

Review Questions

1. What is the difference between a database and a table?
2. What does it mean to say that a database displays both entity integrity and referential integrity?
3. Describe the basic features of the relational data model and discuss their importance to the end user and the designer.
4. What is logical independence?
5. What is physical independence?
6. Why are entity integrity and referential integrity important in a database?

Table name: EMPLOYEE								Database name: Ch03_StoreCo	
	EMP_CODE	EMP_TITLE	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_DOB	STORE_CODE		
▶ +	1	Mr.	vWilliamson	John	vW	21-May-64	3		
+	2	Ms.	Ratula	Nancy		09-Feb-69	2		
+	3	Ms.	Greenboro	Lottie	R	02-Oct-61	4		
+	4	Mrs.	Rumpersfro	Jennie	S	01-Jun-71	5		
+	5	Mr.	Smith	Robert	L	23-Nov-59	3		
+	6	Mr.	Renselaer	Cary	A	25-Dec-65	1		
+	7	Mr.	Ogallo	Roberto	S	31-Jul-62	3		
+	8	Ms.	Johnsson	Elizabeth	I	10-Sep-68	1		
+	9	Mr.	Eindsmar	Jack	vW	19-Apr-55	2		
+	10	Mrs.	Jones	Rose	R	06-Mar-66	4		
+	11	Mr.	Broderick	Tom		21-Oct-72	3		
+	12	Mr.	vWashington	Alan	Y	08-Sep-74	2		
+	13	Mr.	Smith	Peter	N	25-Aug-64	3		
+	14	Ms.	Smith	Sherry	H	25-May-66	4		
+	15	Mr.	Olenko	Howard	U	24-May-64	5		
+	16	Mr.	Archialo	Barry	V	03-Sep-60	5		
+	17	Ms.	Grimaldo	Jeanine	K	12-Nov-70	4		
+	18	Mr.	Rosenberg	Andrew	D	24-Jan-71	4		
+	19	Mr.	Rosten	Peter	F	03-Oct-68	4		
+	20	Mr.	McKee	Robert	S	06-Mar-70	1		
+	21	Ms.	Baumann	Jennifer	A	11-Dec-74	3		

Table name: STORE						Table name: REGION	
	STORE_CODE	STORE_NAME	STORE_YTD_SALES	REGION_CODE	EMP_CODE		
▶ +	1	Access Junction	\$1,003,455.76	2	8	▶ +	1 East
+	2	Database Corner	\$1,421,987.39	2	12	+	2 vWest
+	3	Tuple Charge	\$986,783.22	1	7		
+	4	Attribute Alley	\$944,568.56	2	3		
+	5	Primary Key Point	\$2,930,098.45	1	15		

7. Using the figure above: For each table, identify the primary keys and the foreign key(s). If a table does not have a foreign key, write None in the space provided.
8. Using the figure above: Identify if the tables exhibit referential integrity. Answer yes or no; then explain your answer. Write NA (Not Applicable) if the table does not have a foreign key.
9. Using the figure above: Identify if the tables exhibit entity integrity. Answer yes or no; then explain your answer.

Table name: CHARTER

Database name: Ch03_AviaCo

CHAR_TRIP	CHAR_DATE	AC_NUMBER	CHAR_DESTINATION	CHAR_DISTANCE	CHAR_HOURS_FLOWN	CHAR_HOURS_WAIT	CHAR_FUEL_GALLONS	CHAR_OIL_QTS	CUS_CODE
10001	05-Feb-06	2289L	ATL	936.0	5.1	2.2	354.1	1	10011
10002	05-Feb-06	2778V	BNA	320.0	1.6	0	72.6	0	10016
10003	05-Feb-06	4278Y	GNV	1,574.0	7.8	0	339.8	2	10014
10004	06-Feb-06	1484P	STL	472.0	2.9	4.9	97.2	1	10019
10005	06-Feb-06	2289L	ATL	1,023.0	5.7	3.5	397.7	2	10011
10006	06-Feb-06	4278Y	STL	472.0	2.6	5.2	117.1	0	10017
10007	06-Feb-06	2778V	GNV	1,574.0	7.9	0	348.4	2	10012
10008	07-Feb-06	1484P	TYS	644.0	4.1	0	140.6	1	10014
10009	07-Feb-06	2289L	GNV	1,574.0	6.6	23.4	459.9	0	10017
10010	07-Feb-06	4278Y	ATL	998.0	6.2	3.2	279.7	0	10016
10011	07-Feb-06	1484P	BNA	352.0	1.9	5.3	66.4	1	10012
10012	08-Feb-06	2778V	MOB	884.0	4.8	4.2	215.1	0	10010
10013	08-Feb-06	4278Y	TYS	644.0	3.9	4.5	174.3	1	10011
10014	09-Feb-06	4278Y	ATL	936.0	6.1	2.1	302.6	0	10017
10015	09-Feb-06	2289L	GNV	1,645.0	6.7	0	459.5	2	10016
10016	09-Feb-06	2778V	MOY	312.0	1.5	0	67.2	0	10011
10017	10-Feb-06	1484P	STL	508.0	3.1	0	105.5	0	10014
10018	10-Feb-06	4278Y	TYS	644.0	3.8	4.5	167.4	0	10017

