SQL Exercises

Given the Ch06_Review database's structure and contents shown in Figure Q6.1 (available ate the last page), use SQL commands to answer questions 1-25.

1. **Write the SQL code that will create the table structure for a table named EMP_1. This table is a subset of the EMPLOYEE table. The basic EMP_1 table structure is summarized in Table Q6.1. (Note that the JOB_CODE is the FK to JOB.)**

Table Q6.1 The EMP_1 Table Structure

ATTRIBUTE (FIELD) NAME	DATA DECLARATION
EMP_NUM	CHAR(3)
EMP_LNAME	VARCHAR(15)
EMP_FNAME	VARCHAR(15)
EMP_INITIAL	CHAR(1)
EMP_HIREDATE	DATE
JOB_CODE	CHAR(3)

2. **Having created the table structure in Question 1, write the SQL code to enter the first two rows for the table shown in Figure Q6.2.**

FIGURE Q6.2 The Contents of the EMP_1 Table

EMP_NUM	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_HIREDATE	JOB_CODE
101	News	John	G	08-Nov-98	502
102	Senior	David	H	12-Jul-87	501
103	Arbough	June	E	01-Dec-94	500
104	Ramoras	Anne	K	15-Nov-85	501
105	Johnson	Alice	K	01-Feb-91	502
106	Smithfield	William		22-Jun-02	500
107	Alonzo	Maria	D	10-Oct-91	500
108	Washington	Ralph	B	22-Aug-89	501
109	Smith	Larry	W	18-Jul-95	501

3. **Assuming that the data shown in the EMP_1 table have been entered, write the SQL code that will list all attributes for a job code of 502.**

4. **Write the SQL code that will save the changes made to the EMP_1 table.**

5. **Write the SQL code to change the job code to 501 for the person whose personnel number is 106. After you have completed the task, examine the results, and then reset the job code to its original value.**

6. **Write the SQL code to delete the row for the person named William Smithfield, who was hired on June 22, 2002 and whose job code classification is 500. (*Hint*: Use logical operators to include all the information given in this problem.)**

7. **Write the SQL code that will restore the data to its original status; that is, the table should contain the data that existed before you made the changes in Questions 5 and 6.**

8. **Write the SQL code to create a copy of EMP_1, naming the copy EMP_2. Then write the SQL code that will add the attributes EMP_PCT and PROJ_NUM to its structure. The EMP_PCT is the bonus percentage to be paid to each employee. The new attribute characteristics are shown next:**

   EMP_PCT NUMBER(4,2)
   PROJ_NUM CHAR(3)

   (*Note*: If your SQL implementation allows it, you may use DECIMAL(4,2), rather than NUMBER(4,2).)

9. **Write the SQL code to enter an EMP_PCT value of 3.85 for the person whose employee number (EMP_NUM) is 103. Next, enter the remaining EMP_PCT values shown in Figure Q6.9:**

FIGURE Q6.9 The Contents of the EMP_2 Table

EMP_NUM	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_HIREDATE	JOB_CODE	EMP_PCT	PROJ_NUM
+ 101	News	John	G	08-Nov-98	502	5.00	
+ 102	Senior	David	H	12-Jul-87	501	8.00	
+ 103	Arbough	June	E	01-Dec-94	500	3.85	
+ 104	Ramoras	Anne	K	15-Nov-85	501	10.00	
+ 105	Johnson	Alice	K	01-Feb-91	502	5.00	
+ 106	Smithfield	William		22-Jun-02	500	6.20	
+ 107	Alonzo	Maria	D	10-Oct-91	500	5.15	
+ 108	Washington	Ralph	B	22-Aug-89	501	10.00	
+ 109	Smith	Larry	W	18-Jul-95	501	2.00	

10. **Using a single command sequence, write the SQL code that will enter the project number (PROJ_NUM) = 18 for all employees whose job classification (JOB_CODE) is 500.**

11. **Using a single command sequence, write the SQL code that will enter the project number (PROJ_NUM) = 25 for all employees whose job classification (JOB_CODE) is 502 or higher. When you are done with questions 10 and 11, the EMP_2 table will contain the data shown in Figure Q6.11:**

FIGURE Q6.11 The EMP_2 Table Contents After the Modifications

EMP_NUM	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_HIREDATE	JOB_CODE	EMP_PCT	PROJ_NUM
101	News	John	G	08-Nov-98	502	5.00	25
102	Senior	David	H	12-Jul-87	501	8.00	
103	Arbough	June	E	01-Dec-94	500	3.85	18
104	Ramoras	Anne	K	15-Nov-85	501	10.00	
105	Johnson	Alice	K	01-Feb-91	502	5.00	25
106	Smithfield	William		22-Jun-02	500	6.20	18
107	Alonzo	Maria	D	10-Oct-91	500	5.15	18
108	Washington	Ralph	B	22-Aug-89	501	10.00	
109	Smith	Larry	W	18-Jul-95	501	2.00	

(You may assume that the table has been saved again at this point!)

