True,1),
    Format([calendar],'y'),
    Format([calendar],'ww'),
    Month([calendar]),
    MonthName(Month([calendar]),True),
    Format([calendar],'q'),
    Year([calendar]);
```

2.8 Tabela dim_category

Transformar dados da tabela ***108_dim_category***

```
INSERT INTO 208_dim_category (
    category_id,
    category_name,
    load_date )
SELECT
    category_id,
    category_name,
    extract_date
FROM 108_dim_category ;
```

2.9 Tabela fact_aquisitions

Transformar dados da tabela ***120_fact_aquisitions***

Conversão do campo ***aquisition_date***, originalmente no formato *data/hora* para o formato de *data*.

Criado o campo ***total_price***, resultante da multiplicação: [price]*[quantity]

```
INSERT INTO 220_fact_aquisitions (
    aquisition_id,
    movie_id,
    supplier_id,
    staff_id,
    unit_price,
    total_price,
    quantity,
    aquisition_date,
    load_date )
SELECT
    aquisition_id,
    movie_id,
    supplier_id,
    staff_id,
    price,
    [price]*[quantity] AS total,
    quantity,
    DateSerial(Year([aquisition_date]),Month([aquisition_date]),Day([aquisition_date])) AS
AquDate,
    extract_date
FROM 120_fact_aquisitions ;
```

2.10 Tabela fact_communications

Transformar dados da tabela ***121_fact_communications***

```
INSERT INTO 221_fact_communications (
    comm_id,
    supplier_id,
    staff_id,
```

```
    comm_type,
    comm_date,
     load_date )
SELECT
    comm_id,
    supplier_id,
    staff_id,
    type,
    comm_date,
    extract_date
FROM 121_fact_communications;
```

2.11 Tabela fact_film_actor

Transformar dados da tabela ***122_fact_film_actor***

```
INSERT INTO 222_fact_film_actor (
    actor_id,
    film_id,
    load_date )
SELECT
    actor_id AS aid,
    film_id AS fid,
    extract_date AS load_date
FROM 122_fact_film_actor ;
```

2.12 Tabela fact_payment

Transformar dados da tabela ***123_fact_payment***
Conversão do campo ***payment_date***, originalmente no formato *data/hora* para o formato de *data*.

```
INSERT INTO 223_fact_payment (
    payment_id,
    customer_id,
    staff_id,
    rental_id,
    film_id,
    amount,
    payment_date,
    load_date )
SELECT
    payment_id,
    customer_id,
    staff_id,
    rental_id,
    film_id,
    amount,
```

```
        DateSerial(Year(payment_date),Month(payment_date),Day(payment_date)) AS
PaymDate,
        extract_date
    FROM 123_fact_payment ;
```

2.13 Tabela fact_relatives

Transformar dados da tabela ***124_fact_relatives***
Só se efetua a transformação nos registos dos "filhos" e "filhas".

```
INSERT INTO 224_fact_relatives (
    relative_id,
    employee_id,
    child_first_name,
    child_last_name,
    child_gender,
    child_birth_date,
    load_date )
SELECT
    relative_id,
    employee_id,
    first_name,
    last_name,
    gender,
    birth_date,
    extract_date
FROM 124_fact_relatives
WHERE (relantionship_id)=3 Or (relantionship_id)=4;
```

2.14 Tabela fact_salaries

Transformar dados da tabela ***125_fact_salaries***

```
INSERT INTO 225_fact_salaries (
    employee_id,
    title,
    salary,
    start_date,
    load_date )
SELECT
    employee_id,
    title,
    salary,
    start_date,
    extract_date
FROM 125_fact_salaries ;
```

2.15 Tabela fact_film_category

Transformar dados da tabela ***126_fact_film_category***

```
INSERT INTO 226_fact_film_category (
    film_id,
    category_id,
    load_date )
SELECT
    film_id,
    category_id,
    extract_date
FROM 126_fact_film_category;
```

3. Transformações em tabelas

3.1 Tabela dim_actor

Carregar dados da tabela ***201_dim_actor***

