The Ch07\_ConstructCo database stores data for a consulting company that tracks all charges to projects. The charges are based on the hours each employee works on each project. The structure and contents of the Ch07\_ConstructCo database are shown in Figure P7.1.

Figure P7.1 Structure and contents of the Ch07\_ConstructCo database



**Note that the ASSIGNMENT table in Figure P7.1 stores the JOB\_CHG\_HOUR values as an attribute (ASSIGN\_CHG\_HR) to maintain historical accuracy of the data. The JOB\_CHG\_HOUR values are likely to change over time. In fact, a JOB\_CHG\_HOUR change will be reflected in the ASSIGNMENT table. And, naturally, the employee primary job assignment might change, so the ASSIGN\_JOB is also stored. Because those attributes are required to maintain the historical accuracy of the data, they are not redundant.**

**Given the structure and contents of the** Ch07\_ConstructCo **database shown in Figure P7.1, use SQL commands to answer Problems 1–16**

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 the table below. (Note that the JOB\_CODE is the FK to JOB.)**

|  |  |
| --- | --- |
| **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) |

 - CREATE TABLE EMP\_1 (

EMP\_NUM CHAR(3) PRIMARY KEY,

EMP\_LNAME VARCHAR(15) NOT NULL,

EMP\_FNAME VARCHAR(15) NOT NULL,

EMP\_INITIAL CHAR(1),

EMP\_HIREDATE DATE,

JOB\_CODE CHAR(3),

FOREIGN KEY (JOB\_CODE) REFERENCES JOB);

1. **Having created the table structure in Problem 1, write the SQL code to enter the first two rows for the table shown in Figure P7.2.**

Figure P7.2 The contents of the EMP\_1 table



 - INSERT INTO EMP\_1 VALUES (‘101’, ‘News’, ‘John’, ‘G’, ’08-Nov-00’, ‘502’);

INSERT INTO EMP\_1 VALUES (‘102’, ‘Senior’, ‘David’, ‘H’, ’12-Jul-89’, ‘501’);

1. **Assuming 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.**

 **-** SELECT \*

FROM EMP\_1

WHERE JOB\_CODE = ‘502’;

1. **Write the SQL code that will save the changes made to the EMP\_1 table.**

 **-** COMMIT;

1. **Write the SQL code to change the job code to 501 for the person whose employee number (EMP\_NUM) is 107. After you have completed the task, examine the results, and then reset the job code to its original value.**

- UPDATE EMP\_1

SET JOB\_CODE = ‘501’

WHERE EMP\_NUM = ‘107’;

To see the changes:

SELECT \*

FROM EMP\_1

WHERE EMP\_NUM = ‘107’;

To reset, use

ROLLBACK;

1. **Write the SQL code to delete the row for the person named William Smithfield, who was hired on June 22, 2004, and whose job code classification is 500. (Hint: Use logical operators to include all of the information given in this problem.)**

**-** DELETE FROM EMP\_1

WHERE EMP\_LNAME = 'Smithfield'

AND EMP\_FNAME = 'William'

AND EMP\_HIREDATE = '22-June-04'

AND JOB\_CODE = '500';

1. **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 Problems 5 and 6.**

**-** ROLLBACK;

1. **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:**

**EMP\_PCTNUMBER(4,2)**

**PROJ\_NUMCHAR(3)**

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

- CREATE TABLE EMP\_2 (

EMP\_NUM CHAR(3) NOT NULL UNIQUE,

EMP\_LNAME VARCHAR(15) NOT NULL,

EMP\_FNAME VARCHAR(15) NOT NULL,

EMP\_INITIAL CHAR(1),

EMP\_HIREDATE DATE NOT NULL,

JOB\_CODE CHAR(3) NOT NULL,

PRIMARY KEY (EMP\_NUM),

FOREIGN KEY (JOB\_CODE) REFERENCES JOB);

