Department of Computer Science
MY University, Islamabad.

Implementation Phase (LAB)

Project No:	**07**
Course Title:	**Database System**
Student Name:	**Taha Saddiqui**
Registration No:	**baib232005**
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Lab Instructor:	**Mr. Hamza Javed**
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MY UNIVERSITY
STEP INTO TOMORROW

Department of Computer Science

Spring-2024 DataBase Systems (CS-103)

Lab Task # 07

SQL-Joins

Instructors: Mr. Hamza Javed *Date: 4 June 2024*

Question 1

List the following details of each employee: employee number, last name, first name, sex, and salary.

Question 2

List first name, last name, and hire date for employees who were hired in 1986.

Question 3

List the manager of each department with the following information: department number, department name, the manager's employee number, last name, first name.

Question 4

List the department of each employee with the following information: employee number, last name, first name, and department name.

Question 5

List first name, last name, and sex for employees whose first name is "Hercules."nd last names begin with "B."

Question 6

List only single gender (Male/Female)employee which contain maximum salary. with the following information: employee number, last name, first name, Gender and salaries.

Question 7

List the department and salary of each employee with the following information: employee number, last name, first name, salary and department name.

Question 8

Apply left join on employee table with titles

Question 9

Apply Cross join with department and dept_manager.

Question 10

Apply Right join on employee table with department

Database And Table Queries

```
USE dbproject7;
CREATE TABLE employees (
        emp_no INT NOT NULL,
        emp_title_id VARCHAR(5) NOT NULL,
        birth_date DATE NOT NULL,
        first_name VARCHAR(30) NOT NULL,
        last_name VARCHAR(30) NOT NULL,
        sex VARCHAR(1) NOT NULL,
        hire_date DATE NOT NULL,
        PRIMARY KEY (emp_no)
);
CREATE TABLE dept_manager (
        dept_no VARCHAR(4) NOT NULL,
        emp_no INT NOT NULL,
        PRIMARY KEY (dept_no, emp_no),
        FOREIGN KEY (emp_no) REFERENCES employees (emp_no) ON DELETE CASCADE,
        FOREIGN KEY (dept_no) REFERENCES departments (dept_no) ON DELETE CASCADE
);
CREATE TABLE dept_emp (
        emp_no INT NOT NULL,
        dept_no VARCHAR(4) NOT NULL,
        PRIMARY KEY (emp_no, dept_no),
        FOREIGN KEY (emp_no) REFERENCES employees (emp_no) ON DELETE CASCADE,
        FOREIGN KEY (dept_no) REFERENCES departments (dept_no) ON DELETE CASCADE
);
CREATE TABLE departments (
        dept_no VARCHAR(4) NOT NULL,
        dept_name VARCHAR(30) NOT NULL,
        PRIMARY KEY (dept_no)
);
CREATE TABLE titles (
        title_id VARCHAR(5) NOT NULL,
        title VARCHAR(30) NOT NULL,
        PRIMARY KEY (title_id)
);
CREATE TABLE salaries (
        emp_no INT NOT NULL,
        salary INT NOT NULL,
        PRIMARY KEY (emp_no),
        FOREIGN KEY (emp_no) REFERENCES employees (emp_no) ON DELETE CASCADE
);
```

Instructions To load .csv Data into MySQL

```
LOAD DATA INFILE 'D:\\Programs\\Datasets\\dept_manager.csv'
INTO TABLE dept_manager
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;

LOAD DATA INFILE 'D:\\Programs\\Datasets\\dept_emp.csv'
INTO TABLE dept_emp
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;

LOAD DATA INFILE 'D:\\Programs\\Datasets\\departments.csv'
INTO TABLE departments
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;

LOAD DATA INFILE 'D:\\Programs\\Datasets\\titles.csv'
INTO TABLE titles
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;

LOAD DATA INFILE 'D:\\Programs\\Datasets\\salaries.csv'
INTO TABLE salaries
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS;

LOAD DATA INFILE 'D:\\Programs\\Datasets\\employees.csv'
INTO TABLE employees
FIELDS TERMINATED BY ','
ENCLOSED BY ' " '
LINES TERMINATED BY '\n'
IGNORE 1 ROWS
```