```
INSERT INTO 301_dim_actor (
    actor_id,
    first_name,
    last_name,
    load_date )
SELECT
    actor_id,
    first_name,
    last_name,
    load_date
FROM 201_dim_actor ;
```

3.2 Tabela dim_customer

Carregar dados da tabela ***202_dim_customers***

```
INSERT INTO 302_dim_customer (
    customer_id,
    first_name,
    last_name,
    city,
    store,
    create_date,
    active,
    load_date )
SELECT
    customer_id,
    first_name,
```

```
    last_name,
    city,
    store,
    create_date,
    active,
    load_date
FROM 202_dim_customers ;
```

3.3 Tabela dim_film

Extração de dados da tabela ***203_dim_film***

```
INSERT INTO 303_dim_film (
    film_id,
    movie_id,
    title,
    release_year,
    film_language,
    load_date )
SELECT
    film_id,
    movie_id,
    title,
    release_year,
    film_language,
    load_date
FROM 203_dim_film ;
```

3.4 Tabela dim_staff

Carregar dados da tabela ***204_dim_staff***

```
INSERT INTO 304_dim_staff (
    staff_id,
    employee_id,
    first_name,
    last_name,
    hire_date,
    exit_date,
    department_name,
    load_date )
SELECT
    staff_id,
    employee_id,
    first_name,
    last_name,
    hire_date,
    exit_date,
    department_name,
    load_date
FROM 204_dim_staff ;
```

3.5 Tabela dim_suppliers

Carregar dados da tabela ***205_dim_suppliers***

```
INSERT INTO 305_dim_suppliers (
    supplier_id,
    supplier_name,
    supplier_type,
    load_date )
SELECT
    supplier_id,
    supplier_name,
    supplier_type,
    load_date
FROM 205_dim_suppliers ;
```

3.6 Tabela dim_rental

Carregar dados da tabela ***206_dim_rental***

```
INSERT INTO 306_dim_rental (
    rental_id,
    rental_date,
    return_date,
    load_date )
SELECT
    rental_id,
    rental_date,
    return_date,
    load_date
FROM 206_dim_rental ;
```

3.7 Tabela dim_category

Carregar dados da tabela ***208_dim_category***

```
INSERT INTO 308_dim_category (
    category_id,
    category_name,
    load_date )
SELECT
    category_id,
    category_name,
    load_date
FROM 208_dim_category ;
```

3.8 Tabela dim_calendar

Carregar dados da tabela ***207_dim_calendar***

```
INSERT INTO 307_dim_calendar (
    calendar,
    nDay,
    nWeekday,
```

```
    tWeekDay,
    nYearDay,
    nYearWeek,
    nMonth,
    tMonth,
    nQuarter,
    nyear )
SELECT
    calendar,
    nDay,
    nWeekday,
    tWeekDay,
    nYearDay,
    nYearWeek,
    nMonth,
    tMonth,
    nQuarter,
    nyear
FROM 207_dim_calendar ;
```

3.9 Tabela fact_aquisitions

Carregar dados da tabela ***220_fact_aquisitions***
Carregar dados da tabela ***303_dim_film***
Carregar dados da tabela ***304_dim_staff***
Carregar dados da tabela ***305_dim_suppliers***
Carregar dados da tabela ***307_dim_calendar***

```
INSERT INTO 320_fact_aquisitions (
    aquisition_id,
     film_key,
     supplier_key,
     staff_key,
     unit_price,
     total_price,
     quantity,
     aquisition_date_key,
     load_date )
SELECT
          QFA.aquisition_id,
     DF.film_key,
     DS.supplier_key,
     DST.staff_key,
     QFA.unit_price,
     QFA.total_price,
     QFA.quantity,
     DC.calendar_key,
     QFA.load_date
FROM ((((SELECT
         aquisition_id,
         movie_id,
```

