CGS 2545: Database Concepts
Spring 2014

SQL In Class Exercises – Part 1

Instructor : Dr. Mark Llewellyn
markl@cs.ucf.edu
HEC 236, 407-823-2790
http://www.cs.ucf.edu/courses/cgs2545/spr2014

Department of Electrical Engineering and Computer Science
Computer Science Division
University of Central Florida

Relational diagram

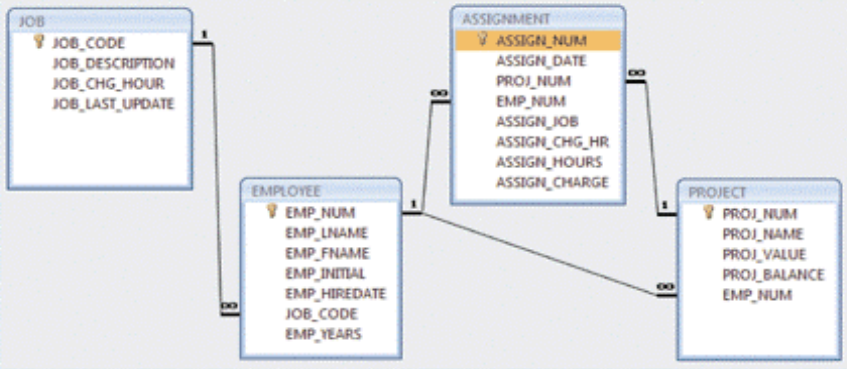


Table name: JOB

JOB_CODE	JOB_DESCRIPTION	JOB_CHG_HOUR	JOB_LAST_UPDATE
500	Programmer	35.75	20-Nov-09
501	Systems Analyst	96.75	20-Nov-09
502	Database Designer	125.00	24-Mar-10
503	Electrical Engineer	84.50	20-Nov-09
504	Mechanical Engineer	67.90	20-Nov-09
505	Civil Engineer	55.78	20-Nov-09
506	Clerical Support	26.87	20-Nov-09
507	DSS Analyst	45.95	20-Nov-09
508	Applications Designer	48.10	24-Mar-10
509	Bio Technician	34.55	20-Nov-09
510	General Support	18.36	20-Nov-09

Table name: PROJECT

PROJ_NUM	PROJ_NAME	PROJ_VALUE	PROJ_BALANCE	EMP_NUM
15	Evergreen	1453500.00	1002350.00	103
18	Amber Wave	3500500.00	2110346.00	108
22	Rolling Tide	805000.00	500345.20	102
25	Starflight	2650500.00	2309880.00	107

