LAB 6 – Summary the Records

Objectives:

At the end of this lab, the students will be able to:

1. Use aggregate functions.
2. Grouping and summarise the records.
3. Using HAVING clause to restrict summary records.

Scenario 1

ABC Airlines implemented web based Airline Booking System to support the company business strategic. Before using the system, users are required to create a new user and maintain the profile data. Once this process done, user can login into the system and make a flight booking or to view the availaibility of flight or any discount of flight. Data dictionary for the system will be presented as below;

Table 1 – Data Dictionary

Table Name: profile

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
prfid	Profile ID (IC No or Other ID No)	VARCHAR	30	Yes	PK	
loginid	Login Id	VARCHAR	15	Yes	Unique	
prfname	Name	VARCHAR	55	Yes		
prfdob	Date of Birth	VARCHAR	55	Yes		
prfaddr1	Address 1	VARCHAR	55			
prfaddr2	Address 1	VARCHAR	55			
prfstate	State	VARCHAR	30			
prfpostcode	PostCode	INT	5			
prfHPNo	HP No.	VARCHAR	15	Yes		
prfPassportNo	Passport No	VARCHAR	20			
prfemail	Email address	VARCHAR	30	Yes		
prfpwd	password	VARCHAR	12	Yes		

Airport

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
airportcode	Airport Code	VARCHAR	10	Yes	PK	
airportname	Airport Name	VARCHAR	45	Yes		
city	City	VARCHAR	30			
country	Country	VARCHAR	30			

Table Name: flight

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
flightno	Flight Number	VARCHAR	15	Yes	PK	
airportcode	Airport Code	VARCHAR	10	Yes	FK	airport
departfrom	Depart location	VARCHAR	30			
arrivalto	Arrival location	VARCHAR	30			
airplanecode	Airplane code	VARCHAR	30	Yes	FK	airline

Table Name: airplane

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
airplanecode	Airplane code	VARCHAR	30	Yes	PK	
airlinename	Airplane name	VARCHAR	50	Yes		
manufactured	Manufactured by	VARCHAR	50			
seatcapacity	Seat capacity	INT	30			
airportcode	Airport Code	VARCHAR	10	Yes	FK	Airport

Table Name: flightdetails

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
flightno	Flight Number	VARCHAR	15	Yes	FK	flight
departuredate	Flight DepartureDate	DATE		Yes		
ticketprice	Ticket Price	DECIMAL	(9,2)			
departtime	Depart time	TIME				
arrivaltime	Arrival time	TIME				
duration	Flight Duration	INT				
seatavailability	Seat available	INT				

Table Name: booking

Attribute	Description	Data Type	Size	Required	Constraints	FK Referenced Table
bookingid	Booking Id	VARCHAR	15	Yes	PK	
prfid	Profile ID (IC No or Other ID No)	VARCHAR	30	Yes	FK	profile
flightno	Flight Number	VARCHAR	15	Yes	FK	flight
bookingdate	Booking Date	DATE				
departuredate	Flight DepartureDate	DATE		Yes		
bookingstatus	Booking status	VARCHAR	30		Booking, Confirmed	

Note: Activity 1, 2, 3, 4, and 5 are based on this scenario.

1.1 Activity 1

1.1.1 Objective

1. Creating a table based on pre-defined data dictionary.
2. Insert a sample of records into respective tables.

Task 1

Create a Entity Relationship Diagram (ERD) for this scenario.

[Estimated Time: 15 minutes]

Task 2

Create a table based on data dictionary and apply all business rules stated in the requirements, and referential integrity for related entities.

[Estimated Time: 30 minutes]

Task 3

Create a record for each table based on data provided in Table 2.

Table 2– Sample Data

Airportcode

airportcode	airportname	city	country
KUL	Kuala Lumpur Airport	Kuala Lumpur	Malaysia
TGG	Sultan Mahmud KT Airport	Kuala Terengganu	Malaysia
DMK	Suvarnabhumi Airport	Bangkok	Thailand
CGK	Jakarta Soekarno-Hatta Int. Airport	Jakarta	Indonesia
PEN	Penang Int. Airport	Penang	Malaysia
SGN	Ho Chi Minh Airport	Ho Chi Minh	Vietnam
SIN	Changi Int. Airport	Changi	Singapore
KBR	Kota Bahru Airport	Kota Bahru	Malaysia
LGK	Langkawi Int. Airport	Langkawi	Malaysia
SYD	Sydney Int. Airport	Sydney	Australia
KIX	Osaka Int. Airport	Osaka	Japan

Airplane

airplanecode	airlinename	manufactured	Seatcapacity	airportcode
BFT125QR	Malaysia Airlines	Boeing	155	KUL
QZB34THY	AirAsia	Airbus	135	KUL
SFT5267U	Singapore Airlines	Airbus	155	SIN
PV178WE	AirAsia	Airbus	135	KUL
TH61GH8	Thai Airways	Boeing	180	DMK
HQA782K	Malaysia Airlines	Boeing	155	KUL
ZJK8286P	Malaysia Airlines	Boeing	155	KUL
KDK234Y	AirAsia	Airbus	190	KUL
SDH529H	AirAsia	Airbus	155	CGK
SRF458U	Singapore Airlines	Airbus	190	SIN

