# *Database Management I (420-D10-HR)*

# *Lab 12 - Single Table Queries I*

Date assigned: Wednesday, November 2, 2016

Date due: **Wednesday, November 2, 2016, 11:50 am**

**Learning Objectives**

Upon successful completion of this lab exercise, the student will be able to:

* 1. use the SELECT statement to retrieve data from database tables
  2. use the DISTINCT clause in a SELECT statement when appropriate
  3. use column aliases to customize column headings
  4. use the concatenation operator in a SELECT clause
  5. use the arithmetic operators in a SELECT clause
  6. use the WHERE clause in a SELECT statement to restrict the data selected
  7. use the logical operators AND, OR and NOT in a WHERE clause
  8. use BETWEEN to specify a range in a WHERE clause
  9. use IN to specify a value set in a WHERE clause
  10. use LIKE and wildcard characters in a WHERE clause
  11. sort SQL output
  12. use single-row character, numeric and date functions in a SELECT query
  13. use the NVL, NVL2, COALESCE, NULLIF, DECODE and CASE functions in a SELECT query
  14. use conversion functions in a SELECT query
  15. use nested functions in a SELECT query

***References:*** w3schools.com

SQL Cheat Sheet (Moodle)

**To uploaded to Moodle:**

1. The ***username\_*D10**\_**L12\_SQL\_Select.docx** file containing the **SELECT** statements you wrote for this lab.

**To Start:**

Rename this document to ***username\_*D10**\_**L12\_SQL\_Select.docx**. Copy the **SELECT** statements that you code for the questions in this lab into the appropriate locations in this file.

You will be using the ShahDB . The script to create the DB is in Moodle. The model is show in an appendix to this document.

# Single-Table SELECT Queries

***Objectives***: Learn to write SELECT queries to retrieve data from one table.

***To Do:***

## Display all employee names and salary with appropriate column headers. The output should look like:

Employee Name Salary

-------------------------------- ----------------------

Smith, John 265000

Houston, Larry 150000

Roberts, Sandi 75000

McCall, Alex 66500

Dev, Derek 80000

Shaw, Jinku 24500

Garner, Stanley 45000

Chen, Sunny 35000

8 rows selected

## SELECT fname||' '||lname AS "Employee name", salary

## FROM NN\_employee;

## Display all employees who do nt get any commission. The output should look like:

Employees with no commission

--------------------------------

Roberts, Sandi

McCall, Alex

Chen, Sunny

## SELECT lname||', '||fname AS "Employees with no commission"

## FROM NN\_Employee

## WHERE commission IS NULL;

## Display unique building names from the LOCATION table. The output should look like:

Buildings

----------

Gandhi

Heritage

Kennedy

Nehru

## SELECT DISTINCT building

## FROM IU\_Location

## Display all course sections offered in Winter 2003. The output should look like:

CSID COURSE SE TERM FACULTYID DA START ENDTI ROOMID MAXCOUNT

---- ------ -- ---- ---------- -- ----- ----- ------ ----------

1101 CIS265 01 WN03 111 MW 09:00 10:30 13 30

1102 CIS253 01 WN03 123 TR 09:00 10:30 18 40

1103 MA150 02 WN03 444 F 09:00 12:00 15 25

1104 AC101 10 WN03 345 MW 10:30 12:00 16 35

## SELECT \*

## FROM IU\_crssection

## WHERE termId='WN03';

## Display names of faculty members who work in Department 1 or 2. Use the IN operator in your query. The output should look like:

NAME

---------------

Jones

Williams

Mobley

Vajpayee

## SELECT name

## FROM IU\_faculty

## WHERE deptid IN (1,2);

## For each CourseId, display the maximum count in descending order. The output should look like:

CSID COURSEID MAXCOUNT

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4202 420B31 24

4201 420C30 24

4203 420D10 24

4204 420E11 24

1104 AC101 35

1102 CIS253 40

1208 CIS253 40

1209 CIS253 40

1210 CIS253 1

1205 CIS265 35

1101 CIS265 30

1206 CIS265 30

1207 LA123 30

1103 MA150 25

SELECT csid, courseid, maxcount

FROM IU\_crssection

ORDER BY maxcount desc;

