

CS 457L – Data modeling and Implementation techniques (Lab)

Venue: Rm 211

Time Duration: 12.45 pm to 2.35 pm

Date: Feb. 27, 2024

Instructions: Open book, Open notes

Lab Mid-term exam: [Max: 70 points]

Answer all questions given below. For each question from Q1 through Q7, show the SQL query and the SQL output.

1. (3 pts) Write a SQL command that will create a table named “scores” that has the fields `studentsName` (string 30 characters), `score` (integer) and `maxScore` (integer).
2. (3 pts) Write a SQL command that will insert a record into the “scores” table above for a student whose name is “Kyle”, with a score of 80, in a test with a maximum score of 200.
3. (3 pts) Write a SQL command that will display the name and score (not `maxScore`) of students where the maximum score of the test is 200.
4. (3 pts) Write a SQL command that will create a table named “appts” that has the fields **`student`** (string 14 characters), **`advisor`** (string 3 characters), and **`room`** (integer).
5. (3 pts) Write a SQL command that will insert a record into the “appts” table above for a student named “Kelly”, where the advisor is “JSR”, and the room number is 5.
6. (3 pts) Write a SQL command that will display the name of students that are associated with the advisor named “JSR”.
7. (7 pts) Use the `FRIENDS` table to answer the following questions.

LASTNAME	FIRSTNAME	AREACODE	PHONE	ST	ZIP
BUNDY	AL	100	555-1111	IL	22333
MEZA	AL	200	555-2222	UK	
MERRICK	BUD	300	555-6666	CO	80212
MAST	JD	381	555-6767	LA	23456
BULHER	FERRIS	345	555-3223	IL	23332
PERKINS	ALTON	911	555-3116	CA	95633
BOSS	SIR	204	555-2345	CT	95633

a. Write a query that returns everyone in the database whose last name begins with M.

b. Write a query that returns everyone who lives in Illinois with a first name of AL.

c. Given two tables (`PART1` and `PART2`) containing columns named `PARTNO`, how would you find out which part numbers are in both tables? Write the query.

Use the `INTERSECT`. Remember that `INTERSECT` returns rows common to both queries.

d. What shorthand could you use instead of `WHERE a >= 10 AND a <=30`?

e. What will this query return?

```
SELECT FIRSTNAME
FROM FRIENDS
WHERE FIRSTNAME = 'AL'
AND LASTNAME = 'BULHER';
```

f. Using the `FRIENDS` table, write a query that returns the following:

NAME	ST
AL	IL

g. Using the `FRIENDS` table, write a query that returns the following:

NAME	PHONE
MERRICK, BUD	300-555-6666
MAST, JD	381-555-6767
BULHER, FERRIS	345-555-3223

Questions 8 through 52 carry 1 point each: [45 points]

8. SQL is the _____ standard language to access relational databases.
9. (Projection / Selection) is done by listing column names in a select list of a query.
10. To remove duplications within the result set, you should use which keyword after the word select.
 - a. DISTINCT
 - b. UNIQUE
 - c. Either of the above.
 - d. NONE of the above.
11. Which statement(s) below would likely fail?
 - a. `SelectT * FROM employees;` (two T's in the select word)
 - b. `SELECT * FROM "employees"` (unless employees created with double quotes)
 - c. `SELECT * FROM employ-`
`ees;`
 - d. `Select *`
12. Number columns returned in queries are normally displayed (Left, Right, Center) justified.
13. Which query(s) would return a result of 50?

- a. Select $(100*2+50)/5$ from dual;
- b. Select $100*2 + 50/5$ from dual;
- c. Select $(100)*2+(50/5)$ from dual;
- d. Select $((100 *2)+50)/5$ from dual;

14. Consider the statement:

`"SELECT salary + commission_pct as compensation, 'Commission is ' || commission_pct as "Commission"
FROM employees;"`

What is the value of the compensation and commission in the result set for a row where the value of the salary column is 1000 and the commission_pct column is null? (ignore double quotes)

- a. compensation: "1000" commission: "null"
- b. compensation: "null" commission: "null"
- c. compensation: "null" commission: "Commission is "
- d. compensation: "0" commission: "Commission is 0"

15. For a column alias to contain a space or retain case, it must (choose the best answer):

- a. Be enclosed within the ampersand symbol.
- b. Be enclosed with single quotes.
- c. Be enclosed within parenthesis
- d. Be enclosed with double quotes

16. A SQL query must have both a list of items following the keyword _____ and a data source following the keyword _____.

