

# String Patterns

## 1. Problem 1 : Retrieve all employees whose address is in Elgin,IL.

The screenshot shows a SQL IDE with a script editor on the left and a results pane on the right. The script editor contains the following SQL query:

```
----- String Patterns-----  
---- Problem 1 : Retrieve all employees whose address is in Elgin,IL  
select * from EMPLOYEES where address like '%Elgin,IL%';
```

The results pane displays the output of the query, showing three rows of employee data:

ID	F_NAME	L_NAME	SSN
	Alice	James	1234
	Nancy	Allen	1234
	Ann	Jacob	1234

## 2. Problem 2 : Retrieve all employees who were born during the 1970's.

The screenshot shows a SQL IDE with a script editor on the left and a results pane on the right. The script editor contains the following SQL query:

```
----- Problem 2 : Retrieve all employees who were born during the 1970's  
SELECT F_NAME , L_NAME  
FROM EMPLOYEES  
WHERE B_DATE LIKE '197%';
```

The results pane displays the output of the query, showing four rows of employee data:

F_NAME	L_NAME
John	Thomas
Alice	James
Nancy	Allen
Mary	Thomas

### 3. Problem 3 : Retrieve all employees in department 5 whose salary is between 60000 and 70000.

The screenshot shows the SQL Developer interface with a query window titled '\* HR\_Databa...'. The query is as follows:

```
70  
71 ----- Problem 3 : Retrieve all employees in department 5 whose sala:  
72 SELECT *  
73 FROM EMPLOYEES  
74 WHERE (SALARY BETWEEN 60000 AND 70000) AND DEP_ID = 5;  
75  
76  
77  
78  
79  
80  
81  
82  
83  
84  
85  
86
```

The results pane on the right shows 'Result - Jan 27, 2022 11:27:54 PM' with a run time of 0.006 s. It displays 'Result set 1' with the following data:

EMP_ID	F_NAME	L_NAME
E1004	Santosh	Kumar
E1010	Ann	Jacob

At the bottom, there is a 'Run selected' button and a checkbox labeled 'Remember my selection' which is checked.

## Sorting

### 1. Problem 1 : Retrieve a list of employees ordered by department ID

The screenshot shows the SQL Developer interface with a query window titled '\* HR\_Databa...'. The query is as follows:

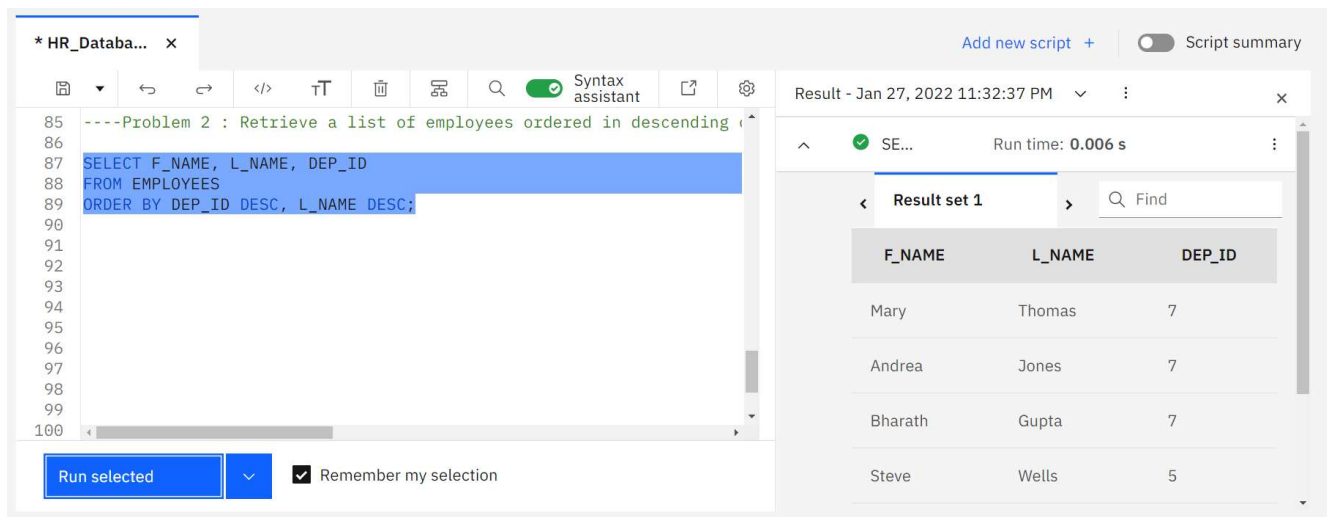
```
76 -----Sorting -----  
77 ----Problem 1 : Retrieve a list of employees ordered by department :  
79  
80 SELECT F_NAME, L_NAME, DEP_ID  
81 FROM EMPLOYEES  
82 ORDER BY DEP_ID;  
83  
84  
85  
86  
87  
88  
89  
90  
91
```