12. **Write the SQL code that will enter a PROJ_NUM of 14 for those employees who were hired before January 1, 1992 and whose job code is at least 501. (You may assume that the table will be restored to the condition it was in following Question 11.)**

13. Write the two SQL command sequences required to:

There are many ways to accomplish both tasks. We are illustrating the shortest way to do the job next.

a. Create a temporary table named TEMP_1, whose structure is composed of the EMP_2 attributes EMP_NUM and EMP_PCT.

b. Copy the matching EMP_2 values into the TEMP_1 table.

14. Write the SQL command that will delete the newly created TEMP_1 table from the database.

15. Write the SQL code required to list all employees whose last names start with 'Smith'. In other words, the rows for both Smith and Smithfield should be included in the listing.

16. **Using the EMPLOYEE, JOB, and PROJECT tables in the Ch06_Review database (see Figure Q6.1), write the SQL code that will produce the results shown in Figure Q6.16.**

FIGURE Q6.16 The Query Results for Question 16

PROJ_NAME	PROJ_VALUE	PROJ_BALANCE	EMP_LNAME	EMP_FNAME	EMP_INITIAL	JOB_CODE	JOB_DESCRIPTION	JOB_CHG_HOUR
Rolling Tide	$805,000.00	$500,345.20	Senior	David	H	501	Systems Analyst	$96.75
Evergreen	$1,453,500.00	$1,002,349.75	Arbough	June	E	503	Electrical Engineer	$84.50
Starflight	$2,650,500.00	$2,309,879.76	Alonzo	Maria	D	500	Programmer	$35.75
Amber Wave	$3,500,500.00	$2,110,345.91	Washington	Ralph	B	501	Systems Analyst	$96.75

17. **Write the SQL code that will produce a virtual table named REP_1, containing the same information that was shown in Question 16.**

18. **Write the SQL code to find the average bonus percentage in the EMP_2 table you created in question 8.**

19. **Write the SQL code that will produce a listing for the data in the EMP_2 table in ascending order by the bonus percentage.**

20. **Write the SQL code that will list only the different project numbers found in the EMP_2 table.**

21. **Write the SQL code to calculate the ASSIGN_CHARGE values in the ASSIGNMENT table in the Ch06_Review database. (See Figure Q6.1.) Note that ASSIGN_CHARGE is a derived attribute that is calculated by multiplying the ASSIGN_CHG_HR and the ASSIGN_HOURS.**

22. **Using the data in the ASSIGNMENT table, write the SQL code that will, for each employee, yield the total number of hours worked and the total charges stemming from those hours worked. The results of running this query are shown in Figure Q6.22.**

FIGURE Q6.22 Total Hours and Charges by Employee

EMP_NUM	EMP_LNAME	SumOfASSIGN_HOURS	SumOfASSIGN_CHARGE
101	News	3.1	$387.50
103	Arbough	19.7	$1,664.65
104	Ramoras	11.9	$1,218.70
105	Johnson	12.5	$1,382.50
108	Washington	8.3	$840.15
113	Joenbrood	3.8	$192.85
115	Bawangi	12.5	$1,276.75
117	Williamson	18.8	$649.54

23. Write a query to produce the total number of hours and charges for each of the projects represented in the ASSIGNMENT table. The output is shown in Figure Q6.23.

FIGURE Q6.23 Total Hours and Charges by Project

PROJ_NUM	SumOfASSIGN_HOURS	SumOfASSIGN_CHARGE
15	20.5	$1,806.52
18	23.7	$1,544.80
22	27.0	$2,593.16
25	19.4	$1,668.16

24. Write the SQL code to generate the total hours worked and the total. The results are shown in Figure Q6.24.

FIGURE Q6.24 Total Hours and Charges, All Employees

SumOfSumOfASSIGN_HOURS	SumOfSumOfASSIGN_CHARGE
90.6	$7,612.64

FIGURE Q6.1 STRUCTURE AND CONTENTS OF THE CH06_REVIEW DATABASE