Introduction to Databases (CSE 3151)

ASSIGNMENT 3: PRACTICING SQL QUERIES USING SQL OPERATORS, AGGREGATE AND SCALAR FUNCTIONS

1. Write the SQL Expressions for the following queries using suitable SQL operators .

a) Display the Course_ids, Titles and Credits of course that are offered in any of the departments namely: Physics, Music, Finance and Biology.

Ans-

course_id	title	credits
Filter...	Filter...	Filter...
BIO-101	Intro. to Biology	4
BIO-301	Genetics	4
BIO-399	Computational Biology	3
FIN-201	Investment Banking	3
MU-199	Music Video Production	3
PHY-101	Physical Principles	4

b) Display records of the instructors whose name starts with "K" and who get salary more than 65000.

Ans-

ID	name	department	Salary	date_of_join
Filter...	Filter...	Filter...	Filter...	Filter...
45565	Katz	Comp. Sci.	75000	2015-04-17T00:00:00.0
98345	Kim	Elec. Eng.	80000	2020-05-14T00:00:00.0

c) Display name, department, gross salary and net salary of instructors with 105% DA, 20% HRA, 30% IT. (gross salary = salary + DA + HRA, net salary = gross salary – IT)

Ans-

name	department	gross_salary	net_salary
Filter...	Filter...	Filter...	Filter...
Srinivasan	Comp. Sci.	84825	65325
Wu	Finance	117450	90450
Mozart	Music	52200	40200
Einstein	Physics	123975	95475
El Said	History	78300	60300
Gold	Physics	113535	87435
Katz	Comp. Sci.	97875	75375
Califieri	History	80910	62310
Singh	Finance	104400	80400
Crick	Biology	93960	72360
Brandt	Comp. Sci.	120060	92460
Kim	Elec. Eng.	104400	80400

d) Display records of the Instructors with salary range 60000 to 80000.

Ans-

ID	name	department	Salary	date_of_join
Filter...	Filter...	Filter...	Filter...	Filter...
10101	Srinivasan	Comp. Sci.	65000	2010-01-01T00:00:
32343	El Said	History	60000	2013-11-05T00:00:
45565	Katz	Comp. Sci.	75000	2015-04-17T00:00:
58583	Califieri	History	62000	2016-08-12T00:00:
76543	Singh	Finance	80000	2017-02-28T00:00:
76766	Crick	Biology	72000	2018-12-01T00:00:
98345	Kim	Elec. Eng.	80000	2020-05-14T00:00:

e) Display the records of the instructors having the second letter in their name as 'r'.
Ans-

ID	name	department	Salary	date_of_join
Filter...	Filter...	Filter...	Filter...	Filter...
10101	Srinivasan	Comp. Sci.	65000	2010-01-01T00:00
76766	Crick	Biology	72000	2018-12-01T00:00
83821	Brandt	Comp. Sci.	92000	2019-10-20T00:00

f) Display the names of the instructors of Comp.Sci. Department in the descending order of their salary.
Ans-

name
Filter...
Brandt
Katz
Srinivasan

g) Update all records of Instructor table with a salary hike of 15%.
Ans-
Output- No output as it only updated the record
h) Update the records with a salary hike of 3% for Comp.Sci. Dept instructors having salary less than 70000.
Ans-

Output- No output as it only updated the record
i) Display the annual salary of each instructor.
Ans-

name	annual_salary
Filter...	Filter...
Srinivasan	897000
Wu	1242000
Mozart	552000
Einstein	1311000
El Said	828000
Gold	1200600
Katz	1035000
Califieri	855600
Singh	1104000
Crick	993600
Brandt	1269600
Kim	1104000

j) Update the title of the course having title 'Game Design' to 'Game Theory'.
Ans-
Output- No output as it only updated the record.
k) Delete the instructor records of History department.
Ans-
Output- No output as it only updated the record.
l) Delete the course records of the courses having course_id starting with 'BIO'.
Ans-
Output- No output as it only updated the record.