## Display faculty names in descending order by their department, but in alphabetical order by their name within each department. The output should look like:

DEPTID NAME

---------------------- ---------------

420 Hamilton

420 McDonald

420 Patterson

420 Jirgens

420 Stark

420 Turanyi

5 Chang

4 Rivera

3 Collins

3 Sen

2 Vajpayee

2 Williams

1 Jones

1 Mobley

13 rows selected

## SELECT deptid, name

## FROM IU\_faculty

## ORDER BY deptid desc, name;

## Find faculty members whose names start with the letter C. The output should look like:

NAME

---------------

Chang

Collins

## SELECT name

## FROM IU\_faculty

## WHERE SUBSTR(name, 0,1)='C';

## Find Students who started in the year 2003. Use the start term column and wild card. The output should look like:

Student Name STARTTERM

-------------------------------- ---------

Diaz, Jose WN03

Tyler, Mickey SP03

Patel, Rajesh WN03

Lee, Brian WN03

Khan, Amir WN03

## SELECT last||' '||first AS "Student name", startterm

## FROM IU\_student

## WHERE startterm='WN03';

## List the Building, Roomno and Capacity for all labs that can accommodate 40 or more students.

BUILDING ROOMNO CAPACITY

---------- ------ ----------------------

Kennedy 204 50

Kennedy 206 40

## SELECT building, roomno, capacity

## FROM IU\_location

## WHERE capacity >= 40;

## List the employee name and total earnings for all employees who earn a commission. Total earnings is the sum of the salary and the commission. The list should be sorted with the highest total earnings first. Use appropriate column headings. The output should look like:

Employee Name Total Earnings

-------------------------------- --------------

Smith, John 300000

Houston, Larry 160000

Dev, Derek 100000

Garner, Stanley 50000

Shaw, Jinku 27500

## SELECT lname||' '||fname AS "Employee name", salary + commission AS "Total Earnings"

## FROM NN\_employee

## WHERE commission IS NOT NULL

## ORDER BY "Total Earnings" desc;

## List all employees who are in programmer or accountant positions. (Do this two ways.) The output should be:

Programmers and Accountants

--------------------------------

Chen, Sunny

McCall, Alex

## SELECT lname||', '||fname AS "Programmers and Accountants"

## FROM NN\_Employee

## WHERE positionid = 3 OR positionId = 4;

SELECT lname||', '||fname AS "Programmers and Accountants"

FROM NN\_Employee

WHERE positionid IN (3, 4);

## List all courses that have a courseid beginning with 420. The output should look like:

COURSEID TITLE

-------- ------------------------------

420C30 Web Programming III

420E11 Systems I

420D10 Database Management I

420B31 Programming III

## SELECT courseID, title

## FROM IU\_course

## WHERE courseId LIKE '420%';

## List all sections in the spring, 2003 term that have classes on Mondays. The output should look like:

CSID COURSEID

---------------------- --------

1205 CIS265

1207 LA123

1209 CIS253

SELECT csid, courseid

FROM IU\_crssection

WHERE termid='SP03' AND day='MW';

## Display all employee names (last name and first name separated by a comma and a space) with proper case and salary with currency format. The output should look like:

Name Salary

-------------------------------- ---------

Smith, John $265,000

Houston, Larry $150,000

Roberts, Sandi $75,000

Mccall, Alex $66,500

Dev, Derek $80,000

Shaw, Jinku $24,500

Garner, Stanley $45,000

Chen, Sunny $35,000

8 rows selected.