Flight

flightno	airportcode	departfrom	arrivalto	airplanecode
MH1130	KUL	KUL	KBR	BFT125QR
MH1131	KUL	KBR	KUL	BFT125QR
AK3522	KUL	KUL	SGN	QZB34THY
AK2010	KUL	TGG	KUL	QZB34THY
SQ106	SIN	SIN	KUL	SFT5267U
SQ231	SIN	SIN	SYD	SFT5267U
AK6322	KUL	KUL	LGK	PV178WE
TG001	DMK	DMK	KUL	TH61GH8
MH1326	KUL	KUL	TGG	HQA782K
D7532	KUL	KUL	KIX	KDK234Y
QZ200	CGK	CGK	KUL	SDH529H
SQ552	SIN	SIN	KIX	SRF458U
MH1450	KUL	KUL	PEN	ZJK8286P

profile

ProfileID	Login Id	Profile Name	Date of Birth	Address 1	Address 2
811201101002	user1	Nur Aznah Ibrahim	01-12-1981	No. 5, Taman Pasir Putih	Pasir Puteh
830712074120	user2	Mohamad Rosli ALi	12-07-1983	No. 3, Blok A1-2	Taman Perda
910215083021	user3	Ramlah Azman	15-02-1991	167, Tmn Alam Megah	Shah Alam
790516092123	user4	Angeline Lee	16-05-1976	6789, Astana Kondominium	Johor Bahru
890812071267	user5	Ahmad Yunos Azmi	12-08-1989	Lot 16, Tmn Gong Badak	Kuala Terengganu
870412113245	user6	Abdul Rahman Ismail	12-04-1987	Lot. 145, Kg. Tok Molor	Kuala Terengganu
841207110923	user7	Zainal Mokhtar	07-12-1984	B123, Feringgi Apartment	Batu Ferringi
FS-1001-200	user8	Steven Darren	10-08-1982	A-102, Geylang Park	Geylang
870910119034	user9	Nurwani Hashim	10-09-1987	12, Taman Ketereh,	Kota Bahru
850918103698	user10	Wan Azman	18-09-1985	No.2, Tmn Setia Alam	Klang

State	PostCode	HP No	PassportNo	Email	Password
Kelantan	16800	011-8802142	C3341298	aznah@gmail.com	user001
P. Pinang	13800	012-5541289	C0083487	rosli@yahoo.com.my	user002
Selangor	42300	019-3329034	C5412123	ram@gmail.com	user003
Johor	80300	013-7783457	C1274589	angeline@gmail.com	user004
Terengganu	21030	016-9928927	C2204517	yunos@gmail.com	user005
Terengganu	21070	013-9982325	C1245689	ar@yahoo.com	user006
Penang	11100	019-5519729	C1547567	zainal@yahoo.com	user007
Singapore	388264	+65-6681010	SG200100-10	darren@yahoo.com.sg	user008
Kelantan	15200	019-9961278	C7123789	wani@gmail.com	user009
Selangor	42400	012-3353660	C5183672	wan@yahoo.com	user010

Flightdetails

flightno	departuredate	ticketprice	departtime	arrivaltime	duration	seatavailability
MH1130	12-08-2016	560.00	9:50	10:45	50	20
MH1131	12-08-2016	480.00	11:30	12:20	50	70
AK3522	13-08-2016	550.00	13:15	14:35	90	55
AK3522	18-08-2016	490.00	16:30	17:30	90	78
AK2010	14-08-2016	189.00	20:05	21:00	55	15
SQ106	15-08-2016	890.00	9:00	10:00	60	10
SQ231	20-08-2016	1890.00	00:30	06:30	360	35
AK6322	22-08-2016	220.00	11:35	12:20	45	10
TG001	16-08-2016	1400.00	9:00	11:15	135	80
MH1326	28-08--2016	460.00	9:15	10:10	55	45
D7532	05-09-2016	1900.00	14:30	21:30	420	60
QZ200	07-09-2016	380.00	10:00	11:15	75	20
SQ552	07-09-2016	2300.00	9:00	16:00	420	60
MH1450	05-09-2016	110.00	15:00	15:50	50	5

