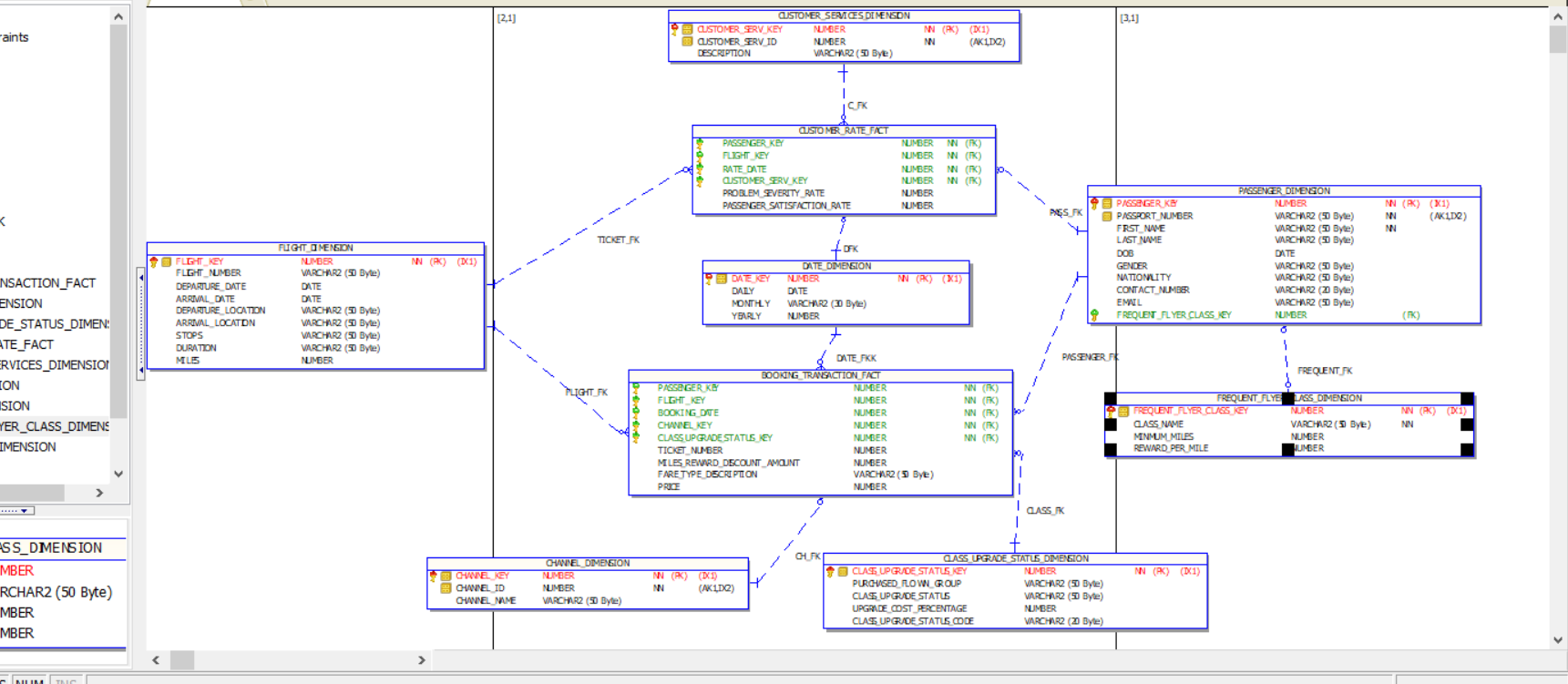
**3.Pysical Model**

**Type of indexes in the physical design model**

**1-primary key index: Each dimension must have a pk**

**2-Foreign key index: Each fact table has foreign keys that connect to its dimensions**

****

**4.DDLS**

**PASSENGER\_DIMENSION**

CREATE TABLE PASSENGER\_DIMENSION

(

PASSENGER\_KEY NUMBER,

PASSPORT\_NUMBER VARCHAR2(50 BYTE) NOT NULL,

FIRST\_NAME VARCHAR2(50 BYTE) NOT NULL,

LAST\_NAME VARCHAR2(50 BYTE),

DOB DATE,

GENDER VARCHAR2(50 BYTE),

NATIONALITY VARCHAR2(50 BYTE),

CONTACT\_NUMBER VARCHAR2(20 BYTE),

EMAIL VARCHAR2(50 BYTE),

FREQUENT\_FLYER\_CLASS\_KEY NUMBER

)

ALTER TABLE PASSENGER\_DIMENSION ADD (

CONSTRAINT PASSENGER\_DIMENSION\_PK

PRIMARY KEY (PASSENGER\_KEY)