The destinations are indicated by standard three-letter airport codes. For example,
 STL = St. Louis, MO ATL = Atlanta, GA BNA = Nashville, TN

Table name: AIRCRAFT

AC_NUMBER	MOD_CODE	AC_TTAF	AC_TTEL	AC_TTER
1484P	PA23-250	1,833.1	1,833.1	101.8
2289L	C-90A	4,243.8	768.9	1,123.4
2778V	PA31-350	7,992.9	1,513.1	789.5
4278Y	PA31-350	2,147.3	622.1	243.2

AC_TTAF = Aircraft total time, airframe (hours)
 AC_TTEL = Total time, left engine (hours)
 AC_TTER = Total time, right engine (hours)

In a fully developed database system, such attribute values would be updated by application software when the CHARTER table entries are posted.

Table name: MODEL

MOD_CODE	MOD_MANUFACTURER	MOD_NAME	MOD_SEATS	MOD_CHG_MILE
C-90A	Beechcraft	KingAir	8	\$2.67
PA23-250	Piper	Aztec	6	\$1.93
PA31-350	Piper	Navajo Chieftain	10	\$2.35

Customers are charged per roundtrip mile, using the MOD_CHG_MILE rate. The MOD_SEAT gives the total number of seats in the airplane, including the pilot and copilot seats. Therefore, a PA31-350 trip that is flown by a pilot and a copilot has six passenger seats available.

Table name: PILOT

EMP_NUM	PIL_LICENSE	PIL_RATINGS	PIL_MED_TYPE	PIL_MED_DATE	PIL_PT135_DATE
101	ATP	ATP/SEL/MEL/Instr/CFI	1	20-Jan-06	11-Jan-06
104	ATP	ATP/SEL/MEL/Instr	1	19-Dec-05	17-Jan-06
105	COM	COMM/SEL/MEL/Instr/CFI	2	05-Jan-06	02-Jan-06
106	COM	COMM/SEL/MEL/Instr	2	10-Dec-05	02-Feb-06
109	COM	ATP/SEL/MEL/SES/Instr/CFI	1	22-Jan-06	15-Jan-06

The pilot licenses shown in the PILOT table include the ATP = Airline Transport Pilot and COM = Commercial Pilot. Businesses that operate "on demand" air services are governed by Part 135 of the Federal Air Regulations (FARs) that are enforced by the Federal Aviation Administration (FAA). Such businesses are known as "Part 135 operators." Part 125 operations require that pilots successfully complete flight proficiency checks each six months. The "Part 135" flight proficiency check date is recorded in PIL_PT135_DATE. To fly commercially, pilots must have at least a commercial license and a 2nd class medical certificate (PIL_MED_TYPE = 2.)

The PIL_RATINGS include

SEL = Single Engine, Land
 SES = Single Engine (Sea)
 CFI = Certified Flight Instructor

MEL = Multi-engine Land
 Instr. = Instrument
 CFI = Certified Flight Instructor, Instrument

Table name: EMPLOYEE

EMP_NUM	EMP_TITLE	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_DOB	EMP_HIRE_DATE
100	Mr.	Kolmycz	George	D	15-Jun-42	15-Mar-88
101	Ms.	Lewis	Rhonda	G	19-Mar-85	25-Apr-86
102	Mr.	Vandam	Rhett		14-Nov-58	18-May-93
103	Ms.	Jones	Anne	M	11-May-74	26-Jul-99
104	Mr.	Lange	John	P	12-Jul-71	20-Aug-90
105	Mr.	Williams	Robert	D	14-Mar-75	19-Jun-03
106	Mrs.	Duzak	Jeanine	K	12-Feb-68	13-Mar-89
107	Mr.	Dierke	Jorge	D	01-May-75	02-Jul-97
108	Mr.	Wesenberg	Paul	R	14-Feb-66	03-Jun-93
109	Ms.	Travis	Elizabeth	K	18-Jun-61	14-Feb-06
110	Mrs.	Genkazi	Leighla	W	19-May-70	29-Jun-90

Table name: CUSTOMER

CUS_CODE	CUS_LNAME	CUS_FNAME	CUS_INITIAL	CUS_AREACODE	CUS_PHONE	CUS_BALANCE
10010	Ramas	Alfred	A	615	844-2573	\$0.00
10011	Dunne	Leona	K	713	894-1238	\$0.00
10012	Smith	Kathy	W	615	894-2265	\$896.54
10013	Olowski	Paul	F	615	894-2180	\$1,265.19
10014	Orlando	Myron		615	222-1672	\$673.21
10015	O'Brien	Amy	B	713	442-3361	\$1,014.56
10016	Brown	James	G	615	297-1228	\$0.00
10017	Williams	George		615	290-2556	\$0.00
10018	Farriss	Anne	G	713	382-7165	\$0.00
10019	Smith	Olette	K	615	297-3909	\$453.98

10. Using the tables shown in the figure above: For each table, identify the primary keys.
11. Using the tables shown in the figure above: For each table, identify the foreign keys. If a table does not have a foreign key, write None in the space provided.
12. Using the tables shown in the figure above: For each table, identify the secondary keys. If a table does not have a secondary key, write None in the space provided.