

Practical 8 – Grouping

Objectives of this practical

- To summarize (aggregate functions) based on specific attributes (GROUP BY)
- To conditionally filter for specific groups of data (WHERE, HAVING clauses)

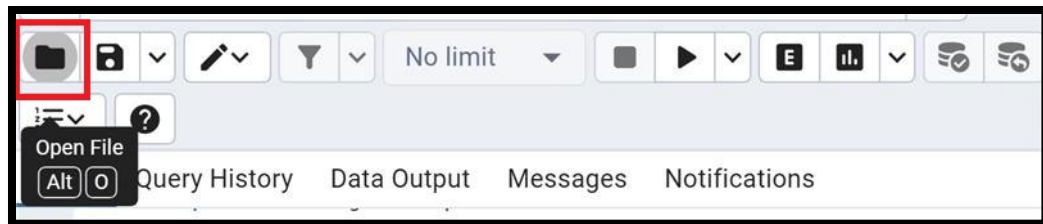
Contents

BrightSpace Submission.....	3
MCQ Section	3
Section A: Group By	4

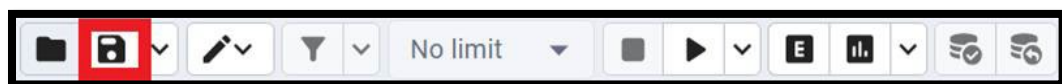
BrightSpace Submission

You are required to **submit** your answers for the **MCQ Section & all parts of Section A Question 1**.

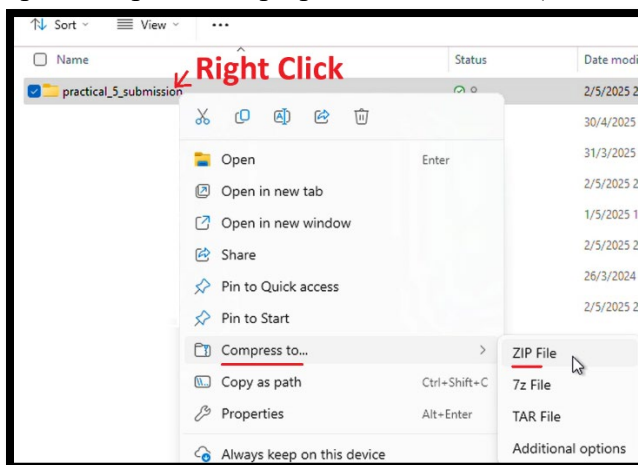
- Download the practical_8_submission.zip from BrightSpace.
- **Unzip** the zip file. There will be a root folder with the necessary files.
- Do **NOT** rename the file's name or file's extension.
- Use the files **directly**, do not create copies.
- Fill the answers to the MCQs using the **mcq.xlsx** file.
- Fill the sql query to each question using the provided **.sql** files.
- Input **only one** statement for each .sql file.
 - You can open the .sql file directly in PgAdmin using the Query Tool



To save the file:



- Upon completion, zip up the **root folder**. (Do not zip at any higher-level folder)



- Submit the zip file on BrightSpace using the submission link.

MCQ Section

1. What is the purpose of the GROUP BY clause in SQL?
 - a) Filter rows based on condition
 - b) Sort the result set
 - c) Group rows sharing a common value
 - d) Limit the number of results
2. What happens if you use GROUP BY without an aggregate function?

For example:

```
SELECT department FROM employees
GROUP BY department;
```

- a) Error is raised
 b) Only grouped values are shown
 c) Query is ignored
 d) GROUP BY is skipped
3. What happens if you include a column in the SELECT list that is not in the GROUP BY clause or used in an aggregate function?

For example:

-- name is not in the GROUP BY

*SELECT department, name FROM employees
 GROUP BY department;*

- a) The query runs and returns all columns
 b) The query returns only grouped columns
 c) The query gives an error
 d) The query ignores the extra column

Section A: Group By

1.

a)

Compare the mean pay, total pay and the number of staff across the **different grades**.

Note:

- Include only full-time staff.
- Sort the output from the least number of staff to the most.

	grade character varying (5)	Mean Pay numeric	Total Pay numeric	No of Staff bigint
1	SSD	9000.0000000000000000	9000.00	1
2	SSE	8500.0000000000000000	8500.00	1
3	L4A	2000.0000000000000000	2000.00	1
4	L5A	3000.0000000000000000	3000.00	1
5	L4	4950.0000000000000000	4950.00	1
6	L3	5136.6666666666666667	15410.00	3
7	L1	7110.0000000000000000	21330.00	3
8	L2	5696.6666666666666667	17090.00	3

Include only the grades with more than 2 staff.

- Modify your statement in (a) to display this

	grade character varying (5)	Mean Pay numeric	Total Pay numeric	No of Staff bigint
1	L1	7110.0000000000000000	21330.00	3
2	L3	5136.6666666666666667	15410.00	3
3	L2	5696.6666666666666667	17090.00	3

b)

What are the highest and lowest pay, as well as the highest and lowest allowance of **each**

department. List them in ascending order of department code.

Note:

- The column labels

	dept_code character varying (5)	highest pay numeric	highest allowance numeric	lowest pay numeric	lowest allowance numeric
1	DPO	8500.00	1500.00	8500.00	1500.00
2	PO	9000.00	2000.00	9000.00	2000.00
3	SB	7600.00	900.00	4950.00	100.00
4	SOC	7070.00	1000.00	2000.00	100.00

2.

a)

Verify that staff names in the staff relation are unique.
Display any staff names that are **not** unique.
[Hint – consider the count of staff name]

staff_name character varying (100)	Number of times staff name occurs bigint
---------------------------------------	---

3.

a)

Compare the **total** manpower cost **by department**.

Note

- Handle the null values in pay and allowance as 0 values
- Total manpower cost for a department is defined as pay plus allowance.
- Exclude** the cost due to Deputy Principal's Office (DPO) by using the IN set membership operator.
- List the No of Staff for each department as well.

	Department character varying (5)	Total Manpower Cost by Dept numeric	No of staff bigint
1	PO	11000.00	1
2	SOC	37390.00	9
3	SB	30740.00	7

Exclude those departments with total manpower cost less than \$20,000. Sort the result from the greatest number of staff to the least.

	Department character varying (5)	Total Manpower Cost by Dept numeric	No of staff bigint
1	SOC	37390.00	9
2	SB	30740.00	7

b)

Write the SQL statement to list first alphabet of staff number, the number of staff and mean age of staff sorted by ascending order of number of staff.

[Consider the SUBSTRING function]

Note

- The column labels.

	By First Alphabet of Staff_no text	Number of staff bigint	Mean Age numeric
1	T	2	69.5000000000000000
2	S	16	61.3750000000000000