

APPENDIX A

DB2 Sample Tables

This appendix provides information on the DB2 sample tables used in most of the figures and examples in this book. These tables are used as examples in this book as a convenience because they are bundled with DB2, installed at most DB2 shops, and are generally available for everyone's use.

An understanding of the data in the sample tables and the relationship between these tables is imperative to understanding the SQL in this book. The DB2 sample tables primarily contain information about projects and the entities involved in working on these projects. Figure A.1 shows these entities and the relationships between them.

The sample tables represent departments, employees, projects, activities, activities assigned to a project, and employees assigned to a project's activities. In the following sections, you can find a general description of each table, its columns, and its relationship to the other sample tables, along with its table creation DDL.

The Activity Table: DSN8810.ACT

DSN8810.ACT describes activities that can be performed for projects. This table simply provides activity information. It does not tie each activity to a project. The following information about an activity is recorded: the activity number, the activity keyword, and the activity description. The activity number (ACTNO) is the primary key for this table.

DSN8810.ACT is a parent table for DSN8810.PROJACT. Two indexes have been built for this table: DSN8810.XACT1 is a primary key index on ACTNO, and DSN8810.XACT2 is a unique index on ACTKWD.

PART IX: APPENDIXES

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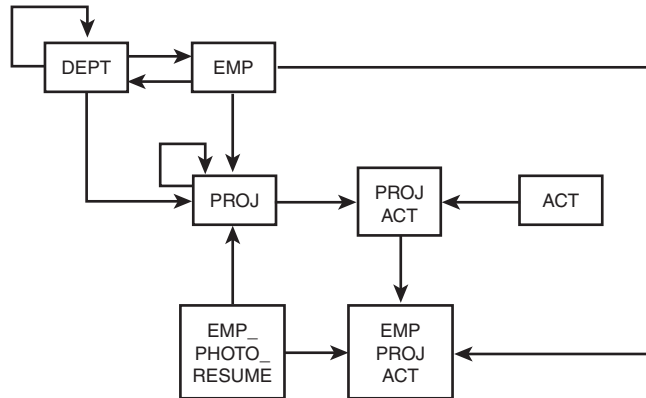


FIGURE A.1 DB2 sample table relationships.

DSN8810.ACT Table DDL

```

CREATE TABLE DSN8810.ACT
( ACTNO          SMALLINT          NOT NULL,
  ACTKWD         CHAR(6)           NOT NULL,
  ACTDESC        VARCHAR(20)       NOT NULL,
  PRIMARY KEY (ACTNO)
)
IN DSN8D81A.DSN8S81P
CCSID EBCDIC;

```

The Department Table: DSN8810.DEPT

DSN8810.DEPT describes information about departments that may be participating in projects. The following information is stored for each department: the department number, the department name, the employee number for the manager of this department, and the department number for the department to which this department reports. The department number is the primary key.

Referential integrity is used to implement a self-referencing constraint for ADMRDEPT. This referential constraint establishes the higher level department to which this department reports. A constraint also exists for MGRNO to EMPNO, the primary key of the DSN8810.EMP table. It ensures that the manager of a department is a valid employee.

Three indexes have been built for this table: DSN8810.XDEPT1 is a primary key index on DEPTNO, DSN8810.XDEPT2 is an index on MGRNO, and DSN8810.XDEPT3 is an index on ADMRDEPT.

DSN8810.DEPT Table DDL

```

CREATE TABLE DSN8810.DEPT
( DEPTNO         CHAR(3)           NOT NULL,
  DEPTNAME       VARCHAR(36)       NOT NULL,
  MGRNO          CHAR(6),
  ADMRDEPT       CHAR(3)           NOT NULL,

```

```

        LOCATION          CHAR(16),
        PRIMARY KEY (DEPTNO)
    )
    IN DSN8D81A.DSN8S81D
    CCSID EBCDIC;

ALTER TABLE DSN8810.DEPT
    FOREIGN KEY RDD (ADMRDEPT)
        REFERENCES DSN8810.DEPT ON DELETE CASCADE;

ALTER TABLE DSN8810.DEPT
    FOREIGN KEY RDE (MGRNO)
        REFERENCES DSN8810.EMP ON DELETE SET NULL;

```

The Employee Table: DSN8810.EMP

DSN8810.EMP describes employees in the organization. This table is in a partitioned table space. The following information is retained about employees: the employee's number, first name, middle initial, and last name; the department where this employee works; the employee's phone number; the date the employee was hired; and the employee's job description, education level, sex, birth date, salary, commission, and bonus data. The primary key is the employee number.