Question 1 : List the following details of each employee: employee number, last name, first name, sex, and salary.

```
SELECT e.emp_no, e.last_name, e.first_name, e.sex, s.salary
FROM dbproject7.employees e
JOIN dbproject7.salaries s ON e.emp_no = s.emp_no
LIMIT 10;
```

emp_no	last_name	first_name	sex	salary
10001	Facello	Georgi	M	60117
10002	Simmel	Bezalel	F	65828
10003	Bamford	Parto	M	40006
10004	Koblick	Chirstian	M	40054
10005	Maliniak	Kyoichi	M	78228
10006	Preusig	Anneke	F	40000
10007	Zielinski	Tzvetan	F	56724
10008	Kalloufi	Saniya	M	46671
10009	Peac	Sumant	F	60929
10010	Piveteau	Duangkaew	F	72488

Question 2 : List first name, last name, and hire date for employees who were hired in 1986.

```
SELECT e.first_name, e.last_name, e.hire_date
FROM dbproject7.employees e
WHERE YEAR(e.hire_date) = 1986
LIMIT 10;
```

first_name	last_name	hire_date
Georgi	Facello	1986-06-26
Parto	Bamford	1986-08-28
Chirstian	Koblick	1986-12-01
Sanjiv	Zschoche	1986-02-04
Kwee	Schusler	1986-02-26
Kshitij	Gils	1986-03-27
Zhongwei	Rosen	1986-10-30
Xinglin	Eugenio	1986-09-08
Sudharsan	Flasterstein	1986-08-12
Kendra	Hofting	1986-03-14

Question 3 : List the manager of each department with the following information: department number, department name, the manager's employee number, last name, first name.

```
SELECT d.dept_no, d.dept_name, dm.emp_no, e.last_name, e.first_name
FROM dbproject7.departments d
JOIN dbproject7.dept_manager dm ON d.dept_no = dm.dept_no
JOIN dbproject7.employees e ON dm.emp_no = e.emp_no
LIMIT 10;
```

dept_no	dept_name	emp_no	last_name	first_name
d001	Marketing	110022	Markovitch	Margareta
d001	Marketing	110039	Minakawa	Vishwani
d002	Finance	110085	Alpin	Ebru
d002	Finance	110114	Legleitner	Isamu
d003	Human Resources	110183	Ossenbruggen	Shirish
d003	Human Resources	110228	Sigstam	Karsten
d004	Production	110303	Wegerle	Krassimir
d004	Production	110344	Cools	Rosine
d004	Production	110386	Kieras	Shem
d004	Production	110420	Ghazalie	Oscar

Question 4 : List the department of each employee with the following information: employee number, last name, first name, and department name.

```
SELECT e.emp_no, e.last_name, e.first_name, d.dept_name
FROM dbproject7.employees e
JOIN dbproject7.dept_emp de ON e.emp_no = de.emp_no
JOIN dbproject7.departments d ON de.dept_no = d.dept_no
LIMIT 10;
```

emp_no	last_name	first_name	dept_name
10017	Bouloucos	Cristinel	Marketing
10055	Dredge	Georgy	Marketing
10058	McFarlin	Berhard	Marketing
10108	Giveon	Lunjin	Marketing
10140	Auria	Yucel	Marketing
10175	Ananiadou	Aleksandar	Marketing
10208	Klerer	Xiping	Marketing
10228	Cesareni	Karoline	Marketing
10239	Llado	Nikolaos	Marketing
10259	Vesel	Susanna	Marketing

Question 5 : List first name, last name, and sex for employees whose first name is ”Hercules” and last names begin with ”B.”

```
SELECT e.first_name, e.last_name, e.sex
FROM dbproject7.employees e
WHERE e.first_name = 'Hercules' AND e.last_name LIKE 'B%'
LIMIT 10;
```

first_name	last_name	sex
Hercules	Benzmuller	M
Hercules	Brendel	F
Hercules	Baranowski	M
Hercules	Barreiro	M
Hercules	Baer	M
Hercules	Bernardinello	F
Hercules	Basagni	M
Hercules	Biran	F
Hercules	Bernatsky	M
Hercules	Bail	F

Question 6 : List only single gender (Male/Female)employee which contain maximum salary. with the following information: employee number, last name, first name, Gender and salaries.

```
SELECT e.emp_no, e.last_name, e.first_name, e.sex, s.salary
FROM dbproject7.employees e
JOIN dbproject7.salaries s ON e.emp_no = s.emp_no
WHERE (e.sex, s.salary) IN (
        SELECT sex, MAX(salary)
        FROM dbproject7.employees e
        JOIN dbproject7.salaries s ON e.emp_no = s.emp_no
        GROUP BY e.sex
)
LIMIT 10;
```

emp_no	last_name	first_name	sex	salary
205000	Griswold	Charmane	M	129492
474456	Heydon	Martine	F	123477

