

TIS 3351

ADVANCED DATABASE

ASSIGNMENT 2

DATA WAREHOUSE FOR AIRASIA BOOKING SYSTEM

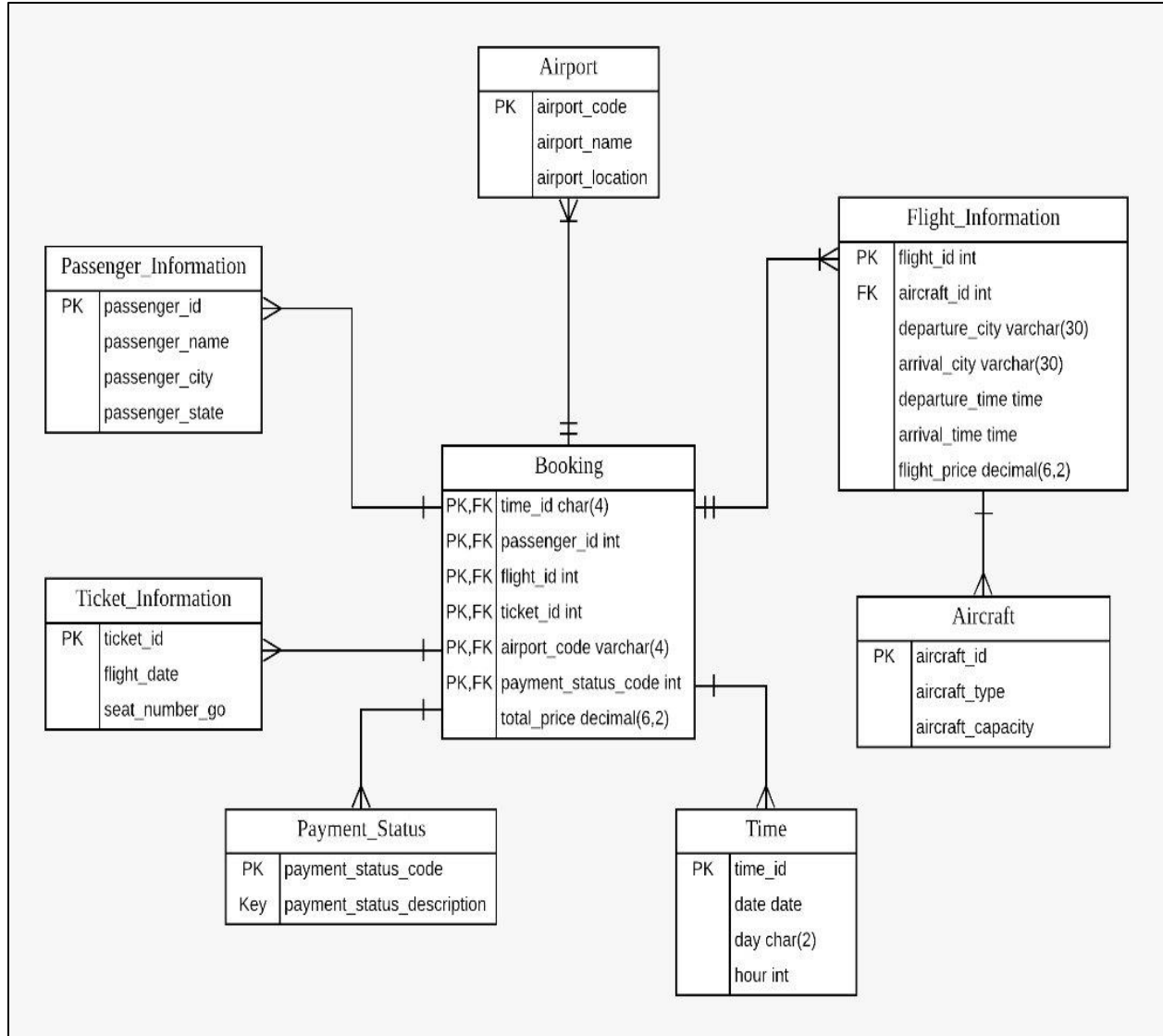
BY

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Star Schema

1. Develop one for each of the followings procedural SQLs:

a. *Stored Procedure*

- This procedure will update the total price with discounted price

```
CREATE PROCEDURE update_total
(
    IN OID int,
    IN Discount int
);
UPDATE Booking
    SET total_price = (total_price * Discount/100)
    WHERE passenger_id = OID
```