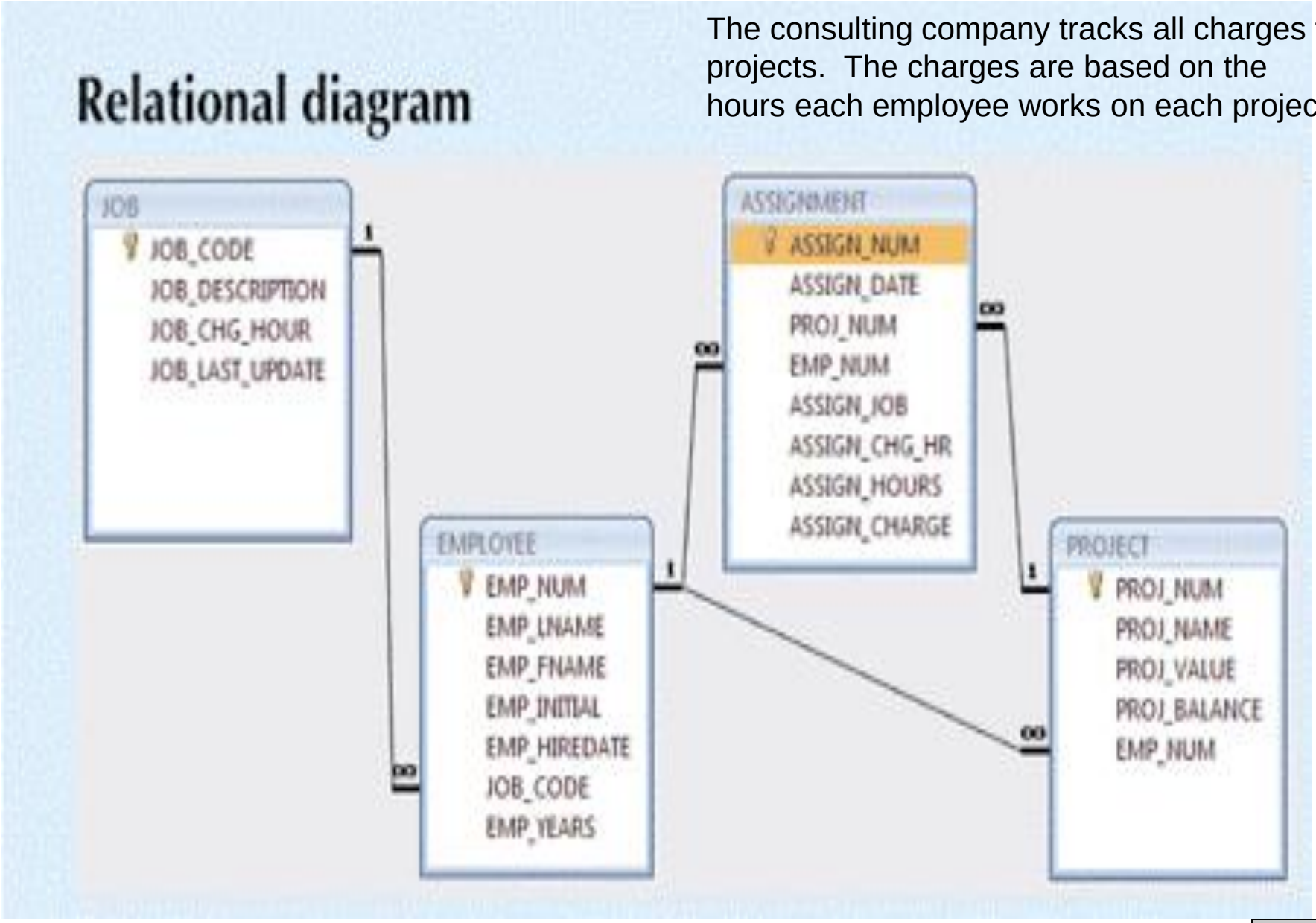
Table name: EMPLOYEE

EMP_NUM	EMP_LNAME	EMP_FNAME	EMP_INITIAL	EMP_HIREDATE	JOB_CODE	EMP_YEARS
101	News	John	G	08-Nov-00	502	12
102	Senior	David	H	12-Jul-89	501	23
103	Arbough	June	E	01-Dec-96	503	16
104	Ramoras	Anne	K	15-Nov-87	501	25
105	Johnson	Alice	K	01-Feb-93	502	19
106	Smithfield	William		22-Jun-04	500	8
107	Alonzo	Maria	D	10-Oct-93	500	19
108	Washington	Ralph	B	22-Aug-91	501	21
109	Smith	Larry	W	18-Jul-97	501	15
110	Olenko	Gerald	A	11-Dec-95	505	17
111	Wabash	Geoff	B	04-Apr-91	506	21
112	Smithson	Darlene	M	23-Oct-94	507	18
113	Joenbrood	Delbert	K	15-Nov-96	508	16
114	Jones	Annelise		20-Aug-93	508	19
115	Bawangi	Travis	B	25-Jan-92	501	20
116	Pratt	Gerald	L	05-Mar-97	510	15
117	Williamson	Angie	H	19-Jun-96	509	16
118	Frommer	James	J	04-Jan-05	510	7

Table name: ASSIGNMENT

ASSIGN_NUM	ASSIGN_DATE	PROJ_NUM	EMP_NUM	ASSIGN_JOB	ASSIGN_CHG_HR	ASSIGN_HOURS	ASSIGN_CHARGE
1001	22-Mar-12	18	103	503	84.50	3.5	295.75
1002	22-Mar-12	22	117	509	34.55	4.2	145.11
1003	22-Mar-12	18	117	509	34.55	2.0	69.10
1004	22-Mar-12	18	103	503	84.50	5.9	498.55
1005	22-Mar-12	25	108	501	96.75	2.2	212.85
1006	22-Mar-12	22	104	501	96.75	4.2	406.35
1007	22-Mar-12	25	113	508	50.75	3.8	192.85
1008	22-Mar-12	18	103	503	84.50	0.9	76.05
1009	23-Mar-12	15	115	501	96.75	5.6	541.80
1010	23-Mar-12	15	117	509	34.55	2.4	82.92
1011	23-Mar-12	25	105	502	105.00	4.3	451.50
1012	23-Mar-12	18	108	501	96.75	3.4	328.95
1013	23-Mar-12	25	115	501	96.75	2.0	193.50
1014	23-Mar-12	22	104	501	96.75	2.8	270.90
1015	23-Mar-12	15	103	503	84.50	6.1	515.45
1016	23-Mar-12	22	105	502	105.00	4.7	493.50
1017	23-Mar-12	18	117	509	34.55	3.8	131.29
1018	23-Mar-12	25	117	509	34.55	2.2	76.01
1019	24-Mar-12	25	104	501	110.50	4.9	541.45
1020	24-Mar-12	15	101	502	125.00	3.1	387.50
1021	24-Mar-12	22	108	501	110.50	2.7	298.35
1022	24-Mar-12	22	115	501	110.50	4.9	541.45
1023	24-Mar-12	22	105	502	125.00	3.5	437.50
1024	24-Mar-12	15	103	503	84.50	3.3	278.85
1025	24-Mar-12	18	117	509	34.55	4.2	145.11

The consulting company tracks all charges to projects. The charges are based on the hours each employee works on each project.