17. (True / False) In the where clause of a query, the column name and value are interchangeable on either side of the operator, therefore `department_id = 90` or `90 = department_id` is interchangeable.

18. Literal values for text or dates must be enclosed within _____.

19. "Between 900 and 1100" would include how many integers? (199 / 200 / 201) (circle one)

20. A SQL condition "Where manager id IN (100, 101, 201)" would be equivalent to three compound conditions using the (OR / AND) operator.

21. In the LIKE operator, which symbol is used to represent a single text character or numeric digit?

- a. " _ "
- b. " / "
- c. "&"
- d. "%"

22. Which of the following has the highest precedence? (AND, NOT, OR , "all are equal must use parenthesis")

23. By default in an ORDER BY clause, where would rows with a null value appear? (beginning of result set, end of result set, not listed in result set)
24. To reverse the default order of a sorting operation in the ORDER BY clause we use which word DESC .
25. A column may be sorted in an ORDER BY clause by: (circle all true answers)
a column name or expression in the select list.
a. a column alias in the select list.
b. a number representing the column position in the select list.
c. a column found in the data source but not in the select list.
26. Row functions return (a value for each row in the data source, a value for each row in the result set, always only a single value).
27. To always return "capitalized" text, use the function .
28. The result of "SELECT SUBSTR('abcdefg', 3,1) FROM dual;" is
a. Abc
b. c
c. d
d. none of the above
29. The result of "SELECT TRIM('x' from 'xxAxx') FROM dual; is
a. Axx
b. xxA
c. A
d. xAx
30. Which function(s) would result in a value of 46?
a. Select substr(46.567, 1, 2) from dual; (works because of implicit conversion-not if in double quotes)
b. Select round(46.567, -1) from dual;
c. Select round(46.567) from dual;
d. Select trunc(46.567) from dual;
31. To add one hour to the current time, we should use:
a. sysdate + 1
b. to_char(sysdate, 'HH:MI:SS')+1
c. sysdate + 1/24
d. to_char(sysdate) + 1/24
32. Which format model was used to convert 25-MAY-04 to May Twenty-Fifth, Two Thousand Four?
a. TO_CHAR('25-MAY-04','DD-MON-YY'), 'Month Ddsph, Year'

- b. TO_CHAR(TO_DATE('25-MAY-04','DD-MON-YY'), 'Month Dd, Year')
 - c. TO_DATE(TO_CHAR('25-MAY-04','Dd-Month-YYYY'), 'Month Ddsph, YYYY')
 - d. TO_CHAR(TO_DATE('25-MAY-04','DD-MON-YY'), 'Month Ddsph, Year')
33. In the arithmetic expression: salary*12 - 400, which operation will be evaluated first?
34. In date formats to use Oracle's built in algorithm for determining the century digits of the year when only providing the last two digits, we should use which format element? (HH, CC, RR, YY)
35. (Projection / Selection) is done by using a WHERE clause in a SQL statement
36. Which of the following can be used in the SELECT statement to return all columns of data in a table?
- a. ALL
 - b. Columns
 - c. *
 - d. DISTINCT
37. Which of the following is the Order of Precedence for arithmetic expressions?
- a. addition, subtraction, multiplication, division
 - b. subtraction, multiplication, addition, division
 - c. division , multiplication, addition, subtraction
 - d. multiplication, division, addition, subtraction
38. Mr. /Ms. Steven King is an employee of our company. hich statement below will return a list of employees in the following format?
- a. SELECT 'Mr./Ms. '||first_name||' '||last_name ||' '||'is an employee of our company.' AS "Employees"
FROM employees;
 - b. SELECT "Mr./Ms."||first_name||' '||last_name 'is an employee of our company.' AS "Employees"
FROM employees;
 - c. SELECT Mr./Ms. ||first_name||' '||last_name ||' '||"is an employee of our company." AS "Employees"
FROM employees;
 - d. SELECT 'Mr./Ms. 'first_name,last_name ||' '||'is an employee of our company.'
FROM employees;
39. For a column alias to contain a space or retain the proper case, it must:
- a. Be enclosed with single quotes.
 - b. Be enclosed within parentheses.
 - c. Be enclosed with double quotes
 - d. Be enclosed within the ampersand symbol