b. *Trigger*

- This trigger is to calculate the flight price and booking fee as a total price.

```
CREATE TRIGGER total_price
NO CASCADE BEFORE INSERT ON Booking
REFERENCING NEW AS n
FOR EACH ROW MODE DB2SQL
SET n.total_price = 15 +
(SELECT flight_price FROM flight_information
    WHERE flight_information.flight_id = n.flight_id)
```

c. User-defined function

- This UDF will return values/table of flight ticket information based on passenger id

```
CREATE FUNCTION FlightTicketInformation (PID int)
RETURNS TABLE
(
    passenger_name varchar(50),
    flight_date date,
    departure_city varchar(30),
    arrival_city varchar(30),
    airport_name varchar(30),
    seat_number_go varchar(5),
    aircraft_type varchar(20)
)
LANGUAGE SQL
READS SQL DATA
NO EXTERNAL ACTION
DETERMINISTIC
RETURN
    SELECT passenger_name, flight_date, departure_city,
    arrival_city, airport_name, seat_number_go, aircraft_type
    FROM Passenger_Information, Ticket_Information,
    Flight_Information, Airport, Aircraft, Booking
    WHERE Passenger_Information.passenger_id =
    Booking.passenger_id AND Ticket_Information.ticket_id =
    Booking.ticket_id AND Ticket_Information.flight_id =
    Booking.flight_id AND Airport.airport_code =
    Booking.airport_code AND Aircraft.aircraft_id =
    Flight_Information.aircraft_id AND
    Passenger_Information.passenger_id = PID
```

2. Demonstrate the implemented procedural SQL in task 1 are correctly implemented/invoked/executed

Stored Procedure

- This procedure will update the total price with discounted price

Before

```
db2 => select * from booking
```

TIME_ID	PASSENGER_ID	FLIGHT_ID	TICKET_ID	AIRPORT_CODE	PAYMENT_STATUS_CODE	TOTAL_PRICE
1701	1100	2404	500	KL01	0	1506.00
1702	1101	2405	501	KL01	1	2006.00
1702	1102	2405	501	LD24	1	2006.00
1720	1107	2403	520	KL02	2	1206.00
1718	1113	2402	518	TY68	0	1006.00
1716	1112	2403	516	S007	1	1206.00
1711	1104	2409	511	SH77	2	2006.00
1706	1109	2407	506	SH77	0	2006.00

```

      8 record(s) selected.

db2 =>
```

After

CALL update_total(1100,20)

```
db2 => CALL update_total (1100,20)
```

Return Status = 0

```
db2 => select * from booking
```

TIME_ID	PASSENGER_ID	FLIGHT_ID	TICKET_ID	AIRPORT_CODE	PAYMENT_STATUS_CODE	TOTAL_PRICE
1701	1100	2404	500	KL01	0	1204.80
1702	1101	2405	501	KL01	1	2006.00
1702	1102	2405	501	LD24	1	2006.00
1720	1107	2403	520	KL02	2	1206.00
1718	1113	2402	518	TY68	0	1006.00
1716	1112	2403	516	S007	1	1206.00
1711	1104	2409	511	SH77	2	2006.00
1706	1109	2407	506	SH77	0	2006.00

```

      8 record(s) selected.

db2 =>
```

Trigger

- This trigger is to calculate the flight price and booking fee as a total price.