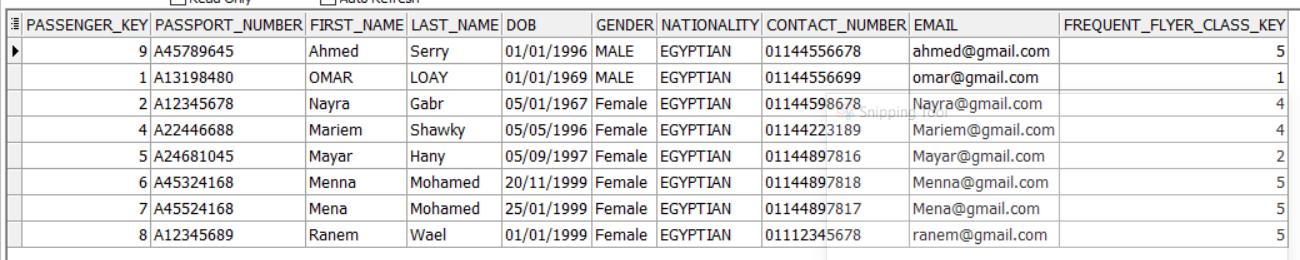
);

ALTER TABLE PASSENGER\_DIMENSION ADD (

CONSTRAINT FREQUENT\_FK

FOREIGN KEY (FREQUENT\_FLYER\_CLASS\_KEY)

REFERENCES HR.FREQUENT\_FLYER\_CLASS\_DIMENSION (FREQUENT\_FLYER\_CLASS\_KEY));



**FREQUENT\_FLYER\_CLASS\_DIMENSION**

CREATE TABLE FREQUENT\_FLYER\_CLASS\_DIMENSION

(

FREQUENT\_FLYER\_CLASS\_KEY NUMBER,

CLASS\_NAME VARCHAR2(50 BYTE) NOT NULL,

MINMUM\_MILES NUMBER,

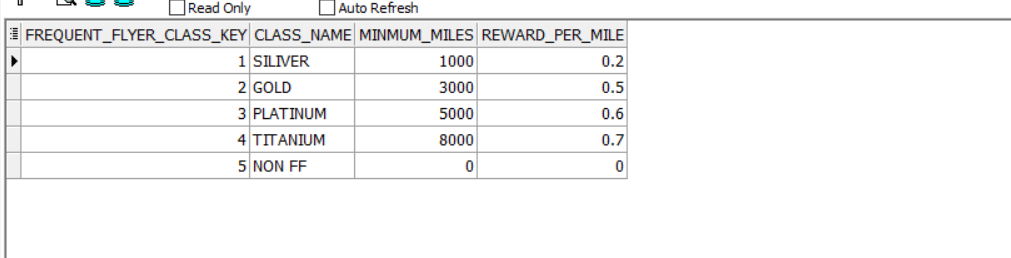
REWARD\_PER\_MILE NUMBER

)

ALTER TABLE FREQUENT\_FLYER\_CLASS\_DIMENSION ADD (

CONSTRAINT FREQUENT\_FLYER\_CLASS\_DIMENS\_PK

PRIMARY KE (FREQUENT\_FLYER\_CLASS\_KEY) );

****

**FLIGHT\_DIMENSION**

CREATE TABLE FLIGHT\_DIMENSION

(

FLIGHT\_KEY NUMBER,

FLIGHT\_NUMBER VARCHAR2(50 BYTE),

DEPARTURE\_DATE DATE,

ARRIVAL\_DATE DATE,

DEPARTURE\_LOCATION VARCHAR2(50 BYTE),

ARRIVAL\_LOCATION VARCHAR2(50 BYTE),

STOPS VARCHAR2(50 BYTE),

DURATION VARCHAR2(50 BYTE),

MILES NUMBER

)

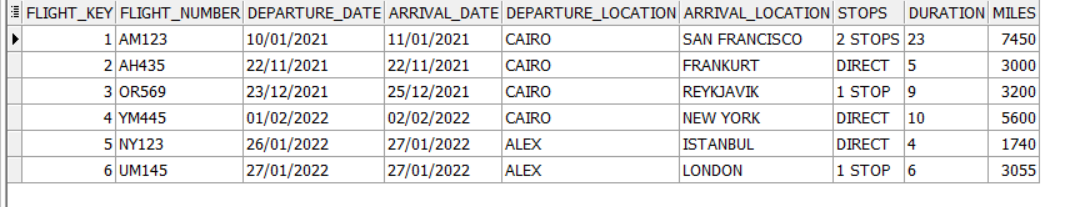
ALTER TABLE FLIGHT\_DIMENSION ADD (

CONSTRAINT TICKET\_DIMENSION\_PK

PRIMARY KEY

(FLIGHT\_KEY)

);



**CUSTOMER\_SERVICES\_DIMENSION**

CREATE TABLE CUSTOMER\_SERVICES\_DIMENSION

(

CUSTOMER\_SERV\_KEY NUMBER,

CUSTOMER\_SERV\_ID NUMBER NOT NULL,

DESCRIPTION VARCHAR2(50 BYTE)

)