INSERT INTO EMP\_2 SELECT \* FROM EMP\_1;

ALTER TABLE EMP\_2

ADD (EMP\_PCT NUMBER (4,2)),

ADD (PROJ\_NUM CHAR(3));

1. **Write the SQL code to change the EMP\_PCT value to 3.85 for the person whose employee number (EMP\_NUM) is 103. Next, write the SQL command sequences to change the EMP\_PCT values as shown in Figure P7.9.**

Figure P7.9 The contents of the EMP\_2 table



- UPDATE EMP\_2

SET EMP\_PCT = 3.85

WHERE EMP\_NUM = '103';

To enter the remaining EMP\_PCT values, use the following SQL statements:

UPDATE EMP\_2

SET EMP\_PCT = 5.00

WHERE EMP\_NUM = ‘101’;

UPDATE EMP\_2

SET EMP\_PCT = 8.00

WHERE EMP\_NUM = ‘102’;

1. **Using a single command sequence, write the SQL code that will change the project number (PROJ\_NUM) to 18 for all employees whose job classification (JOB\_CODE) is 500.**

 **-** UPDATE EMP\_2

SET PROJ\_NUM = '18'

WHERE JOB\_CODE = '500';

1. **Using a single command sequence, write the SQL code that will change the project number (PROJ\_NUM) to 25 for all employees whose job classification (JOB\_CODE) is 502 or higher. When you finish Problems 10 and 11, the EMP\_2 table will contain the data shown in Figure P7.11. (You may assume that the table has been saved again at this point.)**

**-** UPDATE EMP\_2

SET PROJ\_NUM = '25'

WHERE JOB\_CODE > = '502'

1. **Write the SQL code that will change the PROJ\_NUM to 14 for those employees who were hired before January 1, 1994 and whose job code is at least 501. (You may assume that the table will be restored to its condition preceding this question.)**

**-** UPDATE EMP\_2

SET PROJ\_NUM = '14'

WHERE EMP\_HIREDATE <= ' 01-Jan-94'

AND JOB\_CODE >= '501';

1. **Write the two SQL command sequences required to:**
	1. **Create a temporary table named TEMP\_1 whose structure is composed of the EMP\_2 attributes EMP\_NUM and EMP\_PCT.**
	2. **Copy the matching EMP\_2 values into the TEMP\_1 table.**

-This solution contains answers for 13 a or b.

CREATE TABLE TEMP\_1 AS SELECT EMP\_NUM, EMP\_PCT FROM EMP\_2;

An alternate way would be to create the table and then, use an INSERT with a sub-select to populate the rows.

CRATE TABLE TEMP\_1 AS (

EMP\_NUM CHAR(3),

EMP\_PCT NUMBER(4,2));

INSERT INTO TEMP\_1

SELECT EMP\_NUM, EMP\_PCT FROM EMP\_2;

1. **Write the SQL command that will delete the newly created TEMP\_1 table from the database.**

**-** DROP TABLE TEMP\_1;

1. **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. Assume case sensitivity.**

**-** SELECT \*

FROM EMP\_2

WHERE EMP\_LNAME LIKE 'Smith%';

1. **Using the EMPLOYEE, JOB, and PROJECT tables in the** Ch07\_ConstructCo **database (see Figure P7.1), write the SQL code that will produce the results shown in Figure P7.16.**
* SELECT PROJ\_NAME, PROJ\_VALUE, PROJ\_BALANCE, EMPLOYEE.EMP\_LNAME,

EMP\_FNAME, EMP\_INITIAL, EMPLOYEE.JOB\_CODE, JOB.JOB\_DESCRIPTION,

JOB.JOB\_CHG\_HOUR

FROM PROJECT, EMPLOYEE, JOB

WHERE EMPLOYEE.EMP\_NUM = PROJECT.EMP\_NUM

AND JOB.JOB\_CODE = EMPLOYEE.JOB\_CODE;