Before

```
db2 => select * from Booking
```

TIME_ID	PASSENGER_ID	FLIGHT_ID	TICKET_ID	AIRPORT_CODE	PAYMENT_STATUS_CODE	TOTAL_PRICE
1701	1100	2404	500	KL01	0	315.00
1702	1101	2404	501	KL01	1	315.00
1703	1107	2404	502	KL01	2	315.00
1719	1107	2403	506	S007	1	515.00
1720	1107	2403	515	S007	2	515.00
1704	1107	2404	520	KL01	0	315.00
1705	1109	2404	504	KL01	1	315.00
1706	1109	2407	506	SH77	0	4815.00
1707	1103	2403	508	S007	1	515.00
1708	1111	2403	509	S007	0	515.00
1709	1114	2402	510	TY68	1	5015.00
1711	1104	2409	511	SH77	2	4288.50
1712	1110	2410	512	SJ60	0	465.00
1713	1110	2405	513	DB12	1	2515.00
1714	1106	2400	514	KL02	2	615.00
1715	1112	2406	515	LD24	0	8015.00
1716	1112	2403	516	S007	1	515.00
1717	1102	2401	517	KL02	2	4515.00
1718	1113	2402	518	TY68	0	5015.00
1711	1115	2409	511	SH77	1	4765.00

20 record(s) selected.

```
db2 => Select * from Flight_Information
```

FLIGHT_ID	AIRCRAFT_ID	DEPARTURE_CITY	ARRIVAL_CITY	DEPARTURE_TIME	ARRIVAL_TIME	FLIGHT_PRICE
2400	100	Kuala Lumpur	Samut Prakan	14:30:00	16:00:00	600.00
2401	101	Kuala Lumpur	Shanghai	22:00:00	06:00:00	4500.00
2402	102	Tokyo	Kuala Lumpur	00:00:00	10:00:00	5000.00
2403	103	Singapore	Kuala Lumpur	12:00:00	12:40:00	500.00
2404	104	Kuala Lumpur	Jakarta	16:30:00	18:00:00	300.00
2405	105	Dubai	Kuala Lumpur	18:00:00	00:00:00	2500.00
2406	106	London	Singapore	20:30:00	19:15:00	8000.00
2407	107	Shanghai	Singapore	11:00:00	21:00:00	4800.00
2408	108	Kuala Lumpur	London	12:00:00	22:20:00	7600.00
2409	109	Shanghai	Kuala Lumpur	00:45:00	10:00:00	4750.00
2410	110	Jakarta	Singapore	17:45:00	19:00:00	450.00
2411	201	Dubai	Singapore	00:15:00	06:00:00	3000.00
2413	203	London	Kuala Lumpur	21:00:00	19:05:00	7600.00
2414	204	Kuala Lumpur	Dubai	19:45:00	03:45:00	2500.00
2412	202	Kuala Lumpur	Tokyo	13:25:00	23:25:00	5000.00

15 record(s) selected.

After

INSERT INTO Booking (time_id, passenger_id, flight_id, ticket_id, airport_code, payment_status_code) values (1712, 1115, 2411, 515, 'DB12', 0)

```
db2 => insert into Booking (time_id, passenger_id, flight_id, ticket_id, airport_code, payment_status_code) values (1712, 1115, 2411, 515, 'DB12', 0)
DB20000I The SQL command completed successfully.
```

```
db2 => select * from Booking where passenger_id = 1115
```

TIME_ID	PASSENGER_ID	FLIGHT_ID	TICKET_ID	AIRPORT_CODE	PAYMENT_STATUS_CODE	TOTAL_PRICE
1712	1115	2411	515	DB12	0	3015.00

1 record(s) selected.