ALTER TABLE CUSTOMER\_SERVICES\_DIMENSION ADD (

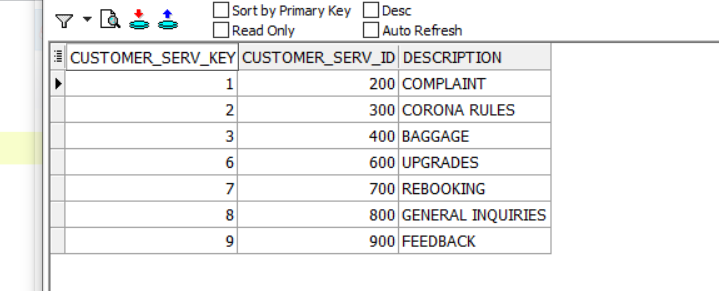
CONSTRAINT CUSTOMER\_SERVICES\_PK

PRIMARY KEY (CUSTOMER\_SERV\_KEY)

CONSTRAINT CUS\_SERV\_UN

UNIQUE (CUSTOMER\_SERV\_ID)

);



**CHANNEL\_DIMENSION**

CREATE TABLE CHANNEL\_DIMENSION

(

CHANNEL\_KEY NUMBER,

CHANNEL\_ID NUMBER NOT NULL,

CHANNEL\_NAME VARCHAR2(50 BYTE)

)

ALTER TABLE CHANNEL\_DIMENSION ADD (

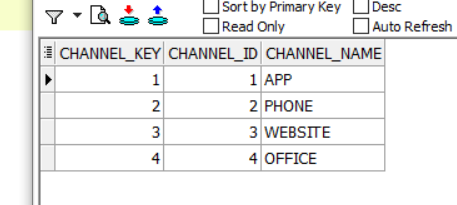
CONSTRAINT CHANNEL\_DIMENSION\_PK

PRIMARY KEY

(CHANNEL\_KEY)

CONSTRAINT CHANNEL\_UN

UNIQUE (CHANNEL\_ID) );



**CLASS\_UPGRADE\_STATUS\_DIMENSION**

CREATE TABLE CLASS\_UPGRADE\_STATUS\_DIMENSION

(

CLASS\_UPGRADE\_STATUS\_KEY NUMBER,

PURCHASED\_FLOWN\_GROUP VARCHAR2(50 BYTE),

CLASS\_UPGRADE\_STATUS VARCHAR2(50 BYTE),

UPGRADE\_COST\_PERCENTAGE NUMBER,

CLASS\_UPGRADE\_STATUS\_CODE VARCHAR2(20 BYTE)

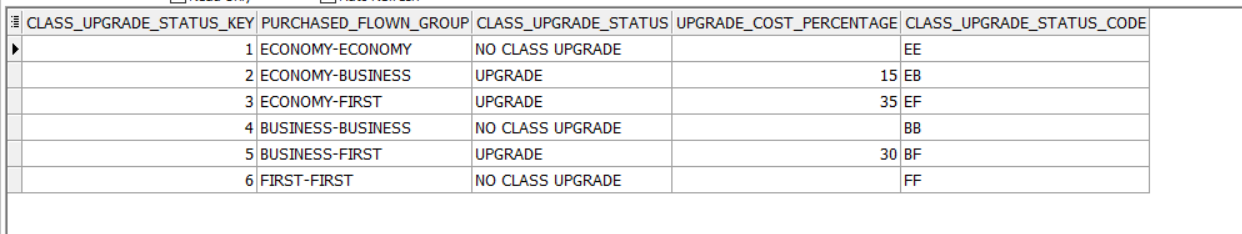
)

ALTER TABLE CLASS\_UPGRADE\_STATUS\_DIMENSION ADD (

CONSTRAINT CLASS\_UPDATE\_DIMENSION\_PK

PRIMARY KEY

(CLASS\_UPGRADE\_STATUS\_KEY));

****

**DATE\_DIMENSION**

CREATE TABLE DATE\_DIMENSION

(

DATE\_KEY NUMBER,

DAILY DATE,

MONTHLY VARCHAR2(30 BYTE),

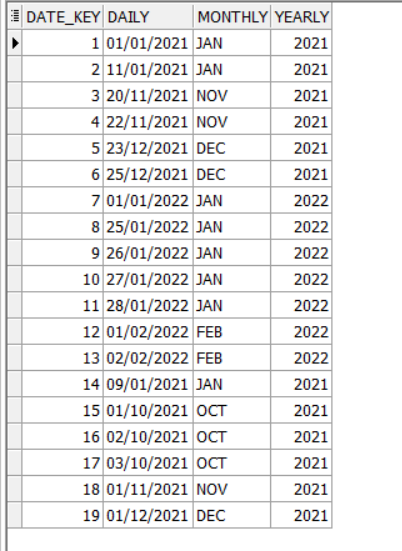
YEARLY NUMBER

)

