

First i create a database With the database name "flight tickets" with a code like below:

```
CREATE DATABASE flight_ticket  
  
WITH  
  
OWNER = postgres  
  
ENCODING = 'UTF8'  
  
CONNECTION LIMIT = -1;
```

Then i create table fact_flight_sales with a code like below:

```
CREATE TABLE IF NOT EXISTS public.fact_flight_sales  
(  
    booking_id character varying(7) NOT NULL,  
    booking_created_time timestamp(6) without time zone NOT NULL,  
    booking_paid_time timestamp(6) without time zone NOT NULL,  
    source_airport_id character varying(4) NOT NULL,  
    destination_airport_id character varying(4) NOT NULL,  
    trip_type character varying(10) NOT NULL,  
    payment_method character varying(20) NOT NULL,  
    booking_price_amount integer NOT NULL,  
    user_id character varying(5) NOT NULL,  
    PRIMARY KEY (booking_id, user_id)  
)  
TABLESPACE pg_default;  
  
ALTER TABLE public.fact_flight_sales  
    OWNER to postgres;
```

And table dim_flight_airport with a code like below:

```
CREATE TABLE IF NOT EXISTS public.dim_flight_airport
(
    airport_id character varying(4) NOT NULL,
    airport_name character varying(45) NOT NULL,
    airport_city_name character varying(20) NOT NULL,
    airport_country_name character varying(20) NOT NULL,
    PRIMARY KEY (airport_id)
)

TABLESPACE pg_default;

ALTER TABLE public.dim_flight_airport
    OWNER to postgres;
```

schema table from database as shown below

List of relations						
Schema	Name	Type	Owner	Persistence	Size	Description
public	dim_flight_airport	table	postgres	permanent	0 bytes	
public	fact_flight_sales	table	postgres	permanent	0 bytes	

Then I add data to table fact_flight_sales with code below:

```
INSERT INTO public.fact_flight_sales(
    booking_id, booking_created_time, booking_paid_time, source_airport_id,
    destination_airport_id, trip_type, payment_method, booking_price_amount, user_id)
VALUES ('F00111', '2017-01-01 20:30:01', '2017-01-01 23:31:00', 'BKK', 'CGK', 'OneWay',
'VirtualAccount', 3000000, '0001'),
('F00321', '2017-01-04 11:45:10', '2017-01-04 12:00:05', 'CGK', 'SUB', 'RoundTrip',
'Transfer', 1150000, '0002'),
('F00335', '2017-01-06 05:08:00', '2017-01-06 07:10:57', 'DPS', 'SIN', 'RoundTrip',
'Transfer', 3100000, '0003'),
('F00421', '2017-01-07 15:30:35', '2017-01-07 15:40:10', 'DPS', 'BKK', 'OneWay',
'VirtualAccount', 4300000, '0004'),
('F00465', '2017-01-01 16:40:03', '2017-01-10 16:40:54', 'CGK', 'SUB', 'OneWay',
'CreditCard', 1200000, '0002'),
```

('F00589', '2017-01-20 12:05:15', '2017-01-20 15:35:18', 'SUB', 'CGK', 'OneWay', 'Transfer', 1350000, '0002'),

('F00677', '2017-01-30 06:11:40', '2017-01-30 10:04:40', 'CGK', 'KNO', 'OneWay', 'MiniMarket', 1200000, '0005'),

('F00681', '2017-02-25 13:30:20', '2017-02-25 13:45:10', 'BKK', 'CGK', 'RoundTrip', 'VirtualAccount', 3500000, '0006'),

('F00693', '2017-03-20 12:45:10', '2017-03-20 13:10:18', 'SUB', 'CGK', 'RoundTrip', 'Transfer', 5700000, '0006'),

('F00723', '2017-07-23 08:15:30', '2017-07-23 08:45:45', 'CGK', 'KNO', 'RoundTrip', 'MiniMarket', 12100000, '0006'),

('F00745', '2017-09-15 15:20:32', '2017-09-15 15:55:20', 'BKK', 'CGK', 'OneWay', 'VirtualAccount', 5300000, '0006'),

('F00824', '2017-10-20 14:20:10', '2017-10-20 14:30:18', 'BKK', 'KNO', 'OneWay', 'Transfer', 2700000, '0006'),

('F00872', '2017-11-21 18:25:35', '2017-11-21 18:35:25', 'DPS', 'BKK', 'RoundTrip', 'MiniMarket', 4200000, '0002'),

('F00922', '2017-12-03 19:22:12', '2017-12-03 19:55:20', 'BKK', 'CGK', 'OneWay', 'VirtualAccount', 12500000, '0002'),