```
            supplier_id,
            staff_id,
            unit_price,
            total_price,
            quantity,
            aquisition_date,
            load_date
        FROM 220_fact_aquisitions)  AS QFA
INNER JOIN 303_dim_film AS DF ON QFA.movie_id = DF.movie_id)
INNER JOIN 304_dim_staff AS DST ON QFA.staff_id = DST.staff_id)
INNER JOIN 305_dim_suppliers AS DS ON QFA.supplier_id = DS.supplier_id)
INNER JOIN 307_dim_calendar AS DC ON QFA.aquisition_date = DC.calendar;
```

3.10 Tabela fact_communications

Carregar dados da tabela ***221_fact_communications***

Carregar dados da tabela ***305_dim_suppliers***

Carregar dados da tabela ***304_dim_staff***

Carregar dados da tabela ***307_dim_calendar***

```
INSERT INTO 321_fact_communication (
    comm_id,
    supplier_key,
    staff_key,
    comm_type,
    comm_date_key,
    load_date )
SELECT
    QFC.comm_id,
    SUP.supplier_key,
    STF.staff_key,
    QFC.comm_type,
    CAL.calendar_key,
    QFC.load_date
FROM (((SELECT
            comm_id,
            supplier_id,
            staff_id,
            comm_type,
            comm_date,
            load_date FROM 221_fact_communications)  AS QFC
INNER JOIN 305_dim_suppliers AS SUP ON QFC.supplier_id = SUP.supplier_id)
INNER JOIN 304_dim_staff AS STF ON QFC.staff_id = STF.staff_id)
INNER JOIN 307_dim_calendar AS CAL ON QFC.comm_date = CAL.calendar;
```

3.11 Tabels fact_film_actor

Carregar dados da tabela ***222_fact_film_actor***

Carregar dados da tabela ***303_dim_film***

Carregar dados da tabela ***301_dim_actor***

```
INSERT INTO 322_fact_film_actor (
```

```
   actor_key,
   film_key,
   load_date )
SELECT
   ACT.actor_key,
   FLM.film_key,
   FFA.load_date
FROM ((SELECT
        actor_id,
        film_id,
        load_date
     FROM 222_fact_film_actor IN)  AS FFA
INNER JOIN 303_dim_film AS FLM ON FFA.film_id = FLM.film_id)
INNER JOIN 301_dim_actor AS ACT ON FFA.actor_id = ACT.actor_id;
```

3.12 Tabela fact_payment

Carregar dados da tabela ***223_fact_payment***
Carregar dados da tabela ***302_dim_customer***
Carregar dados da tabela ***304_dim_staff***
Carregar dados da tabela ***306_dim_rental***
Carregar dados da tabela ***303_dim_film***
Carregar dados da tabela ***307_dim_calendar***

```
INSERT INTO 323_fact_payment(
   INSERT INTO 323_fact_payment (
    payment_id,
    customer_key,
    staff_key,
    rental_key,
    film_key,
    amount,
    payment_date_key,
    load_date )
SELECT
    PYM.payment_id,
    CTM.customer_key,
    STF.staff_key,
    RTL.rental_key,
    FLM.film_key,
    PYM.amount,
    CLD.calendar_key,
    PYM.load_date
FROM (((((SELECT
                payment_id,
                customer_id,
                staff_id,
                rental_id,
                film_id,
                amount,
                payment_date,
                load_date FROM 223_fact_payment )  AS PYM
```

```
INNER JOIN 302_dim_customer AS CTM ON PYM.customer_id = CTM.customer_id)
INNER JOIN 304_dim_staff AS STF ON PYM.staff_id = STF.staff_id)
INNER JOIN 306_dim_rental AS RTL ON PYM.rental_id = RTL.rental_id)
INNER JOIN 307_dim_calendar AS CLD ON PYM.payment_date = CLD.calendar)
INNER JOIN 303_dim_film AS FLM ON PYM.film_id = FLM.film_id;
```

3.13 Tabela fact_relatives

Carregar dados da tabela ***224_fact_relatives***

Carregar dados da tabela ***304_dim_staff***

Carregar dados da tabela ***307_dim_calendar***