*User-defined function**Before*

```
db2 => select * from Booking
```

TIME_ID	PASSENGER_ID	FLIGHT_ID	TICKET_ID	AIRPORT_CODE	PAYMENT_STATUS_CODE	TOTAL_PRICE
1701	1100	2404	500	KL01	0	315.00
1702	1101	2404	501	KL01	1	315.00
1703	1107	2404	502	KL01	2	315.00
1719	1107	2403	506	S007	1	515.00
1720	1107	2403	515	S007	2	515.00
1704	1107	2404	520	KL01	0	315.00
1705	1109	2404	504	KL01	1	315.00
1706	1109	2407	506	SH77	0	4815.00
1707	1103	2403	508	S007	1	515.00
1708	1111	2403	509	S007	0	515.00
1709	1114	2402	510	TY68	1	5015.00
1711	1104	2409	511	SH77	2	4288.50
1712	1110	2410	512	SJ60	0	465.00
1713	1110	2405	513	DB12	1	2515.00
1714	1106	2400	514	KL02	2	615.00
1715	1112	2406	515	LD24	0	8015.00
1716	1112	2403	516	S007	1	515.00
1717	1102	2401	517	KL02	2	4515.00
1718	1113	2402	518	TY68	0	5015.00
1711	1115	2409	511	SH77	1	4765.00

20 record(s) selected.

After

```
1 record(s) selected.
```

```
db2 => select * from Table (FlightTicketInformation(1110))
```

PASSENGER_NAME	FLIGHT_DATE	DEPARTURE_CITY	ARRIVAL_CITY	AIRPORT_NAME	SEAT_NUMBER_GO	AIRCRAFT_TYPE
Abdul Rahman	09/07/2018	Dubai	Kuala Lumpur	Dubai International Airport	A08	AIRBUS A320
Abdul Rahman	09/05/2018	Jakarta	Singapore	Soekarno Hatta Airport	A05	AIRBUS A380

2 record(s) selected.

```
db2 => select * from Table (FlightTicketInformation(1109))
```

PASSENGER_NAME	FLIGHT_DATE	DEPARTURE_CITY	ARRIVAL_CITY	AIRPORT_NAME	SEAT_NUMBER_GO	AIRCRAFT_TYPE
Syed Putra	08/13/2018	Kuala Lumpur	Jakarta	KLIA	B01	AIRBUS A319
Syed Putra	08/25/2018	Shanghai	Singapore	Shanghai Pudong Airport	E26	AIRBUS A330

2 record(s) selected.

```
db2 => select * from Table (FlightTicketInformation(1104))
```

PASSENGER_NAME	FLIGHT_DATE	DEPARTURE_CITY	ARRIVAL_CITY	AIRPORT_NAME	SEAT_NUMBER_GO	AIRCRAFT_TYPE
Kamal Haziq	08/30/2018	Shanghai	Kuala Lumpur	Shanghai Pudong Airport	H44	AIRBUS A350

1 record(s) selected.

```
db2 => select * from Table (FlightTicketInformation(1106))
```

PASSENGER_NAME	FLIGHT_DATE	DEPARTURE_CITY	ARRIVAL_CITY	AIRPORT_NAME	SEAT_NUMBER_GO	AIRCRAFT_TYPE
Lim Kit Siang	09/15/2018	Kuala Lumpur	Samut Prakan	KLIA2	G16	AIRBUS A220

1 record(s) selected.

```
db2 => select * from Table (FlightTicketInformation(1112))
```

PASSENGER_NAME	FLIGHT_DATE	DEPARTURE_CITY	ARRIVAL_CITY	AIRPORT_NAME	SEAT_NUMBER_GO	AIRCRAFT_TYPE
Lee Chong Mei	09/19/2018	Singapore	Kuala Lumpur	Singapore Changi Airport	F12	AIRBUS A318
Lee Chong Mei	09/15/2018	London	Singapore	London Heathrow Airport	B27	AIRBUS A321

2 record(s) selected.