Question 7 : List the department and salary of each employee with the following information: employee number, last name, first name, salary and department name.

```
SELECT e.emp_no, e.last_name, e.first_name, s.salary, d.dept_name
FROM dbproject7.employees e
JOIN dbproject7.salaries s ON e.emp_no = s.emp_no
JOIN dbproject7.dept_emp de ON e.emp_no = de.emp_no
JOIN dbproject7.departments d ON de.dept_no = d.dept_no
WHERE e.emp_no IN (
        SELECT MIN(de.emp_no)
        FROM dbproject7.dept_emp de
        GROUP BY de.dept_no
);
```

emp_no	last_name	first_name	salary	dept_name
10017	Bouloucos	Cristinel	71380	Marketing
10042	Stamatiou	Magy	81662	Finance
10005	Maliniak	Kyoichi	78228	Human Resources
10003	Bamford	Parto	40006	Production
10001	Facello	Georgi	60117	Development
10009	Peac	Sumant	60929	Quality Management
10002	Simmel	Bezalel	65828	Sales
10007	Zielinski	Tzvetan	56724	Research
10011	Sluis	Mary	42365	Customer Service

Question 8 : Apply left join on employee table with titles.

```
SELECT e.*, t.*
FROM dbproject7.employees e
LEFT JOIN dbproject7.titles t ON e.emp_title_id = t.title_id
LIMIT 10;
```

emp_no	emp_title_id	birth_date	first_name	last_name	sex	hire_date	title_id	title
10001	e0003	1953-09-02	Georgi	Facello	M	1986-06-26	e0003	Senior Engineer
10002	s0001	1964-06-02	Bezalel	Simmel	F	1985-11-21	s0001	Staff
10003	e0003	1959-12-03	Parto	Bamford	M	1986-08-28	e0003	Senior Engineer
10004	e0003	1954-05-01	Chirstian	Koblick	M	1986-12-01	e0003	Senior Engineer
10005	s0001	1955-01-21	Kyoichi	Maliniak	M	1989-09-12	s0001	Staff
10006	e0003	1953-04-20	Anneke	Preusig	F	1989-06-02	e0003	Senior Engineer
10007	s0001	1957-05-23	Tzvetan	Zielinski	F	1989-02-10	s0001	Staff
10008	e0001	1958-02-19	Saniya	Kalloufi	M	1994-09-15	e0001	Assistant Engineer
10009	e0003	1952-04-19	Sumant	Peac	F	1985-02-18	e0003	Senior Engineer
10010	e0002	1963-06-01	Duangkaew	Piveteau	F	1989-08-24	e0002	Engineer

Question 9 : Apply Cross join with department and dept manager.

```
SELECT *
FROM dbproject7.departments d
CROSS JOIN dbproject7.dept_manager dm
LIMIT 10;
```

dept_no	dept_name	dept_no	emp_no
d009	Customer Service	d001	110022
d008	Research	d001	110022
d007	Sales	d001	110022
d006	Quality Management	d001	110022
d005	Development	d001	110022
d004	Production	d001	110022
d003	Human Resources	d001	110022
d002	Finance	d001	110022
d001	Marketing	d001	110022
d009	Customer Service	d001	110039

Question 10 : Apply Right join on employee table with department.

```
SELECT e.*, d.*
FROM dbproject7.employees e
RIGHT JOIN dbproject7.dept_emp de ON e.emp_no = de.emp_no
RIGHT JOIN dbproject7.departments d ON de.dept_no = d.dept_no
LIMIT 10;
```

emp_no	emp_title_id	birth_date	first_name	last_name	sex	hire_date	dept_no	dept_name
10017	s0001	1958-07-06	Cristinel	Bouloucos	F	1993-08-03	d001	Marketing
10055	s0001	1956-06-06	Georgy	Dredge	M	1992-04-27	d001	Marketing
10058	s0002	1954-10-01	Berhard	McFarlin	M	1987-04-13	d001	Marketing
10108	s0001	1952-04-07	Lunjin	Giveon	M	1986-10-02	d001	Marketing
10140	s0001	1957-03-11	Yucel	Auria	F	1991-03-14	d001	Marketing
10175	s0001	1960-01-11	Aleksandar	Ananiadou	F	1988-01-11	d001	Marketing
10208	s0001	1960-01-02	Xiping	Klerer	M	1991-12-23	d001	Marketing
10228	s0001	1953-04-21	Karoline	Cesareni	F	1991-08-26	d001	Marketing
10239	s0001	1955-03-31	Nikolaos	Llado	F	1995-05-08	d001	Marketing
10259	s0001	1964-11-24	Susanna	Vesel	M	1986-06-25	d001	Marketing