```
INSERT INTO 324_fact_relatives (
    relative_id,
    staff_key,
    child_first_name,
    child_last_name,
    child_gender,
    child_birth_date_key,
    load_date )
SELECT
    RTL.relative_id,
    STF.staff_key,
    RTL.child_first_name,
    RTL.child_last_name,
    RTL.child_gender,
    CLD.calendar_key,
    RTL.load_date
FROM ((SELECT
            relative_id,
            employee_id,
            child_first_name,
            child_last_name,
            child_gender,
            child_birth_date,
            load_date FROM 224_fact_relatives)  AS RTL
INNER JOIN 304_dim_staff AS STF ON RTL.employee_id = STF.employee_id)
INNER JOIN 307_dim_calendar AS CLD ON RTL.child_birth_date = CLD.calendar;
```

3.14 Tabela fact_salaries

Carregar dados da tabela ***225_fact_salaries***

Carregar dados da tabela ***304_dim_staff***

Carregar dados da tabela ***307_dim_calendar***

```
INSERT INTO 325_fact_salaries (
    staff_key,
    title,
    salary,
    start_date_key,
    load_date )
SELECT
    STF.staff_key,
```

```
     EMP.title, EMP.salary,
    CLD.calendar_key,
    EMP.load_date
FROM ((SELECT
            employee_id,
            title,
            salary,
            start_date,
            load_date
        FROM 225_fact_salaries)  AS EMP
INNER JOIN 304_dim_staff AS STF ON EMP.employee_id = STF.employee_id)
INNER JOIN 307_dim_calendar AS CLD ON EMP.start_date = CLD.calendar;
```

3.15 Tabela fact_film_category

Carregar dados da tabela ***226_fact_film_category***

Carregar dados da tabela ***308_dim_category***

Carregar dados da tabela ***303_dim_film***

```
INSERT INTO 326_fact_film_category (
    film_key,
    category_key,
    load_date )
SELECT
    FLM.film_key,
    CAT.category_key,
    FFC.load_date
FROM ((SELECT
            film_id,
            category_id,
            load_date FROM 226_fact_film_category)  AS FFC
INNER JOIN 308_dim_category AS CAT ON FFC.category_id = CAT.category_id)
INNER JOIN 303_dim_film AS FLM ON FFC.film_id = FLM.film_id;
```

4.KPI's

4.1 Filmes com melhor saída

```
# R1 Filmes mais alugados (top mês 4)

SELECT TOP 10
    FIL.title AS Titulo,
    Count(REN.rental_key) AS Alugueres
FROM 307_dim_calendar AS CAL
INNER JOIN (306_dim_rental AS REN
    INNER JOIN (323_fact_payment AS PAY
        INNER JOIN 303_dim_film AS FIL
        ON PAY.film_key = FIL.film_key)
    ON REN.rental_key = PAY.rental_key)
ON CAL.calendar_key = PAY.payment_date_key
GROUP BY FIL.title, CAL.nMonth
HAVING (CAL.nMonth=4)
ORDER BY Count(REN.rental_key) DESC;
```

4.2 Relação semanal de filmes alugados

```
# R2 Relação semanal filmes alugados

TRANSFORM Count(REN.rental_key) AS Contar
SELECT
    CAL.nYearWeek AS Semana,
    Count(REN.rental_key) AS Contar1
FROM 307_dim_calendar AS CAL
INNER JOIN (306_dim_rental AS REN
    INNER JOIN 323_fact_payment AS PAY
    ON REN.rental_key = PAY.rental_key)
ON CAL.calendar_key = PAY.payment_date_key
GROUP BY CAL.nYearWeek
PIVOT CAL.nWeekday;
```

4.3 Preferência de atores alugados por mês