40. If any column value in an arithmetic expression is null,
- a. The query will create an error message.
 - b. The result will be zero.
 - c. The result is null.
 - d. The SQL interpreter cannot process the query.
41. Which query will return three columns each with UPPER CASE column headings?
- a. `SELECT "Department_id", "Last_name", "First_name"`
`FROM employees;`
 - b. `SELECT DEPARTMENT_ID, LAST_NAME, FIRST_NAME`
`FROM employees;`
 - c. `SELECT department_id, last_name, first_name AS UPPER CASE`
`FROM employees;`
 - d. `SELECT department_id, last_name, first_name`
`FROM employees;`
42. When used in a WHERE clause, which logical condition operator will return TRUE, only if both conditions are TRUE?
- a. OR
 - b. NOT
 - c. AND
 - d. BETWEEN
43. In this database, product_id values are stored like XY01, XY02 while quantity values are stored as numbers. After executing this query, which statement below is TRUE?

```
SELECT quantity, product_id
FROM products
ORDER BY quantity and product_id
```

- a. The results are sorted numerically.
 - b. The results are sorted first numerically then alphabetically.
 - c. The results are sorted first alphabetically then numerically.
 - d. The results are sorted alphabetically.
44. The following query will return which result?
- ```
SELECT last_name AS "Employee Name", job_id, code_number, hire_date
FROM employees
ORDER BY code_number ASC;
```
- a. Results for the hire\_date column will be displayed from smallest to largest date.
  - b. All column results will be ordered from smallest to largest value.
  - c. Results for the code\_number column will be displayed from the smallest number to the largest number.
  - d. Only the code\_number column will be returned.

45. You want to produce query results that display the last\_name, first\_name, department\_id and salary of all employees. Display the first\_name, last\_name and department\_id in ACS but for employees in the same department display the salary results in descending order. Also, if two employees have the same last\_name, you want the first names to be displayed in ascending order.

- a. ORDER BY department\_id, salary ASC, last\_name, first\_name DESC;
- b. ORDER BY last\_name, first\_name, department\_id, salary DESC
- c. ORDER BY department\_id, salary, last\_name, first\_name DESC;
- d. ORDER BY department\_id DESC, salary, last\_name || ' ' || first\_name ASC

46. In the following query, what will be evaluated first?

```
SELECT job_id, salary, hire_date
FROM employees
WHERE salary = 4000 OR job_id = 'AD_PRES' AND hire_date LIKE '03-JUN-04';
```

- a. job\_id = 'AD\_PRES' AND hire\_date LIKE '03-JUN-04';
- b. salary = 4000 OR job\_id = 'AD\_PRES'
- c. salary = 4000
- d. LIKE '03-JUN-04'

47. In the LIKE operator, which symbols can be used?

- a. & and %
- b. % and \_
- c. \$ and /
- d. \* and \_

48. The following query will return what values?

```
SELECT employee_id "number", salary "pay"
FROM employees
WHERE employee_id = 103 OR salary = 4000;
```

- a. All employees plus those with employee id's of 103 whose salary is 4000.
- b. Only employees with employee id's of 103 whose salary is 4000.
- c. Any employee with an employee\_id of 103 and also any employee whose salary is 4000.
- d. Employees with an employee\_id equal to "number" whose salary values are also equal to "pay".

49. What value(s) could be displayed?

```
SELECT prefix
FROM phone
WHERE prefix BETWEEN 360 AND 425
OR prefix IN(515, 206, 253)
AND BETWEEN 555 AND 904);
```

- a. 625
- b. 902
- c. 410
- d. 499

50. Which query will display of all employees whose last names start with "S" and have an 'ae' anywhere in their last name?

- a. 

```
SELECT last_name
FROM employees
WHERE last_name LIKE '_S%ae%';
```
- b. 

```
SELECT last_name
FROM employees
WHERE last_name LIKE 'S_ae%';
```
- c. 

```
SELECT last_name
FROM employees
WHERE last_name LIKE 'S&ae&';
```
- d. 

```
SELECT last_name
FROM employees
WHERE last_name LIKE 'S%ae%';
```

51. A column may be sorted in an ORDER BY clause by: (choose all true answers)

- a. column name or expression in the SELECT list.
- b. A column alias in the SELECT list.
- c. Placing the ORDER BY clause before the SELECT statement.
- d. Putting a column number in the SELECT list.

52. The following query will return which result?

```
SELECT last_name, job_id, department_id, hire_date
FROM employees
ORDER BY 4 DESC;
```

- a. Only column 4 will be displayed.
- b. All 4 columns will be displayed in descending order.
- c. Four columns will be displayed with hire\_dates displayed with the most recent dates listed first.
- d. The hire\_date column