This table is a child of DSN8810.DEPT by the WORKDEPT column and a parent table for DSN8810.PROJ. Two indexes have been built for this table: DSN8810.XEMP1 is a primary unique, partitioned index on EMPNO, and DSN8810.XEMP2 is an index on WORKDEPT.

DSN8810.EMP Table DDL

```

CREATE TABLE DSN8810.EMP
    (EMPNO          CHAR(6)          NOT NULL,
     FIRSTNAME     VARCHAR(12)     NOT NULL,
     MIDINIT       CHAR(1)         NOT NULL,
     LASTNAME      VARCHAR(15)    NOT NULL,
     WORKDEPT      CHAR(3),
     PHONENO       CHAR(4) CONSTRAINT NUMBER CHECK
                 (PHONENO >= '0000' AND
                  PHONENO <= '9999'),
     HIREDATE      DATE,
     JOB           CHAR(8),
     EDLEVEL       SMALLINT,
     SEX           CHAR(1),
     BIRTHDATE     DATE,
     SALARY        DECIMAL(9,2),
     BONUS         DECIMAL(9,2),
     COMM         DECIMAL(9,2),
     PRIMARY KEY (EMPNO)
     FOREIGN KEY RED (WORKDEPT)
         REFERENCES DSN8810.DEPT ON DELETE SET NULL
    )
    EDITPROC DSN8EAE1
    IN DSN8D81A.DSN8S81E
    CCSID EBCDIC;

```

The Employee Photo & Resume Table: DSN8810.EMP_PHOTO_RESUME

DSN8810.EMP_PHOTO_RESUME contains photos and resume text for employees in the DSN8810.EMP table, previously described. The table contains a LOB column for the resume and two LOB columns for photos, one in PSEG format and one in BMP format.

The table is a parent table of DSN8810.PROJ with a foreign key on column RESPEMP. There are four indexes associated with the tables required to store photos and resumes: one on the base table and one each on the auxiliary tables. DSN8810.XEMP_PHOTO_RESUME is a primary unique index on the base table; and DSN8810.XAUX_BMP_PHOTO, DSN8810.XAUX_PSEG_PHOTO, DSN8810.XAUX_EMP_RESUME are each unique indexes on the respective auxiliary tables.

DSN8810.EMP_PHOTO_RESUME Table and Auxiliary Table DDL

```
CREATE TABLE DSN8810.EMP_PHOTO_RESUME
(EMPNO          CHAR(06) NOT NULL,
 EMP_ROWID      ROWID NOT NULL GENERATED ALWAYS,
 PSEG_PHOTO     BLOB(100K),
 BMP_PHOTO      BLOB(100K),
 RESUME         CLOB(5K))
PRIMARY KEY EMPNO
IN DSN8D81L.DSN8S81B
CCSID EBCDIC;
```

An auxiliary table is required for each LOB column in the table. The following DDL creates the auxiliary tables required for the three LOB columns in DSN8810.EMP_PHOTO_RESUME:

```
CREATE AUX TABLE DSN8810.AUX_BMP_PHOTO
IN DSN8D61L.DSN8S61M
STORES DSN8810.EMP_PHOTO_RESUME
COLUMN BMP_PHOTO;

CREATE AUX TABLE DSN8810.AUX_PSEG_PHOTO
IN DSN8D61L.DSN8S61L
STORES DSN8810.EMP_PHOTO_RESUME
COLUMN PSEG_PHOTO;

CREATE AUX TABLE DSN8810.AUX_EMP_RESUME
IN DSN8D61L.DSN8S61N
STORES DSN8810.EMP_PHOTO_RESUME
COLUMN RESUME;
```

Each auxiliary table must have a unique index defined on it. DSN8810.AUX_BMP_PHOTO has a required unique index named DSN8810.XAUX_BMP_PHOTO; DSN8810.AUX_PSEG_PHOTO has a required unique index named DSN8810.XAUX_PSEG_PHOTO; and DSN8810.AUX_EMP_RESUME has a required unique index named DSN8810.XAUX_EMP_RESUME.