ALTER TABLE DATE\_DIMENSION ADD (

CONSTRAINT DATE\_DIMENSION\_PK

PRIMARY KEY(DATE\_KEY));



**CUSTOMER\_RATE\_FACT**

CREATE TABLE CUSTOMER\_RATE\_FACT

(

PASSENGER\_KEY NUMBER NOT NULL,

FLIGHT\_KEY NUMBER NOT NULL,

RATE\_DATE NUMBER NOT NULL,

CUSTOMER\_SERV\_KEY NUMBER NOT NULL,

PROBLEM\_SEVERITY\_RATE NUMBER,

PASSENGER\_SATISFACTION\_RATE NUMBER

)

ALTER TABLE CUSTOMER\_RATE\_FACT ADD (

CONSTRAINT C\_FK

FOREIGN KEY (CUSTOMER\_SERV\_KEY)

REFERENCES CUSTOMER\_SERVICES\_DIMENSION (CUSTOMER\_SERV\_KEY),

CONSTRAINT DFK

FOREIGN KEY (RATE\_DATE)

REFERENCES DATE\_DIMENSION (DATE\_KEY),

CONSTRAINT PASS\_FK

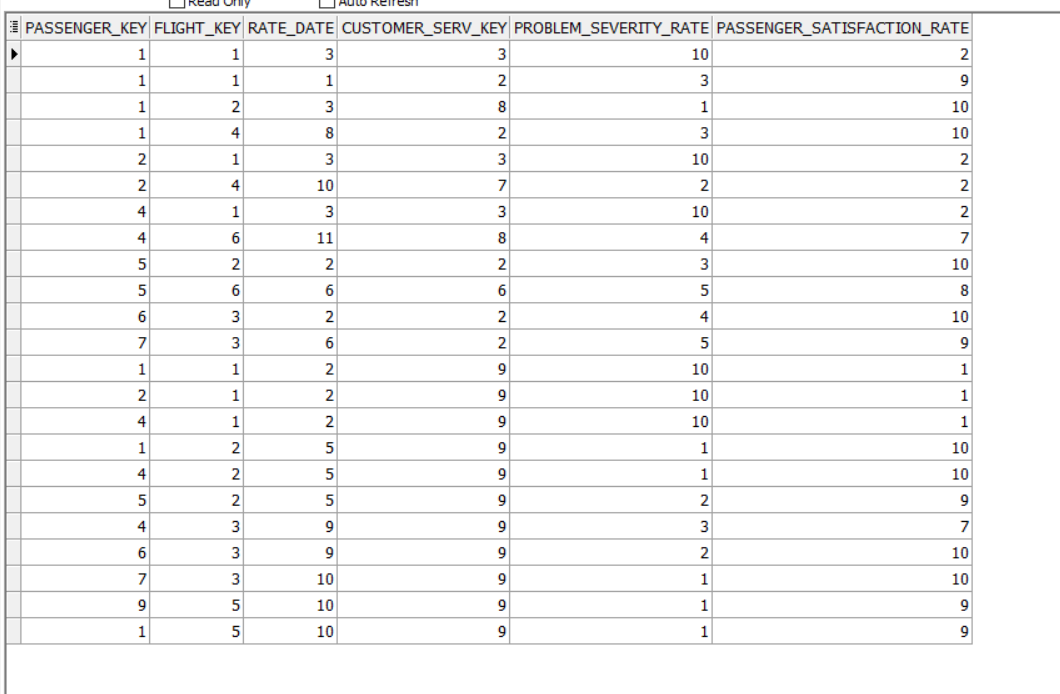
FOREIGN KEY (PASSENGER\_KEY)

REFERENCES PASSENGER\_DIMENSION (PASSENGER\_KEY),

CONSTRAINT TICKET\_FK

FOREIGN KEY (FLIGHT\_KEY)

REFERENCES FLIGHT\_DIMENSION (FLIGHT\_KEY));



**BOOKING\_TRANSACTION\_FACT**

CREATE TABLE BOOKING\_TRANSACTION\_FACT

(

PASSENGER\_KEY NUMBER NOT NULL,

FLIGHT\_KEY NUMBER NOT NULL,

BOOKING\_DATE NUMBER NOT NULL,

CHANNEL\_KEY NUMBER NOT NULL,

CLASS\_UPGRADE\_STATUS\_KEY NUMBER NOT NULL,

TICKET\_NUMBER NUMBER,

MILES\_REWARD\_DISCOUNT\_AMOUNT NUMBER,

FARE\_TYPE\_DESCRIPTION VARCHAR2(50 BYTE),

PRICE NUMBER

)

ALTER TABLE BOOKING\_TRANSACTION\_FACT ADD (

CONSTRAINT CH\_FK

FOREIGN KEY (CHANNEL\_KEY)

REFERENCES CHANNEL\_DIMENSION (CHANNEL\_KEY),

CONSTRAINT CLASS\_FK

FOREIGN KEY (CLASS\_UPGRADE\_STATUS\_KEY)