The results pane on the right shows 'Result - Jan 27, 2022 11:30:28 PM' with a run time of 0.006 s. It displays 'Result set 1' with the following data:

F_NAME	L_NAME	DEP_ID
John	Thomas	2
Ahmed	Hussain	2
Nancy	Allen	2
Alice	James	5

At the bottom, there is a 'Run selected' button and a checkbox labeled 'Remember my selection' which is checked.

- 2. Problem 2 : Retrieve a list of employees ordered in descending order by department ID and within each department ordered alphabetically in descending order by last name**



```
85 ----Problem 2 : Retrieve a list of employees ordered in descending
86
87 SELECT F_NAME, L_NAME, DEP_ID
88 FROM EMPLOYEES
89 ORDER BY DEP_ID DESC, L_NAME DESC;
90
91
92
93
94
95
96
97
98
99
100
```

Run selected ☒ Remember my selection

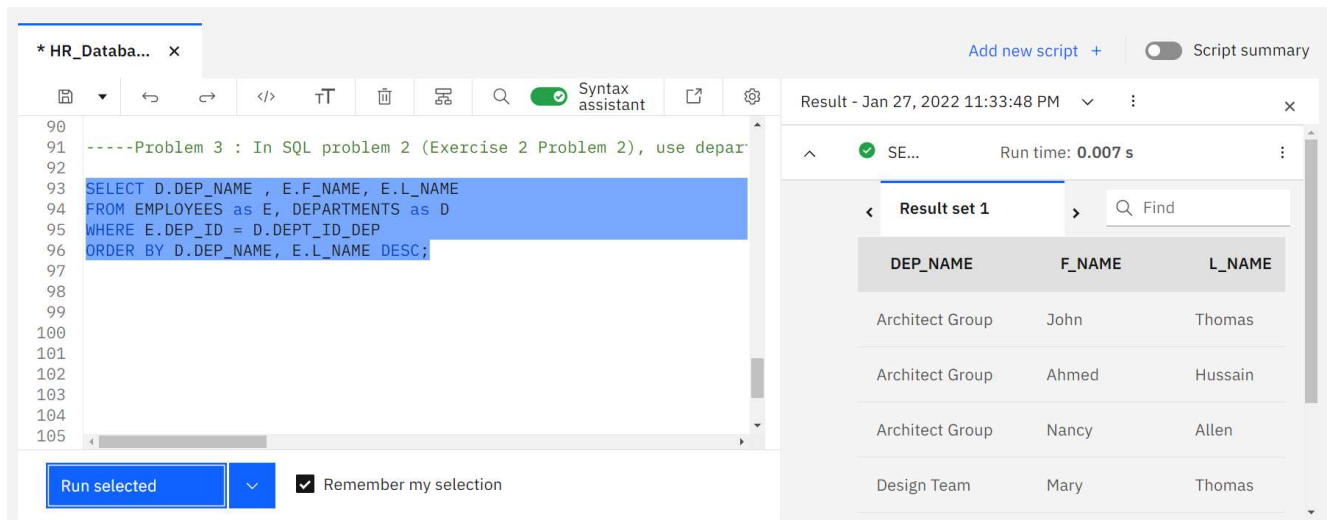
Result - Jan 27, 2022 11:32:37 PM

SE... Run time: 0.006 s

Result set 1

F_NAME	L_NAME	DEP_ID
Mary	Thomas	7
Andrea	Jones	7
Bharath	Gupta	7
Steve	Wells	5

- 3. Problem 3 : In SQL problem 2, use department name instead of department ID. Retrieve a list of employees ordered by department name, and within each department ordered alphabetically in descending order by last name.**



```
90
91 -----Problem 3 : In SQL problem 2 (Exercise 2 Problem 2), use depar
92
93 SELECT D.DEP_NAME , E.F_NAME, E.L_NAME
94 FROM EMPLOYEES as E, DEPARTMENTS as D
95 WHERE E.DEP_ID = D.DEPT_ID_DEP
96 ORDER BY D.DEP_NAME, E.L_NAME DESC;
97
98
99
100
101
102
103
104
105
```