('F00982', '2017-12-23 20:15:30', '2017-12-23 20:25:45', 'CGK', 'KNO', 'RoundTrip', 'MiniMarket', 2100000, '0006'),

('F01125', '2018-05-22 15:20:32', '2018-05-22 15:55:20', 'BKK', 'CGK', 'OneWay', 'VirtualAccount', 5300000, '0004'),

('F01187', '2018-07-20 12:55:10', '2018-07-20 13:20:18', 'SUB', 'CGK', 'RoundTrip', 'Transfer', 1500000, '0002'),

('F01235', '2018-10-23 10:15:30', '2018-10-23 10:25:45', 'CGK', 'KNO', 'RoundTrip', 'MiniMarket', 12200000, '0002'),

('F01292', '2018-12-15 17:10:32', '2018-12-15 17:20:20', 'BKK', 'CGK', 'OneWay', 'VirtualAccount', 5300000, '0001');

Output of the fact_flight_sales table

	booking_id [PK] character varying (7)	booking_created_time timestamp without time zone	booking_paid_time timestamp without time zone	source_airport_id character varying (4)	destination_airport_id character varying (4)	trip_type character varying (10)	payment_method character varying (20)	booking_price_amount integer	user_id [PK] character varying (5)
1	F00111	2017-01-01 20:30:01	2017-01-01 23:31:00	BKK	CGK	OneWay	VirtualAccount	3000000	0001
2	F00321	2017-01-04 11:45:10	2017-01-04 12:00:05	CGK	SUB	RoundTrip	Transfer	1150000	0002
3	F00335	2017-01-06 05:08:00	2017-01-06 07:10:57	DPS	SIN	RoundTrip	Transfer	3100000	0003
4	F00421	2017-01-07 15:30:35	2017-01-07 15:40:10	DPS	BKK	OneWay	VirtualAccount	4300000	0004
5	F00465	2017-01-01 16:40:03	2017-01-10 16:45:54	CGK	SUB	OneWay	CreditCard	1200000	0002
6	F00589	2017-01-20 12:05:15	2017-01-20 15:35:18	SUB	CGK	OneWay	Transfer	1350000	0002
7	F00677	2017-01-30 06:11:40	2017-01-30 10:04:40	CGK	KNO	OneWay	MiniMarket	1200000	0005
8	F00681	2017-02-25 13:30:20	2017-02-25 13:45:10	BKK	CGK	RoundTrip	VirtualAccount	3500000	0006
9	F00693	2017-03-20 12:45:10	2017-03-20 13:10:18	SUB	CGK	RoundTrip	Transfer	5700000	0006
10	F00723	2017-07-23 08:15:30	2017-07-23 08:45:45	CGK	KNO	RoundTrip	MiniMarket	12100000	0006
11	F00745	2017-09-15 15:20:32	2017-09-15 15:55:20	BKK	CGK	OneWay	VirtualAccount	5300000	0006
12	F00824	2017-10-20 14:20:10	2017-10-20 14:30:18	BKK	KNO	OneWay	Transfer	2700000	0006
13	F00872	2017-11-21 18:25:35	2017-11-21 18:35:25	DPS	BKK	RoundTrip	MiniMarket	4200000	0002
14	F00922	2017-12-03 19:22:12	2017-12-03 19:55:20	BKK	CGK	OneWay	VirtualAccount	12500000	0002
15	F00982	2017-12-23 20:15:30	2017-12-23 20:25:45	CGK	KNO	RoundTrip	MiniMarket	2100000	0006
16	F01125	2018-05-22 15:20:32	2018-05-22 15:55:20	BKK	CGK	OneWay	VirtualAccount	5300000	0004
17	F01187	2018-07-20 12:55:10	2018-07-20 13:20:18	SUB	CGK	RoundTrip	Transfer	1500000	0002
18	F01235	2018-10-23 10:15:30	2018-10-23 10:25:45	CGK	KNO	RoundTrip	MiniMarket	12200000	0002
19	F01292	2018-12-15 17:10:32	2018-12-15 17:20:20	BKK	CGK	OneWay	VirtualAccount	5300000	0001

After That i add data to dim_flight_airport table with code below:

```
INSERT INTO public.dim_flight_airport(
    airport_id, airport_name, airport_city_name, airport_country_name)
VALUES ('BKK', 'Suvarnavhumi Airport', 'Bangkok', 'Bangkok'),
       ('CGK', 'Soekarno-Hatta Airport', 'Jakarta', 'Indonesia'),
       ('DPS', 'Ngurah Rai Airport', 'Denpasar-Bali', 'Indonesia'),
       ('KNO', 'Kuala Namu Airport', 'Medan', 'Indonesia'),
       ('SIN', 'Changi Airport Airport', 'Singapore', 'Singapore'),
       ('SUB', 'Juanda Airport', 'Surabaya', 'Indonesia');
```