3. Construct the SQL which contains the following

a. Joins of at least 3 tables

```

SELECT passenger_name, departure_city, arrival_city, total_price,
payment_status_description
FROM passenger_information P, flight_information F, booking B,
payment_status S
WHERE P.passenger_id = B.passenger_id AND F.flight_id =
B.flight_id AND S.payment_status_code = B.payment_status_code

```

PASSENGER_NAME	DEPARTURE_CITY	ARRIVAL_CITY	TOTAL_PRICE	PAYMENT_STATUS_DESCRIPTION
Mike Tyson	Kuala Lumpur	Jakarta	315	Pending
Arif Danial	Kuala Lumpur	Jakarta	315	Paid
Jackie Lew	Kuala Lumpur	Jakarta	315	Cancelled
Jackie Lew	Singapore	Kuala Lumpur	515	Paid
Jackie Lew	Singapore	Kuala Lumpur	515	Cancelled
Jackie Lew	Kuala Lumpur	Jakarta	315	Pending
Syed Putra	Kuala Lumpur	Jakarta	315	Paid
Syed Putra	Shanghai	Singapore	4815	Pending
Zizan Razak	Singapore	Kuala Lumpur	515	Paid
Abdul Hussein	Singapore	Kuala Lumpur	515	Pending
Rahman Putra	Tokyo	Kuala Lumpur	5015	Paid
Kamal Haziq	Shanghai	Kuala Lumpur	4289	Cancelled
Abdul Rahman	Jakarta	Singapore	465	Pending
Abdul Rahman	Dubai	Kuala Lumpur	2515	Paid
Lim Kit Siang	Kuala Lumpur	Samut Prakan	615	Cancelled
Lee Chong Wei	London	Singapore	8015	Pending
Lee Chong Wei	Singapore	Kuala Lumpur	515	Paid
Nabil Ahmad	Kuala Lumpur	Shanghai	4515	Cancelled
Thanabalan Singram	Tokyo	Kuala Lumpur	5015	Pending

19 record(s) selected.

- b. Group by/Group by Rollup/Group by Cube and having clause

```

SELECT airport_name, passenger_name, COUNT(total_price) as
Total_ticket
FROM passenger_information P, airport A, booking B
WHERE P.passenger_id = B.passenger_id AND A.airport_code =
B.airport_code
GROUP BY ROLLUP (passenger_name,airport_name)
ORDER BY passenger_name, airport_name

```

AIRPORT_NAME	PASSENGER_NAME	TOTAL_TICKET
Singapore Changi Airport	Abdul Hussein	1
-	Abdul Hussein	1
Dubai International Airport	Abdul Rahman	1
Soekarno Hatta Airport	Abdul Rahman	1
-	Abdul Rahman	2
KLIA	Arif Danial	1
-	Arif Danial	1
KLIA	Jackie Lew	2
Singapore Changi Airport	Jackie Lew	2
-	Jackie Lew	4
Shanghai Pudong Airport	Kamal Haziq	1
-	Kamal Haziq	1
London Heathrow Airport	Lee Chong Wei	1
Singapore Changi Airport	Lee Chong Wei	1
-	Lee Chong Wei	2
KLIA2	Lim Kit Siang	1
-	Lim Kit Siang	1
KLIA	Mike Tyson	1
-	Mike Tyson	1
Shanghai Pudong Airport	Muhammad Ali	1
-	Muhammad Ali	1
KLIA2	Nabil Ahmad	1
-	Nabil Ahmad	1
Tokyo Haneda Airport	Rahman Putra	1
-	Rahman Putra	1
KLIA	Syed Putra	1
Shanghai Pudong Airport	Syed Putra	1
-	Syed Putra	2
Tokyo Haneda Airport	Thanabalan Singram	1
-	Thanabalan Singram	1
Singapore Changi Airport	Zizan Razak	1
-	Zizan Razak	1
-	-	20

33 record(s) selected.

c. 1 SQL each on the following operator

- Comparison operator >

```
SELECT passenger_name as Name, hour as Booking_Hour, arrival_city
as Destination, airport_code
FROM passenger_information P, time T, flight_information F, airport
A, booking B
WHERE P.passenger_id = B.passenger_id AND T.time_id = B.time_id
AND F.flight_id = B.flight_id AND A.airport_code = B.airport_code
AND hour > 12
```

Table shows passenger who booked at afternoon

NAME	BOOKING_HOUR	DESTINATION	AIRPORT_NAME
Arif Danial	13	Jakarta	KLIA
Jackie Lew	15	Kuala Lumpur	Singapore Changi Airport
Syed Putra	14	Jakarta	KLIA
Syed Putra	14	Singapore	Shanghai Pudong Airport
Abdul Rahman	13	Singapore	Soekarno Hatta Airport
Lee Chong Wei	14	Kuala Lumpur	Singapore Changi Airport
Lee Chong Wei	14	Singapore	London Heathrow Airport

7 record(s) selected.

