Practical 6 – Row Operations

Objectives of this practical

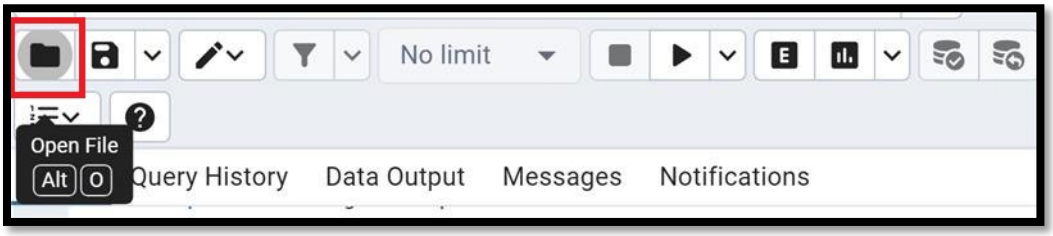
- To perform arithmetic operations on database records
- To apply built-in functions like string functions and operators, number functions, date and time functions to transform the query output.

Contents

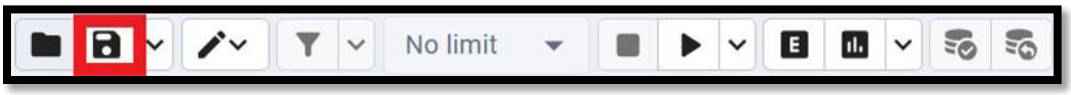
BrightSpace Submission

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

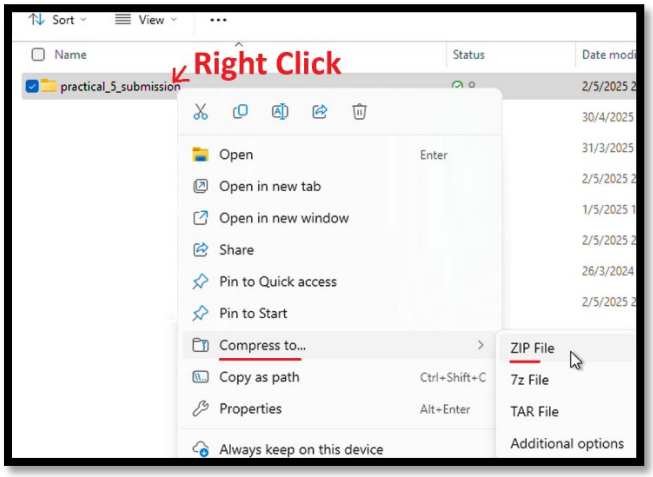
- Download the practical_6_submission.zip from BrightSpace.
- **Unzip** the zip file. There will be a root folder with the necessary files.
- Fill the answers to the MCQs using the **mcq.xlsx file**.
- Fill the sql query to each question using the provided **.sql files**. (Only one answer for each file)
    - 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 does the below return?

    SELECT LENGTH('postgres');

    a) 8
    b) 9
    c) 7
    d) error

2. Which function combines two strings in PostgreSQL?
    a) ADD()
    b) CONCAT()

c) MERGE()
d) JOIN()

3. What does the below return in PostgreSQL?

```
SELECT NOW();
```

a) Current user
b) Current time only
c) Current date and time
d) Current database name

Section A: Arithmetic operations & Handling NULL values

1)

a)

List the course offerings and with the fees clearly stated as shown below:

Note

- Null lab fees should be displayed as zero [Hint – COALESCE function]
- Fee per semester is calculated as the sum of course fee and lab fee
- Sort the order, starting from the most fee per semester to the least.

	crse_code [PK] character varying (5)	crse_name character varying (100)	crse_fee numeric (7,2)	lab fee numeric	fee per semester numeric
1	DAAA	Diploma in Applied AI and Analytics	1000.00	900.00	1900.00
2	DCS	Diploma in Cybersecurity	900.00	300.00	1200.00
3	DIT	Diploma in Information Technology	650.00	450.00	1100.00
4	DFI	Diploma in Financial Informatics	800.00	0	800.00
5	DBIT	Diploma in Business and Information Technology	700.00	100.00	800.00
6	DBA	Diploma in Business Administration	500.00	0	500.00

b)

List the staff compensation as shown below:

Note

- There are null values in allowance. Handle them as 0 values.
- Salary is computed as pay plus allowance.
- Bonus is computed as 2.25 of salary.
- Sort the order by using the formula for bonus.

	staff_name character varying (100)	salary numeric	bonus numeric
1	Bruce	11000.00	24750.0000
2	Ruth	10000.00	22500.0000
3	Fann	8500.00	19125.0000
4	Anita	8070.00	18157.5000
5	Apple	7360.00	16560.0000
6	Gideon	6600.00	14850.0000
7	Charles	6490.00	14602.5000
8	Andy	5490.00	12352.5000
9	Dawn	5400.00	12150.0000
10	Lionel	5200.00	11700.0000
11	Edison	5070.00	11407.5000
12	Edwin	4950.00	11137.5000
13	Derrick	3000.00	6750.0000
14	Titus	2000.00	4500.0000

c)

List the manpower figures as below to determine which departments are understaffed.

Note

- Understaffed is defined as the current number of staff being **less than** the maximum staff strength.
- The label 'number understaffed'
- Sort the order based on the most understaffed departments to the least

	dept_name character varying (100)	max_staff_strength integer	no_of_staff integer	number understaffed integer
1	School of Computing	92	82	10
2	School of Business	90	86	4

Section B: String Functions & Operator + Date Time Functions

2)

a)

List only the academic staff name, concatenated with department code enclosed in parentheses as shown below:

Note

- For academic staff, their staff number starts with uppercase 'S'.
- The label 'staff and department'

	staff and department text
1	Lionel (SB)
2	Lee (SB)
3	Jason (SB)
4	Andy (SB)
5	Edwin (SB)
6	Titus (SOC)
7	Derrick (SOC)
8	Eleanor (SOC)
9	Florence (SOC)
10	Anita (SOC)
11	Apple (SOC)
12	Charles (SOC)
13	Dawn (SOC)
14	Edison (SOC)
15	Fann (SB)
16	Gideon (SB)

b)

Display today's date and time.

c)

List the staff with the number of years they have been service, starting from those with the longest years.

- Years in service is computed from the year a staff joined the school to the current year
  [Hint: EXTRACT or DATE_PART function]

	staff_name character varying (100)	years in service numeric
1	Lionel	34
2	Lee	26
3	Jason	24
4	Andy	23
5	Edwin	22
6	Titus	38
7	Derrick	16
8	Eleanor	15
9	Florence	15
10	Bruce	15
11	Ruth	49
12	Anita	27
13	Apple	43
14	Charles	33
15	Dawn	41
16	Edison	35
17	Fann	45
18	Gideon	28

d)

Which diploma names cannot fit within a form that is limited to 32 characters?

Note

- Display diploma names in all capital letters
- The labels ‘upper’ and ‘length of diploma name’
- Sort the result in ascending order of length of diploma name.

	crse_code [PK] character varying (5)	upper text	length of diploma name integer
1	DIT	DIPLOMA IN INFORMATION TECHNOLOGY	33
2	DBA	DIPLOMA IN BUSINESS ADMINISTRATION	34
3	DAAA	DIPLOMA IN APPLIED AI AND ANALYTICS	35
4	DBIT	DIPLOMA IN BUSINESS AND INFORMATION TECHNOLOGY	46