Booking

Booking ID	Profile ID	Flight No	Booking date	Departure Date	Booking Status
PQ36TY	811201101002	AK3522	07-07-2016	13-08-2016	Confirmed
ZY78UJ	790516092123	SQ106	25-07-2016	15-08-2016	Confirmed
G34ERU	870412113245	AK6322	15-06-2016	22-08-2016	Confirmed
MA5RT7	830712074120	AK2010	01-07-2016	14-08-2016	Confirmed
PD63TJ	841207110923	AK3522	15-07-2016	18-08-2016	Confirmed
LF34FB7	910215083021	MH1450	11-07-2016	05-09-2016	Confirmed
BZ59YUK	890812071267	D7532	15-08-2016	05-09-2016	Booking
N5GH78	FS-1001-200	TG001	12-04-2016	16-08-2016	Confirmed
A45F6Y	811201101002	MH1130	02-07-2016	12-08-2016	Confirmed
QK52TG	870910119034	QZ200	18-05-2016	07-09-2016	Confirmed
BNPYK3	870412113245	AK2010	10-06-2016	14-08-2016	Confirmed
TK43FK	790516092123	SQ106	05-07-2016	15-08-2016	Confirmed
P43ERF	890812071267	AK6322	28-07-2016	22-08-2016	Confirmed
8R421G	830712074120	SQ231	10-05-2016	20-08-2016	Confirmed
S45NB6	FS-1001-200	MH1131	01-08-2016	12-08-2016	Confirmed
D2KYUT	790516092123	SQ552	04-04-2016	07-09-2016	Confirmed
ZB52FD	841207110923	MH1326	22-07-2016	28-08-2016	Confirmed
RS40TG2	850918103698	AK6322	03-06-2015	22-08-2016	Confirmed
AG47Y8	870910119034	MH1450	12-07-2016	05-09-2016	Booking

NOTE: Your answer should include SQL query syntax and the print screen of the output.

[Estimated Time: 30 minutes]

1.2 Activity 2

1.2.1 Objective

- Perform query using aggregate functions.
- Summarise records based on category.
- Using HAVING clause to restrict the summary of records.

1.2.2 Problem Description

Using SQL data manipulation command (DML), complete the following requirements;

1. Find the number of airport that originated from *Malaysia*. Rename the output as *TotalMalaysiaAirport*.

2. Find the number of AirAsia flight departure from *05 June 2016* to *15 August 2016* and booking status is *confirmed*.

3. Display the maximum and minimum *price ticket* for all airline for booking date from *01 April* to *15 Sept 2016* for *Malaysia Airlines*.

4. Retrieve *airport code*, *airport name*, *number of flight* and *average flight duration* for all airport order by *airport name* in ascending order.

5. Display *profile id*, *profile name*, *his state* and the *frequent passenger flies* for passenger who make more than one booking.

6. Display *passenger id*, *name*, *total amount ticket price* booked by every passenger where the *total amount of ticket price* is exceeded the average *ticket price* offered by *Air Asia airlines*.

   NOTE: Your answer should include SQL query syntax and the print screen of the output.

[Estimated Time: 30 minutes]

Lab Exercises

Objective

Construct Entity Relationship Diagram (ERD) for specific problem.
Using DML command to summarise the records in multi tables queries.

Problem Description

The ABC Research Corporation organise a research conference annually with the colloboration with two (2) others research company. The company plans to create database application based on the following entities and attributes;

- Organiser – organiser id, name, address, postcode, state, contact person, contact number and email address.
- Conference – conference id, name, conference date, year, conference theme, venue
- Venue – venue id, venue name, address (street, city, state, post code)
- Participant – participant id, name, designation, company, fees
- Each conference consists of paralle session.

The business rules for the application are;

- Conference venue will rotate among these three companies for every two (2) years.
- A total of 40 participants are allow to attend and present the papers in each conference based on the first come first serve basis.
- Charges for professional is RM3000.00, educator is RM2500.00 and for postgraduate student is RM2000.00.
- Participant id is automatically generated by the system with running number starting from 10001

Task 1

Draw an initial and final ERD diagram for this case study.

Note: - You can use Chen's notation or Crow's Foot notation for designing ERD diagram.

- You ARE NOT allowed to use reverse engineer approach via MySQL Workbench to produce ERD diagram

Task 2

Based on the final ERD, create a table for each entities by applying referential integrity and all the requirements stated in the a table. You should include SQL script and the print screen output of creating a table in your answer.

Note: MySQL do not support the creating of composite attributes. You should create as a normal attribute.

Task 3

Insert the minimum **FIVE (5)** records for all tables.

Note: Insert 3 records for organiser.
For inserting a record, you should read a list of task given in Task 4.

Task 4

Using Data Manipulation Language (DML) command, complete the following tasks;

1. Summarise *organiser name*, *conferenceid* and the *number of participant* attend for each conference. You output must be sorted by *organiser name* as ascending order.

2. List the *company*, *total fees paid* for the conference take place in *year* 2008, 2010 and 2016.

3. Find venue name where more than one conference held at this. You should display *venue name*, *no_of_conference* and *total fees paid*.

4. Display *conferenceid*, *conference name*, *conference year* and *no of session* held for all conferences organised by organiser with id *100* for *conference year 2003* and *2015*. Your ouput must group by conference id, conference name and conference year.

5. Find the conference id, conference name and maximum fees paid by participants who attend the conference for conference code *DSC2010* and *IOTC2016*. You should use *INNER JOIN* clause and *USING* clause for producing the output for this query.

6. Display *participant id*, *participant name*, *no of frequent he/she attending the conference that organised at Kuala Lumpur*, *Langkawi and Penang*. Sort you result by *no of* frequent as descending order.

NOTE: Your answer should include SQL query syntax and the print screen of the output.

[Estimated Time: 60 minutes]