REFERENCES CLASS\_UPGRADE\_STATUS\_DIMENSION (CLASS\_UPGRADE\_STATUS\_KEY),

CONSTRAINT DATE\_FKK

FOREIGN KEY (BOOKING\_DATE)

REFERENCES DATE\_DIMENSION (DATE\_KEY),

CONSTRAINT FLIGHT\_FK

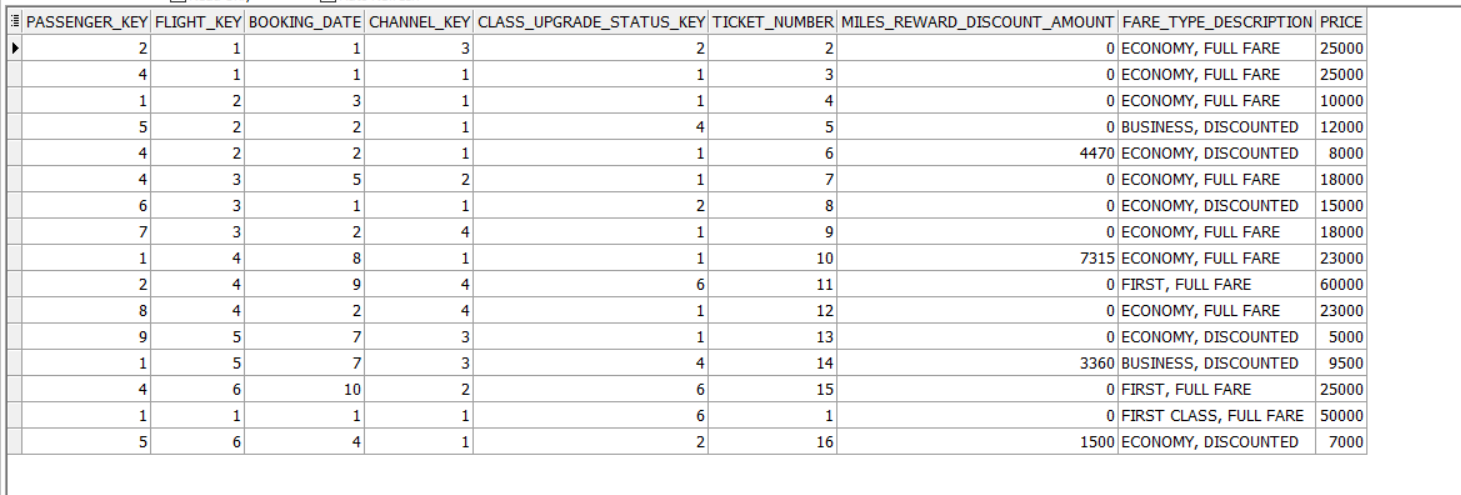
FOREIGN KEY (FLIGHT\_KEY)

REFERENCES FLIGHT\_DIMENSION (FLIGHT\_KEY),

CONSTRAINT PASSENGER\_FK

FOREIGN KEY (PASSENGER\_KEY)

REFERENCES PASSENGER\_DIMENSION (PASSENGER\_KEY));