SELECT lname||', '||fname AS "Name", To\_CHAR(salary, '$999,999') AS "Salary"

FROM NN\_employee;

## Display all employees with their commission value. Display zero commission for employees who do not get any commission. The output should look like:

Employee Name Commission

-------------------------------- ----------

Smith, John $35,000

Houston, Larry $10,000

Roberts, Sandi $0

McCall, Alex $0

Dev, Derek $20,000

Shaw, Jinku $3,000

Garner, Stanley $5,000

Chen, Sunny $0

8 rows selected

SELECT lname||', '||fname AS "Employee name",

TO\_CHAR(NVL(commission, 0.0), '$999,999.99') AS "Commission"

FROM NN\_employee;

## Display all student names and birthdates (display birth dates with the format 20 July, 1996). The output should look like:

Student Name Birthday

------------------------------- -------------------------------

Jose Diaz 12 FEBRUARY, 1980

Mickey Tyler 18 MARCH, 1975

Rajesh Patel 12 DECEMBER, 1982

Deborah Rickles 20 OCTOBER, 1970

Brian Lee 28 NOVEMBER, 1975

Amir Khan 07 JULY, 1981

6 rows selected.

SELECT last||', '||first AS "Student name", TO\_CHAR(birthdate, 'DD Month YYYY')

FROM IU\_student

WHERE birthdate IS NOT NULL;

## Display only the year value from each employee’s hire date. The output should look like:

Name Year

-------------------------------- ----

Smith, John 1960

Houston, Larry 1967

Roberts, Sandi 1991

Mccall, Alex 1997

Dev, Derek 1995

Shaw, Jinku 2000

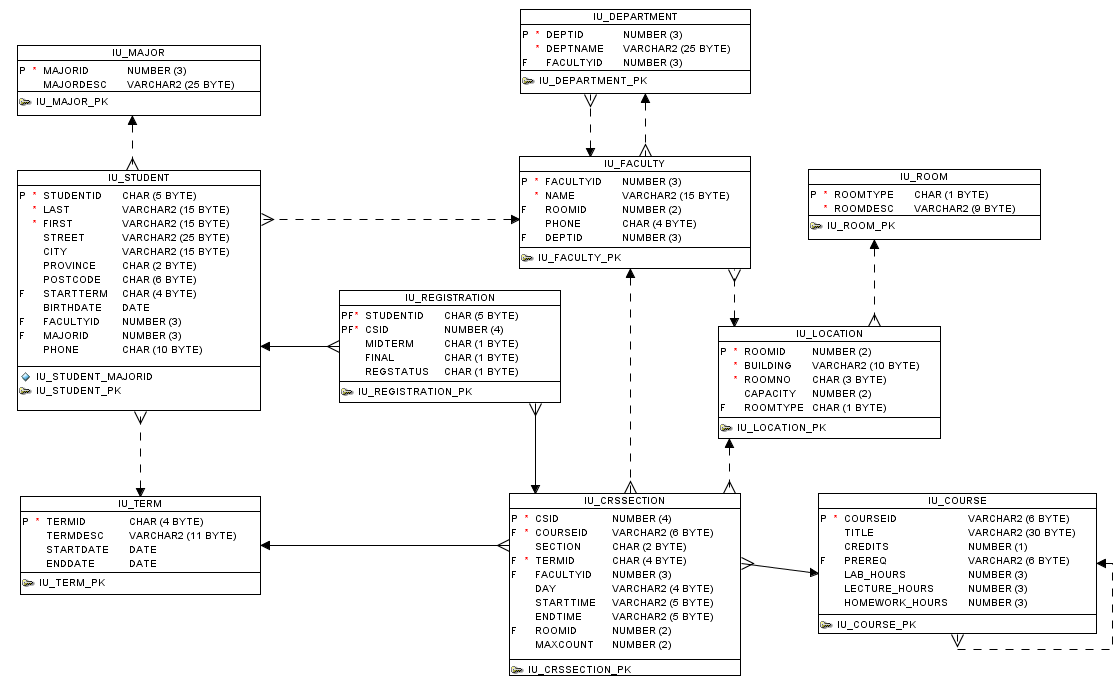
Garner, Stanley 1996

Chen, Sunny 1999

SELECT lname||', '||fname AS "Name", TO\_CHAR(hiredate, 'YYYY')

FROM NN\_employee;

# Appendix A: Shah DB

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