- Logical Operator OR

```
SELECT Distinct passenger_name, passenger_city
FROM passenger_information P, airport A
WHERE P.passenger_city like A.airport_location OR passenger_state
like 'Selangor'
```

Passenger city address same as airport location or passenger live in Selangor

PASSENGER_NAME	PASSENGER_CITY
Kamal Haziq	Klang Lama
Mike Tyson	Kuala Lumpur
Rahman Putra	Kuala Lumpur
Zizan Razak	Shah Alam

4 record(s) selected.

- Special Operator BETWEEN

```
SELECT passenger_name, arrival_city as Destination, flight_date
FROM passenger_information P, flight_information F, booking B,
ticket_information T
WHERE P.passenger_id = B.passenger_id AND F.flight_id = B.flight_id
AND T.ticket_id = B.ticket_id AND T.flight_date NOT BETWEEN '2018-
08-01' AND '2018-08-31'
```

PASSENGER_NAME	DESTINATION	FLIGHT_DATE
Nabil Ahmad	Shanghai	09/21/2018
Lim Kit Siang	Samut Prakan	09/15/2018
Jackie Lew	Kuala Lumpur	09/15/2018
Jackie Lew	Jakarta	09/23/2018
Abdul Rahman	Kuala Lumpur	09/07/2018
Abdul Rahman	Singapore	09/05/2018
Lee Chong Wei	Kuala Lumpur	09/19/2018
Lee Chong Wei	Singapore	09/15/2018
Thanabalan Singam	Kuala Lumpur	09/22/2018
Rahman Putra	Kuala Lumpur	09/05/2018

10 record(s) selected.

- Aggregate Operator SUM

```
SELECT  P.passenger_name,  B.passenger_id,  SUM(total_price)  as
SUM_Total
FROM    booking B, passenger_information P
WHERE   B.passenger_id = P.passenger_id
GROUP BY B.passenger_id = P.passenger_name
```

PASSENGER_NAME	PASSENGER_ID	SUM_TOTAL
Mike Tyson	1100	315.00
Arif Danial	1101	315.00
Nabil Ahmad	1102	4515.00
Zizan Razak	1103	515.00
Kamal Haziq	1104	4288.50
Lim Kit Siang	1106	615.00
Jackie Lew	1107	1660.00
Syed Putra	1109	5130.00
Abdul Rahman	1110	2980.00
Abdul Hussein	1111	515.00
Lee Chong Wei	1112	8530.00
Thanabalan Singram	1113	5015.00
Rahman Putra	1114	5015.00
Muhammad Ali	1115	4765.00

14 record(s) selected.

d. View

```
CREATE VIEW passenger_flight_this_month as
SELECT passenger_name, flight_date, airport_name, arrival_city as
Destination
FROM passenger_information P, ticket_information T,
flight_information F, airport A, booking B
WHERE P.passenger_id = B.passenger_id AND T.ticket_id =
B.ticket_id AND F.flight_id = B.flight_id AND A.airport_code =
B.airport_code AND MONTH(flight_date) >= Month(CURRENT DATE)
```