****

**5. SQL Queries**

**1-What FARE TYPES the company’s frequent flyers book?**

SELECT F.CLASS\_NAME,FARE\_TYPE\_DESCRIPTION,COUNT( FARE\_TYPE\_DESCRIPTION ) AS NUMBER\_OF\_BOOKING

FROM BOOKING\_TRANSACTION\_FACT B

JOIN PASSENGER\_DIMENSION P

ON P.PASSENGER\_KEY =B.PASSENGER\_KEY

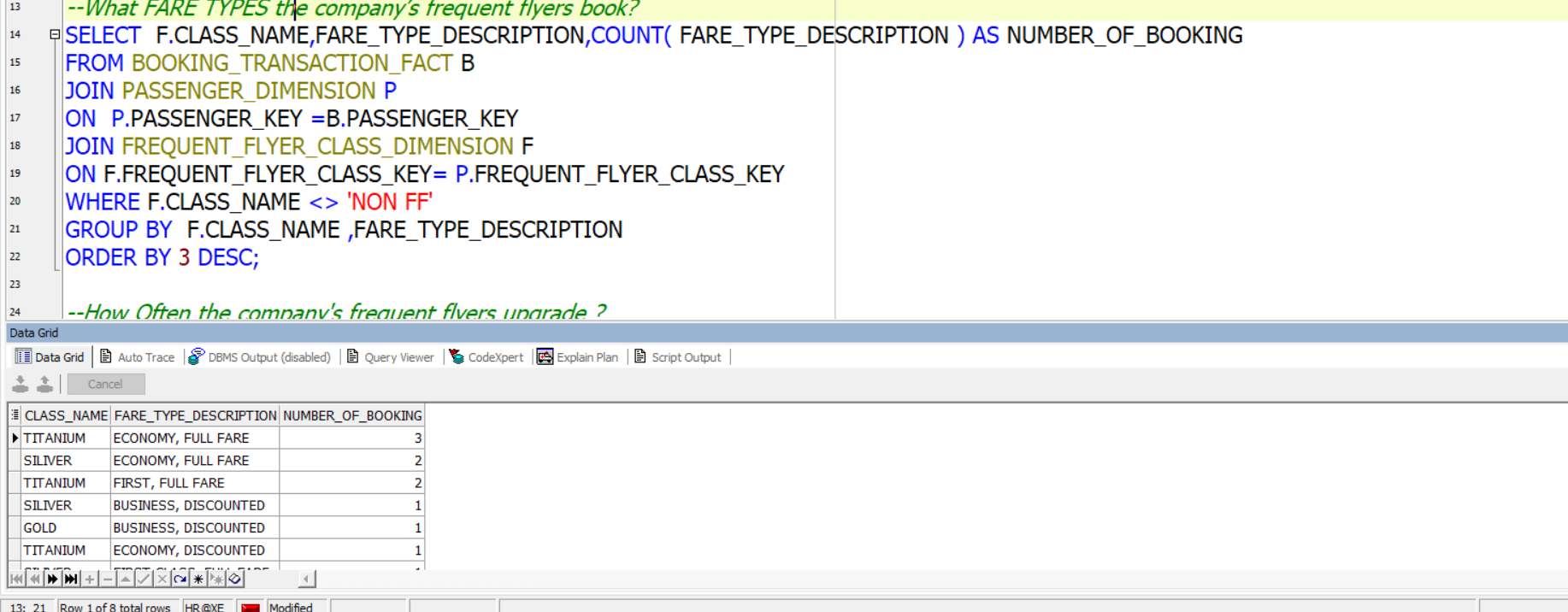
JOIN FREQUENT\_FLYER\_CLASS\_DIMENSION F

ON F.FREQUENT\_FLYER\_CLASS\_KEY= P.FREQUENT\_FLYER\_CLASS\_KEY

WHERE F.CLASS\_NAME <> 'NON FF'

GROUP BY F.CLASS\_NAME ,FARE\_TYPE\_DESCRIPTION

ORDER BY 3 DESC;



**2- ORDER channels that make most of the reservation processes ?**

SELECT COUNT(B.PASSENGER\_KEY) AS TOTAL\_BOOKING ,C.CHANNEL\_NAME

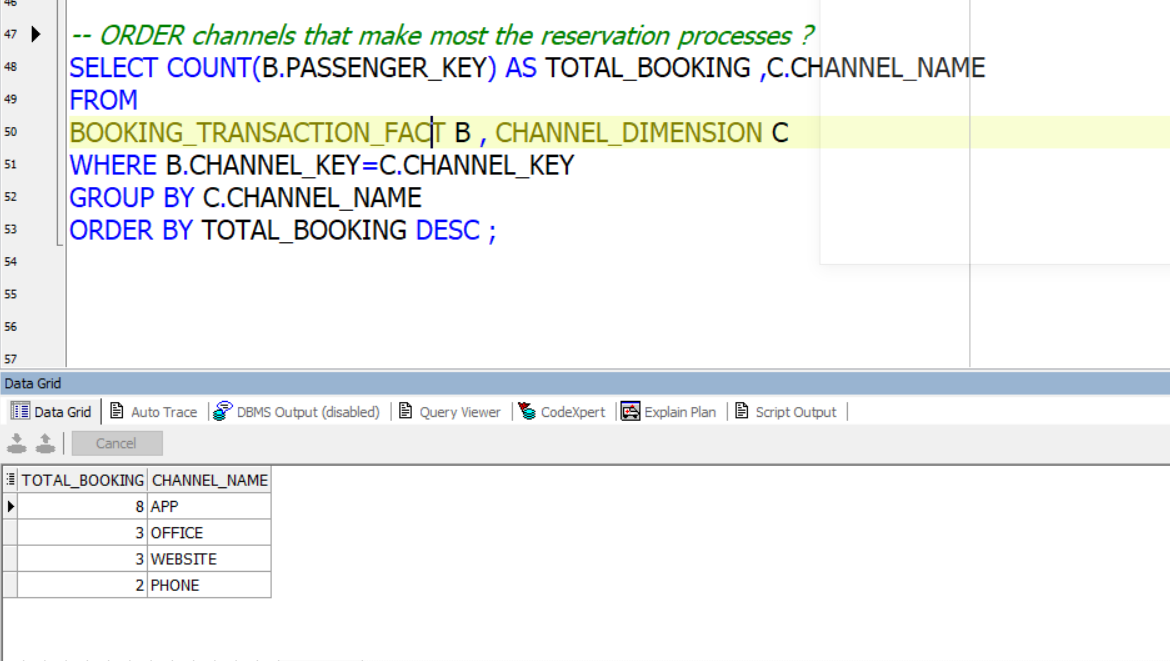
FROM

BOOKING\_TRANSACTION\_FACT B , CHANNEL\_DIMENSION C

WHERE B.CHANNEL\_KEY=C.CHANNEL\_KEY

GROUP BY C.CHANNEL\_NAME

ORDER BY TOTAL\_BOOKING DESC ;