```
# R3 Relatório mensal atores e alugueres

    TRANSFORM Count(REN.rental_id) AS ContarDerental
    SELECT
        ACT.first_name & ' ' & ACT.last_name AS Actor,
        Count(REN.rental_id) AS QtyAlugueres
    FROM (((303_dim_film AS FIL
    INNER JOIN (301_dim_actor AS ACT
    INNER JOIN 322_fact_film_actor AS FAC
        ON ACT.actor_key = FAC.actor_key)
        ON FIL.film_key = FAC.film_key)
```

```
    INNER JOIN 323_fact_payment AS PAY
        ON FIL.film_key = PAY.film_key)
    INNER JOIN 306_dim_rental AS REN
        ON PAY.rental_key = REN.rental_key)
    INNER JOIN 307_dim_calendar AS CAL
        ON REN.rental_date = CAL.calendar
    GROUP BY
        ACT.first_name & ' ' & ACT.last_name
    PIVOT CAL.nMonth;

# R3 Relatório mensal atores e alugueres (ForExcel)

    SELECT
        ACT.first_name & ' ' & ACT.last_name AS Actor,
        Count(REN.rental_id) AS QtyAlugueres,
        CAL.nMonth
    FROM (((303_dim_film AS FIL
    INNER JOIN (301_dim_actor AS ACT
    INNER JOIN 322_fact_film_actor AS FAC
        ON ACT.actor_key = FAC.actor_key)
        ON FIL.film_key = FAC.film_key)
    INNER JOIN 323_fact_payment AS PAY
        ON FIL.film_key = PAY.film_key)
    INNER JOIN 306_dim_rental AS REN
        ON PAY.rental_key = REN.rental_key)
    INNER JOIN 307_dim_calendar AS CAL
        ON REN.rental_date = CAL.calendar
    GROUP BY
        ACT.first_name & ' ' & ACT.last_name,
        CAL.nMonth
    ORDER BY
        Count(REN.rental_id) DESC;
```

4.4 Evolução semanal de alugueres por categoria

```
# R4 Evolução semanal de alugueres por categoria

    TRANSFORM Count(CAT.category_key) AS Soma
    SELECT CAT.category_name
    FROM ((326_fact_film_category AS FCA
    INNER JOIN ((303_dim_film AS FIL
    INNER JOIN 323_fact_payment AS PAY ON FIL.film_key = PAY.film_key)
    INNER JOIN 306_dim_rental AS REN ON PAY.rental_key = REN.rental_key) ON
FCA.film_key = FIL.film_key)
    INNER JOIN 308_dim_category AS CAT ON FCA.category_key = CAT.category_key)
    INNER JOIN 307_dim_calendar AS CAL ON REN.rental_date = CAL.calendar
    GROUP BY CAT.category_name
    PIVOT CAL.nYearWeek;

# R4 Evolução semanal de alugueres por categoria (ForExcel)
```

```
SELECT
    CAT.category_name,
    Count(CAT.category_key) AS Soma,
    CAL.nYearWeek
FROM ((326_fact_film_category AS FCA
INNER JOIN ((303_dim_film AS FIL
INNER JOIN 323_fact_payment AS PAY
    ON FIL.film_key = PAY.film_key)
INNER JOIN 306_dim_rental REN
    ON PAY.rental_key = REN.rental_key)
    ON FCA.film_key = FIL.film_key)
INNER JOIN 308_dim_category AS CAT
    ON FCA.category_key = CAT.category_key)
INNER JOIN 307_dim_calendar AS CAL
    ON REN.rental_date = CAL.calendar
GROUP BY
    CAT.category_name,
    CAL.nYearWeek;
```

4.5 Relação de funcionários e vencimentos