The Employee Assignment Table: DSN8810.EMPPROJECT

DSN8810.EMPPROJECT details which employee performs which activity for each project. It effectively records the assignment of employees to a given activity for a given project. To accomplish this assignment, the table stores an employee number, a project number, and

an activity number on every row, along with information about this employee's assignment. This additional information consists of the percentage of time the employee should spend on this activity, the date the activity starts, and the date the activity ends. No primary key is implemented, but a unique index is used on the combination of PROJNO, ACTNO, EMSTDATE, and EMPNO.

The table is a child of both DSN8810.PROJACT and DSN8810.EMP. Two indexes exist for this table: DSN8810.XEMPPROJACT1 is a unique index on PROJNO, ACTNO, EMSTDATE, and EMPNO; and DSN8810.XEMPPROJACT2 is an index on EMPNO.

DSN8810.EMPPROJACT Table DDL

```
CREATE TABLE DSN8810.EMPPROJACT
(EMPNO          CHAR(6)          NOT NULL,
 PROJNO         CHAR(6)          NOT NULL,
 ACTNO          SMALLINT        NOT NULL,
 EMPTIME        DECIMAL(5,2),
 EMSTDATE       DATE,
 EMENDATE       DATE,
 FOREIGN KEY REPAPA (PROJNO, ACTNO, EMSTDATE)
   REFERENCES DSN8810.PROJACT ON DELETE RESTRICT,
 FOREIGN KEY REPAE (EMPNO)
   REFERENCES DSN8810.EMP ON DELETE RESTRICT
)
IN DSN8D81A.DSN8S81P
CCSID EBCDIC;
```

The Project Table: DSN8810.PROJ

DSN8810.PROJ defines all the projects for the organization. It contains information on the project's number; the project's name; the responsible department number and employee number; the project's staffing requirements, start date, and end date; and the project number of any related, superior project. The primary key is PROJNO.

DSN8810.PROJ is a self-referencing table because one project can relate to another by the MAJPROJ column, which identifies a parent project. It is also a parent table because it has relationships to DSN8810.DEPT for the responsible department and to DSN8810.EMP for the responsible employee.

Two indexes exist for this table: DSN8810.XPROJ1 is a primary key index on PROJNO, and DSN8810.XPROJ2 is an index on RESPEMP.

DSN8810.PROJ Table DDL

```
CREATE TABLE DSN8810.PROJ
(PROJNO          CHAR(6) PRIMARY KEY NOT NULL,
 PROJNAME       VARCHAR(24)          NOT NULL WITH DEFAULT
               'PROJECT NAME UNDEFINED',
 DEPTNO         CHAR(3)              NOT NULL
               REFERENCES DSN8810.DEPT ON DELETE RESTRICT,
 RESPEMP        CHAR(6)              NOT NULL
               REFERENCES DSN8810.EMP ON DELETE RESTRICT,
 PRSTAFF        DECIMAL(5, 2),
 PRSTDATE       DATE,
```

```

    PRENDATE      DATE,
    MAJPROJ       CHAR(6)
)
IN DSN8D81A.DSN8S81P
CCSID EBCDIC;

ALTER TABLE DSN8810.PROJ
    FOREIGN KEY RPP (MAJPROJ)
    REFERENCES DSN8810.PROJ ON DELETE CASCADE;
```

The Project Activity Table: DSN8810.PROJACT

DSN8810.PROJACT records the activities for each project. It stores the following information: the project's number, the activity's number, the number of employees needed to staff the activity, and the estimated activity start date and end date.

DSN8810.PROJACT is a parent of the DSN8810.EMPPROJACT table and functions as a child table for DSN8810.ACT and DSN8810.PROJ. This table has one index: DSN8810.XPROJAC1 is a unique primary key index on PROJNO, ACTNO, and ACSTDATE.

DSN8810.PROJACT Table DDL

```

CREATE TABLE DSN8810.PROJACT
    (PROJNO      CHAR(6)          NOT NULL,
     ACTNO       SMALLINT        NOT NULL,
     ACSTAFF     DECIMAL(5,2),
     ACSTDATE    DATE            NOT NULL,
     ACENDATE    DATE,
     MAJPROJ     CHAR(6),
     PRIMARY KEY (PROJNO, ACTNO, ACSTDATE),
     FOREIGN KEY RPAP (PROJNO)
       REFERENCES DSN8810.PROJ ON DELETE RESTRICT,
     FOREIGN KEY RPAA (ACTNO)
       REFERENCES DSN8810.ACT ON DELETE RESTRICT
)
IN DSN8D81A.DSN8S81P
CCSID EBCDIC;
```

The Sample STOGROUP

The storage group used by the sample database is DSN8G410. The following statement is provided by IBM to define the sample STOGROUP. (Of course, the VOLUMES, VCAT, and PASSWORD information are usually modified prior to the creation of the storage group.)

```

CREATE STOGROUP DSN8G810
    VOLUMES (DSNV01)
    VCAT     DSN8C810;;
```

Sample Databases and Table Spaces

Tables A.1 and A.2 provide a synopsis of the databases and table spaces used for the sample tables.