Run selected ☒ Remember my selection

Result - Jan 27, 2022 11:33:48 PM

SE... Run time: 0.007 s

Result set 1

DEP_NAME	F_NAME	L_NAME
Architect Group	John	Thomas
Architect Group	Ahmed	Hussain
Architect Group	Nancy	Allen
Design Team	Mary	Thomas

# Grouping

- 1) Problem 1 :For each department ID retrieve the number of employees in the department

The screenshot shows a SQL IDE window with a script editor on the left and a results pane on the right. The script editor contains the following SQL query:

```
-----Grouping-----
----- Problem 1 :For each department ID retrieve the number of
--employees in the department.-----
SELECT DEP_ID, COUNT(*)
FROM EMPLOYEES
GROUP BY DEP_ID;
```

The results pane displays the output of the query, titled "Result - Jan 27, 2022 11:37:22 PM". It shows a table with two columns: DEP\_ID and COUNT(\*). The data is as follows:

DEP_ID	COUNT(*)
2	3
5	4
7	3

- 2) Problem 2 : For each department retrieve the number of employees in the department, and the average employee salary in the department

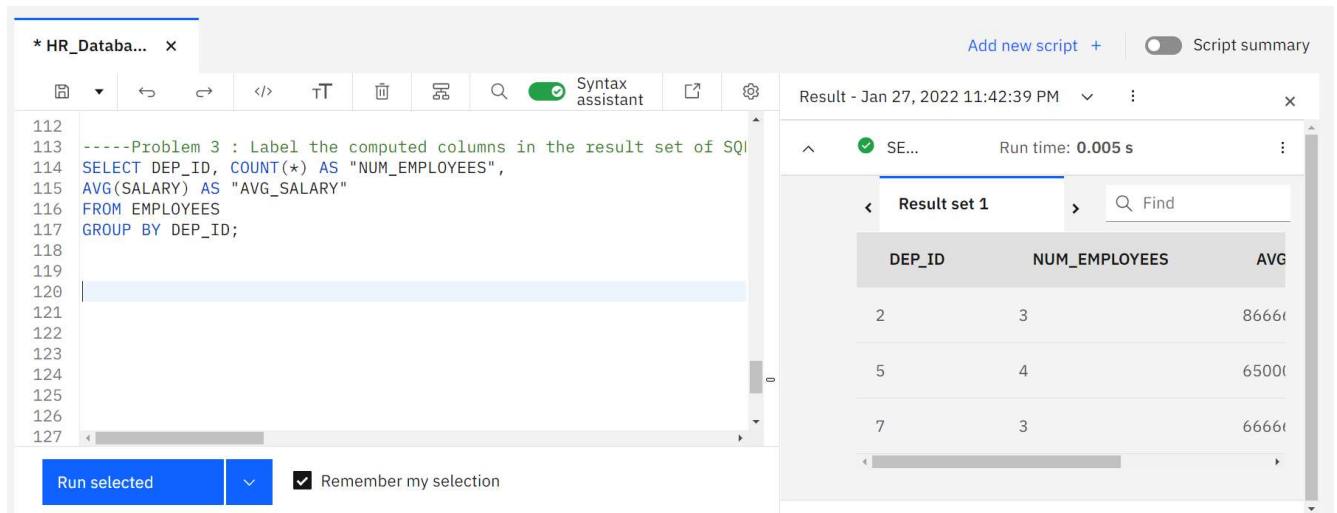
The screenshot shows a SQL IDE window with a script editor on the left and a results pane on the right. The script editor contains the following SQL query:

```
----- Problem 2 : For each department retrieve the number of employ
-- employee salary in the department.-----
SELECT DEP_ID, COUNT(*), AVG(SALARY)
FROM EMPLOYEES
GROUP BY DEP_ID;
```

The results pane displays the output of the query, titled "Result - Jan 27, 2022 11:40:04 PM". It shows a table with three columns: DEP\_ID, COUNT(\*), and AVG(SALARY). The data is as follows:

DEP_ID	COUNT(*)	AVG(SALARY)
2	3	86666.666666666666
5	4	65000.000000000000
7	3	66666.666666666666

**3) Problem 3 : Label the computed columns in the result set of SQL problem 2 as NUM\_EMPLOYEES and AVG\_SALARY**



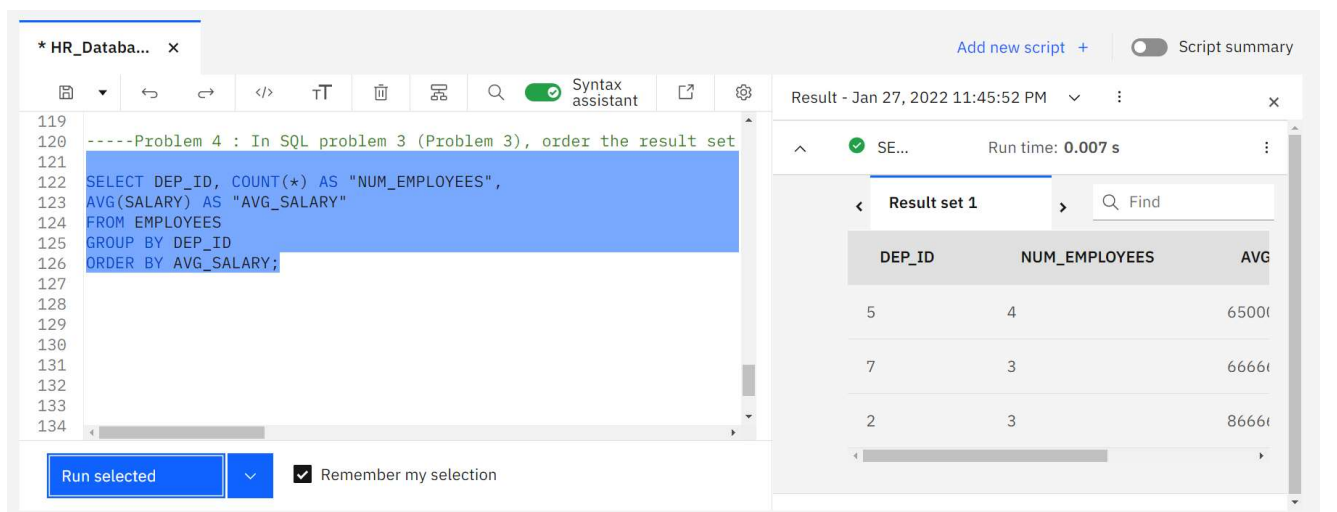
The screenshot shows a SQL IDE interface with a script editor on the left and a results pane on the right. The script editor contains the following SQL query:

```
112  
113 -----Problem 3 : Label the computed columns in the result set of SQL  
114 SELECT DEP_ID, COUNT(*) AS "NUM_EMPLOYEES",  
115 AVG(SALARY) AS "AVG_SALARY"  
116 FROM EMPLOYEES  
117 GROUP BY DEP_ID;  
118  
119  
120  
121  
122  
123  
124  
125  
126  
127
```

The results pane displays the output of the query, showing three rows of data. The columns are labeled DEP\_ID, NUM\_EMPLOYEES, and AVG. The data is as follows:

DEP_ID	NUM_EMPLOYEES	AVG
2	3	8666
5	4	6500
7	3	6666

**4) Problem 4 : In SQL problem 3 (Problem 3), order the result set by Average Salary..**



The screenshot shows the same SQL IDE interface as before, but with a modified query for Problem 4. The query is:

```
119  
120 -----Problem 4 : In SQL problem 3 (Problem 3), order the result set  
121  
122 SELECT DEP_ID, COUNT(*) AS "NUM_EMPLOYEES",  
123 AVG(SALARY) AS "AVG_SALARY"  
124 FROM EMPLOYEES  
125 GROUP BY DEP_ID  
126 ORDER BY AVG_SALARY;  
127  
128  
129  
130  
131  
132  
133  
134
```

The results pane displays the output of the query, showing three rows of data. The columns are labeled DEP\_ID, NUM\_EMPLOYEES, and AVG. The data is sorted by average salary in descending order:

DEP_ID	NUM_EMPLOYEES	AVG
5	4	6500
7	3	6666
2	3	8666

**5) Problem 5: In SQL problem 4 (Problem 4), limit the result to departments with fewer than 4 employees**

The screenshot shows a SQL IDE interface with a query editor on the left and a results pane on the right. The query editor contains the following SQL code:

```
128 ----Problem 5: In SQL problem 4 (Problem 4), limit the result to de
129 SELECT DEP_ID, COUNT(*) AS "NUM_EMPLOYEES",
130        AVG(SALARY) AS "AVG_SALARY"
131 FROM EMPLOYEES
132 GROUP BY DEP_ID
133 HAVING count(*) < 4
134 ORDER BY AVG_SALARY;
```

The results pane shows the output of the query, titled "Result - Jan 27, 2022 11:48:41 PM". It displays a table with three columns: DEP\_ID, NUM\_EMPLOYEES, and AVG. The table contains two rows of data:

DEP_ID	NUM_EMPLOYEES	AVG
7	3	6666
2	3	8666

At the bottom of the IDE, there is a "Run selected" button and a checkbox labeled "Remember my selection" which is checked.