```
# R5 Relação Funcionários e vencimentos

SELECT
    STA.first_name & ' ' & STA.last_name AS Nome,
    SAL.title AS Categoria,
    SAL.salary AS Vencimento
FROM 304_dim_staff AS STA
    INNER JOIN 325_fact_salaries AS SAL
    ON STA.staff_key = SAL.staff_key;
```

4.6 Festa de natal crianças até 14 anos

```
# R6 Festa natal crianças idade até 14 anos

TRANSFORM Count(REL.relative_key) AS numero
SELECT
    REL.child_gender
FROM 324_fact_relatives AS REL
    INNER JOIN 307_dim_calendar AS CAL
    ON REL.child_birth_date_key = CAL.calendar_key
WHERE
    (((Year((Date()-[calendar]))-1900)<=14))
GROUP BY
    REL.child_gender
PIVOT Year((Date()-[calendar]))-1900;
```

4.7 Relação de aquisições semanais por funcionário

```
# R7 Aquisições semanais por funcionário
```

```
TRANSFORM Count(AQU.aquisition_id) AS Aquisições
SELECT
    CAL.nYearWeek AS Semana,
    Count(AQU.aquisition_id) AS [Total Aquisições]
FROM ((320_fact_aquisition AS AQU
INNER JOIN 304_dim_staff AS STA
    ON AQU.staff_key = STA.staff_key)
INNER JOIN 303_dim_film AS FIL
    ON AQU.film_key = FIL.film_key)
INNER JOIN 307_dim_calendar AS CAL
    ON AQU.aquisition_date_key = CAL.calendar_key
GROUP BY
    CAL.nYearWeek
PIVOT STA.first_name & ' ' & STA.last_name;
```

```
# R7 Aquisições semanais por funcionário (ForExcel)

SELECT
    STA.first_name & ' ' & STA.last_name AS Funcionario,
    Count(AQU.aquisition_id) AS Aquisições,
    CAL.nYearWeek AS Semana
FROM ((320_fact_aquisition AS AQU
INNER JOIN 304_dim_staff AS STA
    ON AQU.staff_key = STA.staff_key)
INNER JOIN 303_dim_film AS FIL
    ON AQU.film_key = FIL.film_key)
INNER JOIN 307_dim_calendar AS CAL
    ON AQU.aquisition_date_key = CAL.calendar_key
GROUP BY
    STA.first_name & ' ' & STA.last_name,
    CAL.nYearWeek;
```

4.8 **Contactos mensais com fornecedores**

```
# R8 Contactos mensais com fornecedores

TRANSFORM
    Count(COM.comm_key) AS ContarDecomm_key
SELECT
    STA.first_name & ' ' & STA.last_name AS Nome,
    SUP.supplier_name, Count(COM.comm_key) AS Total
FROM ((321_fact_communication AS COM
INNER JOIN 304_dim_staff AS STA
    ON COM.staff_key = STA.staff_key)
INNER JOIN 305_dim_suppliers AS SUP
    ON COM.supplier_key = SUP.supplier_key)
INNER JOIN 307_dim_calendar AS CAL
ON COM.comm_date_key = CAL.calendar_key
GROUP
    BY STA.first_name & ' ' & STA.last_name,
```

```
    SUP.supplier_name
PIVOT CAL.nMonth;
```

R8 Contactos mensais com fornecedores (ForExcel)

```
SELECT
    STA.first_name & ' ' & STA.last_name AS Nome,
    COM.comm_type,
    SUP.supplier_name,
    Count(COM.comm_key) AS ContarDecomm_key,
    CAL.nMonth
FROM ((321_fact_communication AS COM
INNER JOIN 304_dim_staff AS STA
    ON COM.staff_key = STA.staff_key)
INNER JOIN 305_dim_suppliers AS SUP
    ON COM.supplier_key = SUP.supplier_key)
INNER JOIN 307_dim_calendar AS CAL
    ON COM.comm_date_key = CAL.calendar_key
GROUP BY
    STA.first_name & ' ' & STA.last_name,
    COM.comm_type,
    SUP.supplier_name,
    CAL.nMonth;
```