TABLE A.1 Sample Databases

Database Name	Storage Group	Buffer Pool	CCSID
DSN8D81A	DSN8G810	BP0	EBCDIC
DSN8D81L	DSN8G810	BP0	EBCDIC
DSN8D81P	DSN8G810	BP0	EBCDIC

TABLE A.2 Sample Table Spaces

Table Space Name	Database Name	Buffer Pool	Table Space Type	Lock Size	Compressed
DSN8S81B	DSN8D81L	BP0	SIMPLE	PAGE	NO
DSN8S81C	DSN8D81P	BP0	SEGMENTED	TABLE	NO
DSN8S81D	DSN8D81A	BP0	SIMPLE	PAGE	NO
DSN8S81E	DSN8D81A	BP0	PARTITIONED	PAGE	YES
DSN8S81P	DSN8D81A	BP0	SEGMENTED	ROW	NO
DSN8S81R	DSN8D81A	BP0	SIMPLE	PAGE	NO
DSN8S81S	DSN8D81A	BP0	SIMPLE	PAGE	NO
DSN8S81L	DSN8D81L	BP0	LOB	N/A	N/A
DSN8S81M	DSN8D81L	BP0	LOB	N/A	N/A
DSN8S81N	DSN8D81L	BP0	LOB	N/A	N/A

Views on the Sample Tables

When you install the sample database, there are also several views created on the sample tables. These views are listed in Table A.3. All of the views are qualified by DSN8810 (where the fifth letter indicates the version of DB2, in this case, 8 for V8).

TABLE A.3 Sample Views

View	Table(s)	Columns	Predicates?
VDEPT	DEPT	DEPTNO, DEPTNAME, MGRNO, ADMRDEPT	N/A
VHDEPT	DEPT	DEPTNO, DEPTNAME, MGRNO, ADMRDEPT, LOCATION	N/A
VEMP	EMP	FIRSTNME, MIDINIT, LASTNAME, WORKDEPT	N/A
VEMPLP	EMP	EMPNO, PHONENO	N/A
VPROJ	PROJ	PROJNO, PROJNAME, DEPTNO, RESPEMP, PRSTAFF, PRSTDATE, PRENDATE, MAJPROJ	N/A
VACT	ACT	ACTNO, ACTKWD, ACTDESC	N/A
VPROJACT	PROJACT	PROJNO, ACTNO, ACSTAFF, ACSTDATE, ACENDATE	N/A
VEMPPROJACT	EMPPROJACT	EMPNO, PROJNO, ACTNO, EMPTIME, EMSTDATE, EMENDATE	N/A

TABLE A.3 Continued

View	Table(s)	Columns	Predicates?
VDEPMG1	DEPT	DEPTNO, DEPTNAME, MGRNO ADMRDEPT	MGRNO = EMPNO
VEMPDPT1	EMP DEPT	FIRSTNME, MIDINIT, LASTNAME DEPTNO, DEPTNAME, MGRNO	MGRNO = EMPNO
	EMP	SUBSTR(FIRSTNME, 1, 1), MIDINIT, LASTNAME, WORKDEPT	
VPHONE	EMP	LASTNAME, FIRSTNME, MIDINIT, PHONENO, EMPNO,	WORKDEPT = DEPTNO
VPROJRE1	DEPT PROJ	DEPTNAME PROJNO, PROJNAME, DEPTNO MAJPROJ	RESPEMP = EMPNO
	EMP	EMPNO, FIRSTNME, MIDINIT, LASTNAME	
VSTAFAC1	PROJACT	PROJNO, ACTNO, ACSTAFF, ACSTDATE, ACENDATE,	ACTNO = ACTNO
	ACT	ACTDESC	
VSTAFAC2	EMPPROJACT	PROJNO, ACTNO, ACSTAFF, ACSTDATE, ACENDATE, EMPTIME, EMSTDATE, EMENDATE	ACTNO = ACTNO
	ACT	ACTDESC	
	EMP	EMPNO, FIRSTNME, MIDINIT, LASTNAME	EMPNO = EMPNO