PASSENGER_NAME	FLIGHT_DATE	AIRPORT_NAME	DESTINATION
Nabil Ahmad	09/21/2018	KLIA2	Shanghai
Lim Kit Siang	09/15/2018	KLIA2	Samut Prakan
Jackie Lew	09/15/2018	Singapore Changi Airport	Kuala Lumpur
Jackie Lew	09/23/2018	KLIA	Jakarta
Abdul Rahman	09/07/2018	Dubai International Airport	Kuala Lumpur
Abdul Rahman	09/05/2018	Soekarno Hatta Airport	Singapore
Lee Chong Wei	09/19/2018	Singapore Changi Airport	Kuala Lumpur
Lee Chong Wei	09/15/2018	London Heathrow Airport	Singapore
Thanabalan Singram	09/22/2018	Tokyo Haneda Airport	Kuala Lumpur
Rahman Putra	09/05/2018	Tokyo Haneda Airport	Kuala Lumpur

10 record(s) selected.

e. Two SQL not covered in lecture

i. RANK DATA

```
SELECT flight_price, passenger_name, B.ticket_id, RANK() OVER
(ORDER BY flight_price) as Rank_Data from ticket_information T,
passenger_information P, booking B, flight_information F
WHERE B.ticket_id = T.ticket_id AND P.passenger_id = B.passenger_id
AND F.flight_id = B.flight_id ORDER BY Rank_Data
```

FLIGHT_PRICE	PASSENGER_NAME	TICKET_ID	RANK_DATA
300.00	Mike Tyson	500	1
300.00	Arif Danial	501	1
300.00	Jackie Lew	502	1
300.00	Jackie Lew	520	1
300.00	Syed Putra	504	1
450.00	Abdul Rahman	512	6
500.00	Zizan Razak	508	7
500.00	Abdul Hussein	509	7
500.00	Lee Chong Wei	516	7
500.00	Jackie Lew	506	7
500.00	Jackie Lew	515	7
600.00	Lim Kit Siang	514	12
2500.00	Abdul Rahman	513	13
3000.00	Muhammad Ali	515	14
4500.00	Nabil Ahmad	517	15
4750.00	Kamal Haziq	511	16
4750.00	Muhammad Ali	511	16
4800.00	Syed Putra	506	18
5000.00	Rahman Putra	510	19
5000.00	Thanabalan Singram	518	19
8000.00	Lee Chong Wei	515	21

21 record(s) selected.

ii. ROWS UNBOUNDED PRECEDING

```

SELECT passenger_name, arrival_city, total_price, SUM(total+price)
OVER (ORDER BY total_price ROWS UNBOUNDED PRECEDING) AS
Cumulative_Total__Price
FROM passenger_information P, booking B, flight_information F
WHERE P.passenger_id = B.passenger_id AND F.flight_id = B.flight_id

```

PASSENGER_NAME	ARRIVAL_CITY	TOTAL_PRICE	CUMULATIVE_TOTAL_PRICE
Mike Tyson	Jakarta	315.00	315.00
Arif Danial	Jakarta	315.00	630.00
Jackie Lew	Jakarta	315.00	945.00
Jackie Lew	Jakarta	315.00	1260.00
Syed Putra	Jakarta	315.00	1575.00
Abdul Rahman	Singapore	465.00	2040.00
Jackie Lew	Kuala Lumpur	515.00	2555.00
Jackie Lew	Kuala Lumpur	515.00	3070.00
Zizan Razak	Kuala Lumpur	515.00	3585.00
Abdul Hussein	Kuala Lumpur	515.00	4100.00
Lee Chong Wei	Kuala Lumpur	515.00	4615.00
Lim Kit Siang	Samut Prakan	615.00	5230.00
Abdul Rahman	Kuala Lumpur	2515.00	7745.00
Muhammad Ali	Singapore	3015.00	10760.00
Kamal Haziq	Kuala Lumpur	4288.50	15048.50
Nabil Ahmad	Shanghai	4515.00	19563.50
Muhammad Ali	Kuala Lumpur	4765.00	24328.50
Syed Putra	Singapore	4815.00	29143.50
Rahman Putra	Kuala Lumpur	5015.00	34158.50
Thanabalan Singram	Kuala Lumpur	5015.00	39173.50
Lee Chong Wei	Singapore	8015.00	47188.50

21 record(s) selected.