

UNIVERSITY OF CHITTAGONG

Department of Computer Science and Engineering

Session: 2021-2022 4th semester

Assignment No. : 1

Course Title : Database Systems

Course Code No. : CSE-413

Submitted to:

Dr. Rudra Pratap Deb Nath

Associate Professor Department of Computer Science and Engineering University of Chittagong

Submitted by:

Sanzid Islam Mahi

ID: 22701065

Department of Computer Science and Engineering University of Chittagong

Date: Jul 02, 2024

Chapter 1

Part 1

Test your knowledge:

- 1. The following SELECT statement executes successfully:
- 1 SELECT last_name, job_id, salary AS Sal FROM employees;

Answer: True

- 2. The following SELECT statement executes successfully:
- 1 SELECT * FROM job_grades;

Answer: True

- 3. There are four coding errors in the following statement. Can you identify them?
- SELECT employee_id, last_name salx12 ANNUAL SALARY
- FROM employees;

Errors:

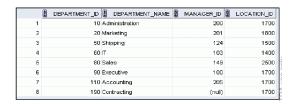
- (a) Missing comma between last_name and sal.
- (b) x should be * for multiplication.
- (c) Alias ANNUAL SALARY needs to be quoted due to the space.
- (d) Missing AS keyword before the alias ANNUAL SALARY.

Part 2

You have been hired as a SQL programmer for Acme Corporation. Your first task is to create some reports based on data from the Human Resources tables.

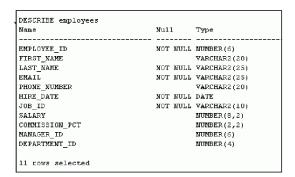
4. Your first task is to determine the structure of the DEPARTMENTS table and its contents.





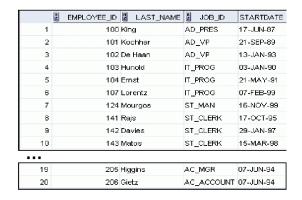
- 1 DESCRIBE DEPARTMENTS;
- 2 SELECT * FROM DEPARTMENTS;

5. You need to determine the structure of the EMPLOYEES table.



Answer:

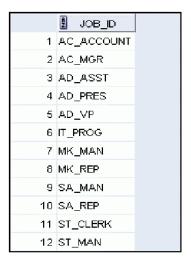
- 1 DESCRIBE EMPLOYEES;
- 6. The HR department wants a query to display the last name, job ID, hire date, and employee ID for each employee, with the employee ID appearing first. Provide an alias STARTDATE for the HIRE_DATE column. Save your SQL statement to a file named lab_01_05.sql so that you can dispatch this file to the HR department. Test your query in the lab_01_05.sql file to ensure that it runs correctly.



Answer:

1 SELECT EMPLOYEE_ID, LAST_NAME, JOB_ID, HIRE_DATE AS STARTDATE
2 FROM EMPLOYEES;

7. The HR department wants a query to display all unique job IDs from the EM-PLOYEES table.

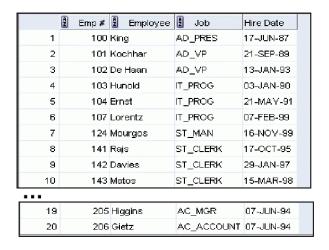


Answer:

- 1 SELECT DISTINCT JOB_ID
- FROM EMPLOYEES;

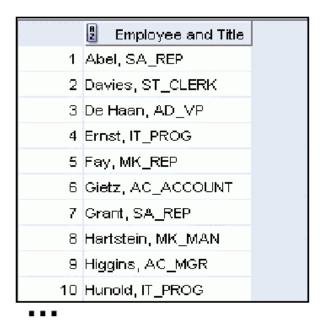
Part 3

8. The HR department wants more descriptive column headings for its report on employees. Copy the statement from lab_01_05.sql to a new SQL Worksheet. Name the column headings Emp #, Employee, Job, and Hire Date, respectively. Then run your query again.



```
SELECT EMPLOYEE_ID AS "Emp_#",LAST_NAME AS "Employee",
JOB_ID AS "Job",HIRE_DATE AS "Hire_Date"
FROM EMPLOYEES;
```

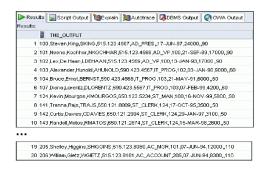
9. The HR department has requested a report of all employees and their job IDs. Display the last name concatenated with the job ID (separated by a comma and space) and name the column Employee and Title.



19 Whalen, AD_ASST 20 Zlotkey, SA_MAN

Answer:

10. To familiarize yourself with the data in the EMPLOYEES table, create a query to display all the data from that table. Separate each column output by a comma. Name the column title THE_OUTPUT.



```
SELECT "Employee_ID"||','||"First_Name"||','||"Last_Name"||
','||"Email"||','||"Phone_Number"||','||"Job_ID"||','||
"Manager_ID"||','||"Hire_Date"||','||"Commission_Pct"||
','||"Department_ID" AS THE_OUTPUT
FROM EMPLOYEES;
```

Chapter 2

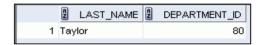
Practice 2

1. Because of budget issues, the HR department needs a report that displays the last name and salary of employees who earn more than \$12,000. Save your SQL statement as a file named lab_02_01.sql. Run your query.