2. Write the SQL Expressions for the following queries using suitable SQL aggregate function.

a) Display the Avg. salary of instructors of Physics department.
Ans-

avg_salary
Filter...
104650

b) Display the Dept_ name and Average salary paid to instructor of each department.
Ans-

department	avg_salary
Filter...	Filter...
Comp. Sci.	88933.3333
Finance	97750
Music	46000
Physics	104650
Biology	82800
Elec. Eng.	92000

c) Display the ID, Name & Department of the instructor drawing the highest salary.
Ans-

id	name	department
Filter...	Filter...	Filter...
22222	Einstein	Physics

d) Display the number of instructors available in Comp. Sci. Department.
Ans-

instructor_count
Filter...
3

e) Display the total credits of all courses offered in Comp.Sci. Department.
Ans-

total_credits
Filter...
17

f) Display the number of instructors and total salary drawn by Physics and Comp. Sci. departments.
Ans-

department	instructor_count	total_salary
Filter...	Filter...	Filter...
Comp. Sci.	3	266800
Physics	2	209300

g) Display the total credits of Comp.Sci. and Biology departments from course table.
Ans-

department	total_credits
Filter...	Filter...
Comp. Sci.	17

h) Display building wise total budget values.
Ans-

builder	total_budget
Filter...	Filter...
Watson	160000
Taylor	185000
Painter	170000
Packard	80000

i) Display the number of instructors of each department.
Ans-

department	instructor_count
Filter...	Filter...
Comp. Sci.	3
Finance	2
Music	1
Physics	2
Biology	1
Elec. Eng.	1

j) Display the number of instructors of each department sorted in high to low.
Ans-

department	instructor_count
Filter...	Filter...
Comp. Sci.	3
Finance	2
Physics	2
Music	1
Biology	1
Elec. Eng.	1

k) Display the number of courses offered semester wise.
Ans-

semester	course_count
Filter...	Filter...
Fall	3
Spring	10
Summer	2

l) Display the name of departments having number of instructors less than 2;
Ans-

department
Filter...
Music
Biology
Elec. Eng.

m) List the number of instructors of each department having 2 or more than 2 instructors except Finance department, sorted in high to low order of their number.
Ans-

department	instructor_count
Filter...	Filter...
Comp. Sci.	3
Physics	2

n) Display the Dept_name that has paid total salary more than 50000.
Ans-

department
Filter...
Comp. Sci.
Finance
Physics
Biology
Elec. Eng.

o) Display the total budget for the building built by Watson.
Ans-

total_budget
Filter...
160000

p) Display the highest salary of the instructor of Comp.Sci. Department.
Ans-

highest_salary
Filter...
105800

3. Write the SQL Expressions for the following queries using suitable SQL scalar function.
a) Display your name with first letter being capital, where the entered name is in lower case.
Ans-

name_with_ca...
Filter...
Dinanath

b) Display 2nd- 6th characters of your name.
Ans-

sub_name
Filter...
inana

c) Find length of your full university name.
Ans-

university_nam...
Filter...
19

d) Display all the Instructor names with its first letter in upper case.
Ans-

formatted_name
Filter...
Srinivasan
Wu
Mozart
Einstein
Gold
Katz
Singh
Crick
Brandt
Kim

e) List the department name of each instructor as a three letter code.
Ans-

dept_code
Filter...
COM
FIN
MUS
PHY
PHY
COM
FIN
BIO
COM
ELE

f) Display the month of the joining of each instructor.
Ans-

joining_month
abc Filter...
January
March
June
September
July
April
February
December
October
May

g) Display the date of joining of each instructor in dd/mm/yy format.
Ans-

formatted_join...
abc Filter...
01/01/10
15/03/11
20/06/12
10/09/09
23/07/14
17/04/15
28/02/17
01/12/18
20/10/19
14/05/20

h) Display the experience of each instructor in terms of months.
Ans-

experience_in_...
abc Filter...
182
168
153
186
128
119
97
75
65
58

i) Display the experience of each instructor in term of years and months.
Ans-

experience
Filter...
15 years, 2 months
14 years, 0 months
12 years, 9 months
15 years, 6 months
10 years, 8 months
9 years, 11 months
8 years, 1 months
6 years, 3 months
5 years, 5 months
4 years, 10 months

j) Display the day of joining of each instructor.
Ans-

joining_day
Filter...
Friday
Tuesday
Wednesday
Thursday
Wednesday
Friday
Tuesday
Saturday
Sunday
Thursday

k) Display the date corresponding to 15 days after today's date.
Ans-

future_date
Filter...
2025-04-14T00:00:00.00...

l) Display the value 94204.27348 truncated up to 2 digits after decimal point.
Ans-

truncated_value
Filter...
94204.27

m) Display the value of the expression $5 + 8^9$.
Ans-

result
Filter...
94

n) Find out the square root of 6464312.
Ans-

square_root
abc Filter...
2542.501130776543

o) Display the string “HELLO ITER” in lower case with a column heading lower case.
Ans-

lower_case
abc Filter...
hello iter