1. Write the SQL code that will create a table named EMP_1. This table is to be a subset of the EMPOLYEE table. The basic structure of the EMP_1 table is shown below:

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)

Answer:

```
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);
```


2. Write the SQL code that will list every attribute for the employees in the EMP_1 table with a JOB_CODE of 502.

Answer:

```
SELECT  *
FROM  EMP_1
WHERE  JOB_CODE = '502';
```

3. Write the SQL code that will change the job code to 501 for the person whose employee number is 107.

Answer:

```
UPDATE EMPLOYEE
SET JOB_CODE = '501'
WHERE EMP_NUM = '107';
```


4. Write the SQL code that 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.)

Answer:

```
DELETE FROM EMPLOYEE
WHERE EMP_LNAME = 'Smithfield'
   AND EMP_FNAME = 'William'
   AND EMP_HIREDATE = '22-June-04'
   AND JOB_CODE = '500';
```


5. Write the SQL code will that will change the job code to 503 for all employees whose current job code is 500.

Answer:

```
UPDATE ASSIGNMENT
SET JOB_CODE = ’503’
WHERE JOB_CODE = ‘500’;
```

6. Write the SQL code will that will list only the distinct project numbers in the ASSIGNMENT table and arrange them in descending order of project number.

Answer:

```
SELECT DISTINCT PROJ_NUM
FROM ASSIGNMENT
ORDER BY PROJ_NUM DESC;
```


7. Write the SQL code will determine the average number of years that all employees have been employed by the company. Have the result labeled "average_employee_years".

Answer:

```
SELECT AVG(EMP_YEARS) AS average_employee_years
FROM EMPLOYEE;
```

8. Write the SQL code will that will list the date on which the first employee was hired by the company.

Answer:

```
SELECT min(EMP_HIREDATE)
FROM EMPLOYEE;
```


9. Write the SQL code that will list the employee number for every employee who is currently assigned to project number 18.

Answer:

```
SELECT EMP_NUM
FROM ASSIGNMENT
WHERE PROJ_NUM = '18';
```

10. Write the SQL code that will list the employee number, first name, and last name for every employee who is currently assigned to project number 18.

Answer:

```
SELECT EMP.EMP_NUM, EMP.EMP_FNAME, EMP.EMP_LNAME
FROM EMPLOYEE NATURAL JOIN ASSIGNMENT
WHERE PROJ_NUM = '18';
```


11. Write the SQL code that will list the employee number, first name, and last name for every employee who is currently assigned to project number 18. Arrange the output in alphabetical order of the employee's last name then by first name.

Answer:

```
SELECT EMP.EMP_NUM, EMP.EMP_FNAME, EMP.EMP_LNAME
FROM EMPLOYEE NATURAL JOIN ASSIGNMENT
WHERE PROJ_NUM = '18'
ORDER BY EMP.EMP_LNAME, EMP.EMP_FNAME;
```


12. Write the SQL code that will change the JOB_CODE to 524 for those employees who were hired before January 1, 1994 and whose job code is currently at least 501.

Answer:

```
UPDATE  EMPLOYEE
SET  JOB_CDOE = ’524'
WHERE  EMP_HIREDATE <= ' 01-Jan-94'
   AND  JOB_CODE >= '501';
```


13. Write the SQL code that will list all employee information for employees whose last name begins with "Smith".

Answer:

```
SELECT *
FROM  EMPLOYEE
WHERE  EMP_LNAME LIKE 'Smith%';
```

14. Write the SQL code that will determine the sum total for all current project balances and list this as "total all project balance."

Answer:

```
SELECT SUM (PROJ_BALANCE) AS Total_All_Projects-Balance
FROM  PROJECT;
```


15. Write the SQL code that will list an employee number, first and last name, job description and project name for every employee.

Answer:

```
SELECT EMP.EMP_NUM, EMP.EMP_LNAME, EMP.EMP_FNAME,
          JOB.JOB_DESCRIPTION, PROJECT.PROJ_NAME
FROM  EMPLOYEE NATURAL JOIN JOB
          NATURAL JOIN ASSIGNMENT
          NATURAL JOIN PROJECT;
```


15. Write the SQL code that will list an employee number, first and last name, job description and project name for every employee.

Same query as previous page but using CROSS JOIN operator instead of NATURAL JOIN

Answer:

```
SELECT EMP.EMP_NUM, EMP.EMP_LNAME, EMP.EMP_FNAME,
            JOB.JOB_DESCRIPTION, PROJECT.PROJ_NAME
FROM  EMPLOYEE CROSS JOIN JOB
           CROSS JOIN ASSIGNMENT
           CROSS JOIN PROJECT
WHERE EMPLOYEE.JOB_CODE = JOB.JOB_CODE
   AND EMPLOYEE.EMP_NUM = ASSIGNMENT.EMP_NUM
   AND ASSIGNMENT.PROJ_NUM = PROJECT.PROJ_NUM;
```


16. Write the SQL code that will produce the count of the current number of different job codes maintained by the company that have a job charge per hour of more than $50.00.

Answer:

```
SELECT  COUNT(*)
FROM JOB
WHERE JOB_CHG_HOUR > 50.00;
```

17. Write the SQL code that will determine the highest job charge per hour.

Answer:

```
SELECT  MAX(JOB_CHG_HOUR)
FROM JOB;
```