Answer:

- SELECT last_name, salary
 FROM employees
 WHERE salary > 12000;
- 2. Open a new SQL Worksheet. Create a report that displays the last name and department number for employee number 176. Run the query.



- SELECT last_name, department_id FROM employees WHERE employee_id = 176;
- 3. The HR department needs to find high-salary and low-salary employees. Modify lab_02_01.sql to display the last name and salary for any employee whose salary is not in the range of \$5,000 to \$12,000. Save your SQL statement as lab_02_03.sql.



Answer:

```
SELECT last_name, salary
FROM employees
WHERE salary NOT BETWEEN 5000 AND 12000;
```

4. Create a report to display the last name, job ID, and hire date for employees with the last names of Matos and Taylor. Order the query in ascending order by the hire date.



Answer:

```
SELECT last_name, job_id, hire_date
FROM employees
WHERE last_name IN ('Matos', 'Taylor')
ORDER BY hire_date ASC;
```

5. Display the last name and department ID of all employees in departments 20 or 50 in ascending alphabetical order by name.



Answer:

```
SELECT last_name, department_id
FROM employees
WHERE department_id IN (20, 50)
ORDER BY last_name ASC;
```

6. Modify lab_02_03.sql to display the last name and salary of employees who earn between \$5,000 and \$12,000, and are in department 20 or 50. Label the columns Employee and Monthly Salary, respectively. Resave lab_02_03.sql as textttlab_02_06.sql. Run the statement in lab_02_06.sql.



Answer:

```
SELECT last_name AS Employee, salary AS "Monthly_Salary"
FROM employees
WHERE salary BETWEEN 5000 AND 12000
AND department_id IN (20, 50);
```

7. The HR department needs a report that displays the last name and hire date for all employees who were hired in 1994.



Answer:

```
SELECT last_name, hire_date
FROM employees
WHERE hire_date LIKE '%94';
```

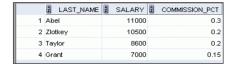
8. Create a report to display the last name and job title of all employees who do not have a manager.



Answer:

```
1 SELECT LAST_NAME, JOB_ID
2 FROM employees
3 WHERE manager_id IS NULL;
```

9. Create a report to display the last name, salary, and commission of all employees who earn commissions. Sort data in descending order of salary and commissions. Use the column numeric position in the ORDER BY clause.



```
SELECT last_name, salary, commission_pct
FROM employees
WHERE commission_pct IS NOT NULL
ORDER BY 2 DESC, 3 DESC;
```

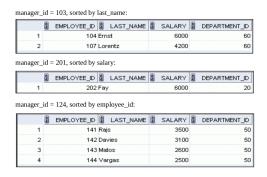
10. Members of the HR department want to have more flexibility with the queries that you are writing. They would like a report that displays the last name and salary of employees who earn more than an amount that the user specifies after a prompt. Save this query to a file named lab_02_10.sql. If you enter 12000 when prompted, the report displays the following results:



Answer:

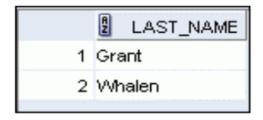
```
SELECT last_name, salary
FROM employees
WHERE salary > $user_input;
```

11. The HR department wants to run reports based on a manager. Create a query that prompts the user for a manager ID and generates the employee ID, last name, salary, and department for that manager's employees. The HR department wants the ability to sort the report on a selected column. You can test the data with the following values:



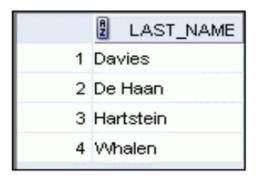
Answer:

12. Display all employee last names in which the third letter of the name is "a."



```
SELECT last_name
FROM hr.employees
WHERE last_name LIKE '__a%';
```

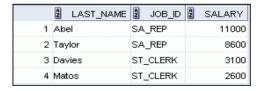
13. Display the last names of all employees who have both an "a" and an "e" in their last name.



Answer:

```
1 SELECT last_name
2 FROM hr.employees
3 WHERE last_name LIKE '%a%' AND last_name LIKE '%e%';
```

14. Display the last name, job, and salary for all employees whose jobs are either those of a sales representative or of a stock clerk, and whose salaries are not equal to \$2,500, \$3,500, or \$7,000.



Answer:

```
SELECT last_name, job_id, salary
FROM hr.employees
WHERE job_id IN ('SA_REP', 'ST_CLERK')
AND salary NOT IN (2500, 3500, 7000);
```

15. Modify lab_02_06.sql to display the last name, salary, and commission for all employees whose commission is 20%. Resave lab_02_06.sql as lab_02_15.sql. Rerun the statement in lab_02_15.sql.



```
SELECT last_name AS Employee, salary AS "Monthly_Salary"
FROM employees
WHERE commission_pct = 0.2;
```