Worksheet No. - 3

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Aim/Overview of the practical:

To implement conditional decision-making logic in PostgreSQL using **IF–ELSE constructs** and **CASE expressions** for classification, validation, and rule-based data processing.

Objective:

- To understand conditional execution in SQL
- To implement decision-making logic using CASE expressions
- To simulate real-world rule validation scenarios
- To classify data based on multiple conditions
- To strengthen SQL logic skills required in interviews and backend systems

Input/Apparatus Used:

- **PostgresSQL**
- **pgAdmin**

Procedure/Algorithm/Code :

```
create table student (
   student_id INT,
   student_name VARCHAR(50),
   marks INT
);

insert into student values
(1, 'Amit', 95),
```

```
(2, 'Riya', 82),
(3, 'Rahul', 68),
(4, 'Sneha', 55),
(5, 'Karan', 40),
(6, 'Neha', 90);


select student_name, marks,
case
when marks >= 90 then 'Excellent'
when marks between 75 and 89 then 'Good'
when marks between 50 and 74 then 'Average'
else 'Poor'
end as performance
from student;

alter table student
add column status VARCHAR(25);

update student
set status =
case
when marks >= 75 then 'Approved'
when marks between 50 and 74 then 'Needs Improvement'
else 'Not Approved'
end;

select * from student;


do $$
declare
   student_marks int := 68;
begin
   if student_marks >= 90 then
      raise notice 'Grade: Excellent';
   elsif student_marks >= 75 then
      raise notice 'Grade: Good';
   elsif student_marks >= 50 then
      raise notice 'Grade: Average';
   else
      raise notice 'Grade: Poor';
   end if;
end $$;


select
student_name,
marks,
status
from student
order by
case
when marks >= 90 then 1
when marks between 75 and 89 then 2
```

when marks between 50 and 74 then 3
else 4
end;

Output:

	student_name character varying (50)	marks integer	performance text
1	Amit	95	Excellent
2	Riya	82	Good
3	Rahul	68	Average
4	Sneha	55	Average
5	Karan	40	Poor
6	Neha	90	Excellent

	student_id integer	student_name character varying (50)	marks integer	status character varying (25)
1	1	Amit	95	[null]
2	2	Riya	82	[null]
3	3	Rahul	68	[null]
4	4	Sneha	55	[null]
5	5	Karan	40	[null]
6	6	Neha	90	[null]

	student_name character varying (50)	marks integer	status character varying (25)
1	Amit	95	[null]
2	Neha	90	[null]
3	Riya	82	[null]
4	Rahul	68	[null]
5	Sneha	55	[null]
6	Karan	40	[null]

Learning outcomes (What I have learnt):

1. **Understand and apply CASE expressions** in SQL for classifying data based on multiple conditions.
2. **Implement conditional logic inside UPDATE statements** to automate decision-making at the database level.
3. **Use IF–ELSE control structures in PL/pgSQL** to perform procedural and rule-

based data validation.

4. **Design real-world classification systems** such as grading or performance evaluation using conditional logic.
5. **Apply CASE expressions for custom sorting and reporting**, improving query flexibility for analytical and dashboard use.