**3-List flights that have the worst Customer Rate ?**

SELECT COUNT(C.PASSENGER\_SATISFACTION\_RATE) AS NUMBER\_OF\_NEGATIVE\_RATE ,F.FLIGHT\_NUMBER

FROM

CUSTOMER\_RATE\_FACT C

JOIN FLIGHT\_DIMENSION F

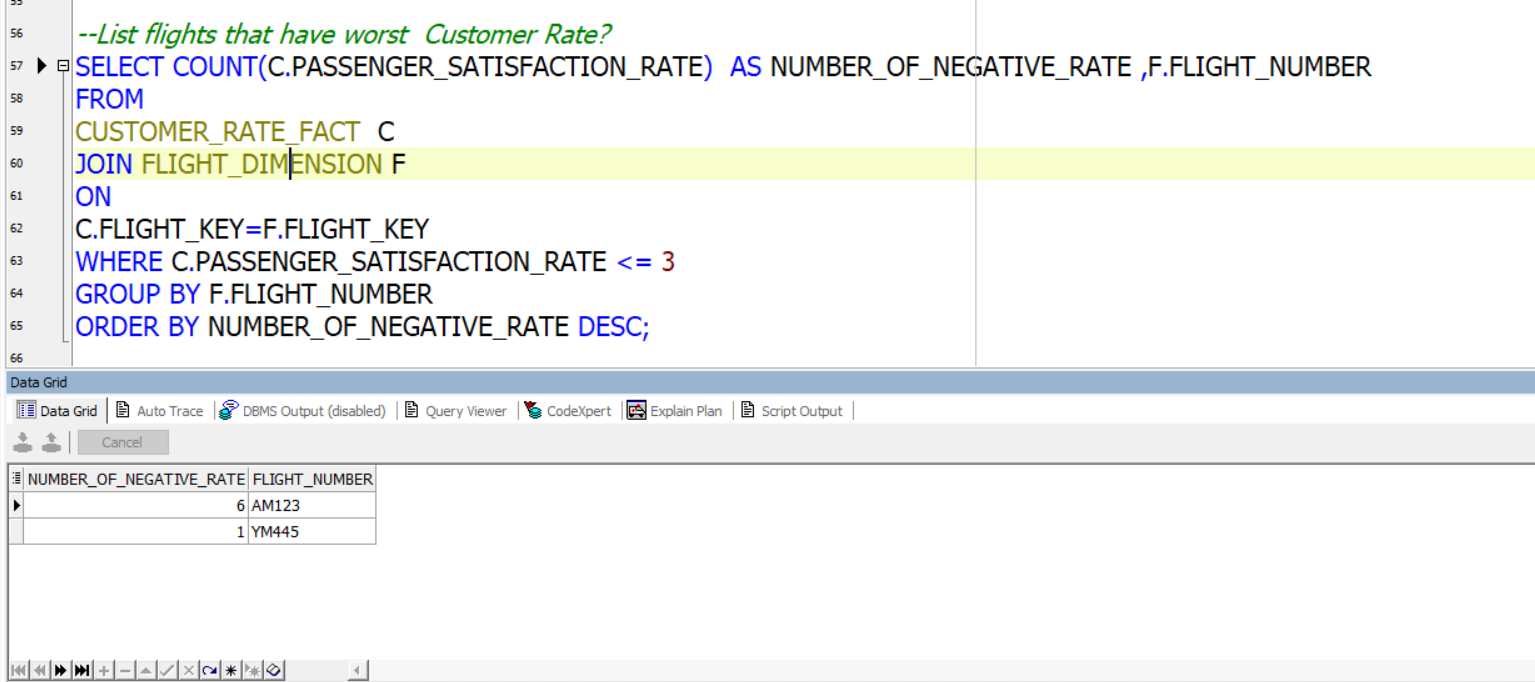
ON

C.FLIGHT\_KEY=F.FLIGHT\_KEY

WHERE C.PASSENGER\_SATISFACTION\_RATE <= 3

GROUP BY F.FLIGHT\_NUMBER

ORDER BY NUMBER\_OF\_NEGATIVE\_RATE DESC;