Output of the dim_flight_airport table

	airport_id [PK] character varying (4)	airport_name character varying (45)	airport_city_name character varying (20)	airport_country_name character varying (20)
1	BKK	Suvarnavhumi Airport	Bangkok	Bangkok
2	CGK	Soekarno-Hatta Airport	Jakarta	Indonesia
3	DPS	Ngurah Rai Airport	Denpasar-Bali	Indonesia
4	KNO	Kuala Namu Airport	Medan	Indonesia
5	SIN	Changi Airport Airport	Singapore	Singapore
6	SUB	Juanda Airport	Surabaya	Indonesia

1.1 Find out popular international routes during Jan 2017 - Dec 2018. Sort from the most popular.

Code:

```
select distinct
  source_airport_id,
  destination_airport_id,
  concat(source_airport_id, '->', destination_airport_id) as routes,
  count(*) as popular_international_routes
from fact_flight_sales
where booking_created_time >= '2017-01-01 00:00:00'
  and booking_created_time <= '2018-12-31 00:00:00'
group by 1,2
order by popular_international_routes desc
```

Output

	source_airport_id character varying (4)	destination_airport_id character varying (4)	routes text	popular_international_routes bigint
1	BKK	CGK	BKK -> CGK	6
2	CGK	KNO	CGK -> KNO	4
3	SUB	CGK	SUB -> CGK	3
4	CGK	SUB	CGK -> SUB	2
5	DPS	BKK	DPS -> BKK	2
6	BKK	KNO	BKK -> KNO	1
7	DPS	SIN	DPS -> SIN	1

1.2 Find the average time (in minute) it takes users to make payment of their bookings. Present the average times for each payment method.

Code:

```
WITH avg_time AS (
    SELECT payment_method,
           booking_paid_time::time as total_minutes1,
           booking_created_time::time as total_minutes
    FROM fact_flight_sales
)
select payment_method,
       avg(EXTRACT(EPOCH FROM total_minutes1)/60 - EXTRACT(EPOCH FROM
total_minutes)/60)
from avg_time
group by 1
order by payment_method
```

Output

	payment_method character varying (20)	avg double precision
1	CreditCard	5.8500000000000023
2	MiniMarket	58.71666666666668
3	Transfer	68.05277777777778
4	VirtualAccount	45.419047619047596

1.3 Get the first five flight ticket purchases of each user in 2017 who have purchased flight tickets at least 5 times and have spent IDR 25 Mio. Sort from users who have highest spend, and then sort by the purchase sequence (from 1 to 5) for each user.

Expected output:

user_id	booking_sequence	booking_created_date	booking_price_amount	total_booking_price_amount
0006	1	2017-02-09	6000000	39400000
0006	2	2017-06-30	15000000	39400000
0006	3	2017-07-23	2000000	39400000
0006	4	2017-12-21	6400000	39400000
0006	5	2017-12-30	10000000	39400000
0002	1	2017-01-04	1150000	34950000
0002	2	2017-04-19	800000	34950000
0002	3	2017-06-24	10000000	34950000
0002	4	2017-10-14	3000000	34950000
0002	5	2017-12-24	20000000	34950000

...

Code:

```
WITH ticket_buy AS (  
  SELECT user_id,  
         ROW_NUMBER() OVER (PARTITION BY user_id order by user_id) as booking_sequence,  
         booking_created_time::date as booking_created_date,  
         booking_price_amount,  
         SUM(booking_price_amount) OVER(PARTITION BY user_id) as  
total_booking_price_amount  
  FROM fact_flight_sales  
)  
select user_id,  
       booking_sequence,  
       booking_created_date ,  
       booking_price_amount,  
       total_booking_price_amount  
from ticket_buy  
where booking_created_date >= '2017-01-01'  
      and booking_created_date <= '2017-12-31'  
group by 1,2,3,4,5  
having total_booking_price_amount > 25000000 and booking_sequence <= 5  
order by user_id asc
```

Output

	user_id character varying (5)	booking_sequence bigint	booking_created_date date	booking_price_amount integer	total_booking_price_amount bigint
1	0002	1	2017-01-20	1350000	34100000
2	0002	2	2017-12-03	12500000	34100000
3	0002	3	2017-01-04	1150000	34100000
4	0002	4	2017-11-21	4200000	34100000
5	0002	5	2017-01-01	1200000	34100000
6	0006	1	2017-03-20	5700000	31400000
7	0006	2	2017-10-20	2700000	31400000
8	0006	3	2017-09-15	5300000	31400000
9	0006	4	2017-12-23	2100000	31400000
10	0006	5	2017-07-23	12100000	31400000