There are also several views created on top of the sample views. The DDL for these views follows:

```
CREATE VIEW DSN8810.VASTRDE1
```

```
(DEPT1NO, DEPT1NAM, EMP1NO, EMP1FN, EMP1MI, EMP1LN, TYPE2,  
DEPT2NO, DEPT2NAM, EMP2NO, EMP2FN, EMP2MI, EMP2LN)
```

```
AS SELECT ALL
```

```
D1.DEPTNO, D1.DEPTNAME, D1.MGRNO, D1.FIRSTNME, D1.MIDINIT,  
D1.LASTNAME, '1',  
D2.DEPTNO, D2.DEPTNAME, D2.MGRNO, D2.FIRSTNME, D2.MIDINIT,  
D2.LASTNAME
```

```
FROM DSN8810.VDEPMG1 D1,  
DSN8810.VDEPMG1 D2
```

```
WHERE D1.DEPTNO = D2.ADMRDEPT;
```

```
CREATE VIEW DSN8810.VASTRDE2
```

```
(DEPT1NO, DEPT1NAM, EMP1NO, EMP1FN, EMP1MI, EMP1LN, TYPE2,  
DEPT2NO, DEPT2NAM, EMP2NO, EMP2FN, EMP2MI, EMP2LN)
```

```
AS SELECT ALL
```

```
D1.DEPTNO, D1.DEPTNAME, D1.MGRNO, D1.FIRSTNME, D1.MIDINIT,  
D1.LASTNAME, '2',  
D1.DEPTNO, D1.DEPTNAME, E2.EMPNO, E2.FIRSTNME, E2.MIDINIT,  
E2.LASTNAME
```



```

FROM DSN8810.VDEPMG1 D1,
     DSN8810.EMP E2
WHERE D1.DEPTNO = E2.WORKDEPT;

CREATE VIEW DSN8810.VPSTRDE1
  (PROJ1NO, PROJ1NAME, RESP1NO, RESP1FN, RESP1MI, RESP1LN,
   PROJ2NO, PROJ2NAME, RESP2NO, RESP2FN, RESP2MI, RESP2LN)
AS SELECT ALL
   P1.PROJNO, P1.PROJNAME, P1.REPEMP, P1.FIRSTNME, P1.MIDINIT,
   P1.LASTNAME,
   P2.PROJNO, P2.PROJNAME, P2.REPEMP, P2.FIRSTNME, P2.MIDINIT,
   P2.LASTNAME
FROM DSN8810.VPROJRE1 P1,
     DSN8810.VPROJRE1 P2
WHERE P1.PROJNO = P2.MAJPROJ;

CREATE VIEW DSN8810.VPSTRDE2
  (PROJ1NO, PROJ1NAME, RESP1NO, RESP1FN, RESP1MI, RESP1LN,
   PROJ2NO, PROJ2NAME, RESP2NO, RESP2FN, RESP2MI, RESP2LN)
AS SELECT ALL
   P1.PROJNO, P1.PROJNAME, P1.REPEMP, P1.FIRSTNME, P1.MIDINIT,
   P1.LASTNAME,
   P1.PROJNO, P1.PROJNAME, P1.REPEMP, P1.FIRSTNME, P1.MIDINIT,
   P1.LASTNAME
FROM DSN8810.VPROJRE1 P1
WHERE NOT EXISTS
  (SELECT *
   FROM DSN8810.VPROJRE1 P2
   WHERE P1.PROJNO = P2.MAJPROJ);

CREATE VIEW DSN8810.VFORPLA
  (PROJNO, PROJNAME, REPEMP, PROJDEP, FRSTINIT, MIDINIT, LASTNAME)
AS SELECT ALL
   F1.PROJNO, PROJNAME, REPEMP, PROJDEP,
   SUBSTR(FIRSTNME,1,1), MIDINIT, LASTNAME
FROM DSN8810.VPROJRE1 F1 LEFT OUTER JOIN DSN8810.EMPPROJACT F2
ON   F1.PROJNO = F2.PROJNO;

```

All the views outlined in Table A.3 and the previous DDL are used in the sample applications that are shipped with DB2.