**4-List Flights that have best feedback?**

SELECT COUNT(C.PASSENGER\_SATISFACTION\_RATE) AS NUMBER\_OF\_POSITIVE\_FEEDBACKS ,F.FLIGHT\_NUMBER

FROM

CUSTOMER\_RATE\_FACT C

JOIN FLIGHT\_DIMENSION F

ON

C.FLIGHT\_KEY=F.FLIGHT\_KEY

JOIN CUSTOMER\_SERVICES\_DIMENSION S

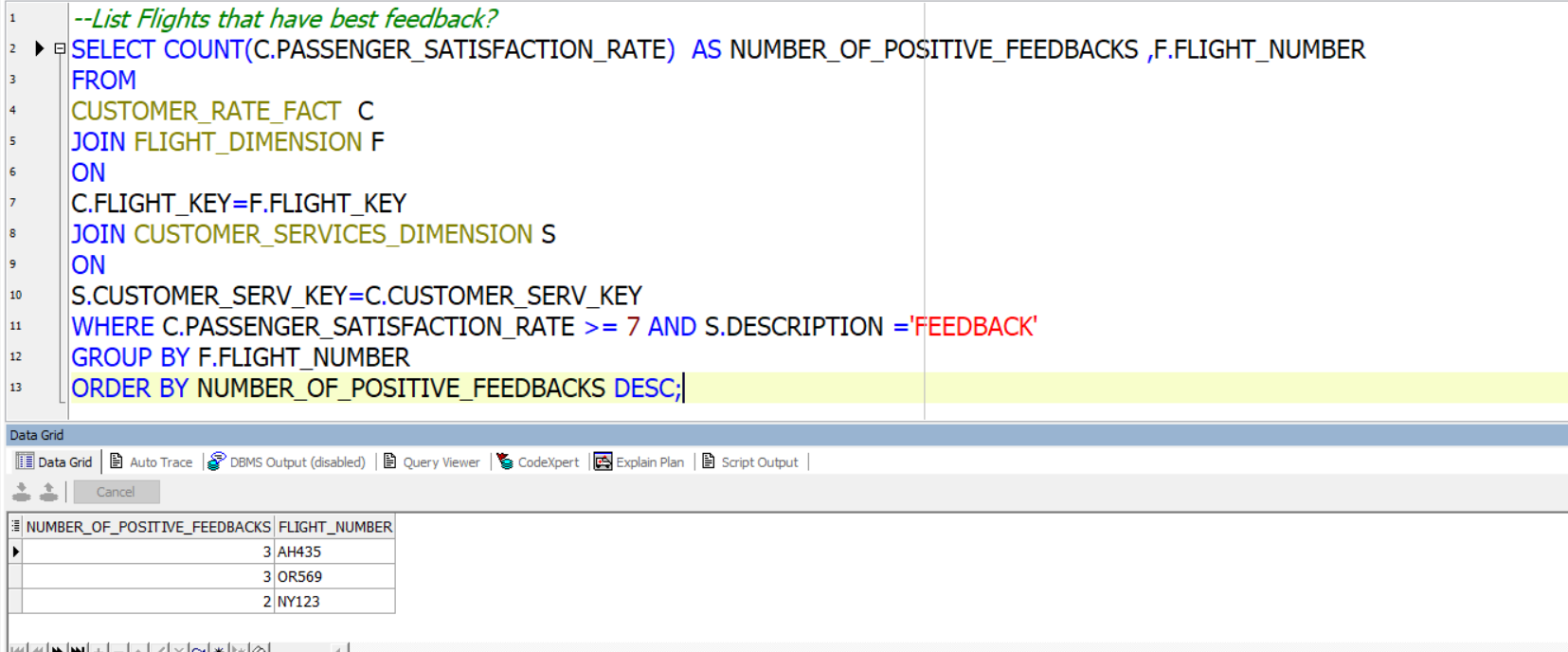
ON

S.CUSTOMER\_SERV\_KEY=C.CUSTOMER\_SERV\_KEY

WHERE C.PASSENGER\_SATISFACTION\_RATE >= 7 AND S.DESCRIPTION ='FEEDBACK'

GROUP BY F.FLIGHT\_NUMBER

ORDER BY NUMBER\_OF\_POSITIVE\_FEEDBACKS DESC;



**5-List Top Loyal Frequent Flyers ?**

SELECT COUNT(B.PASSENGER\_KEY) AS NUMBER\_OF\_FLIGHTS,P.FIRST\_NAME , P.LAST\_NAME , P.PASSPORT\_NUMBER ,F.CLASS\_NAME

FROM PASSENGER\_DIMENSION P

JOIN FREQUENT\_FLYER\_CLASS\_DIMENSION F

ON

P.FREQUENT\_FLYER\_CLASS\_KEY=F.FREQUENT\_FLYER\_CLASS\_KEY

JOIN BOOKING\_TRANSACTION\_FACT B

ON

P.PASSENGER\_KEY=B.PASSENGER\_KEY

WHERE F.CLASS\_NAME <> 'NON FF'

GROUP BY P.FIRST\_NAME , P.LAST\_NAME , P.PASSPORT\_NUMBER ,F.CLASS\_NAME

ORDER BY NUMBER\_OF\_FLIGHTS DESC;

