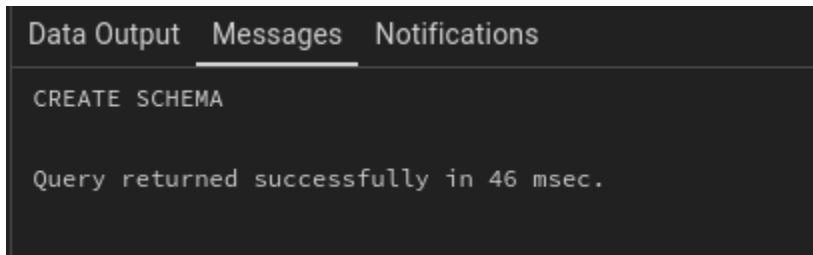# Assignment Report

Database Assignment 4

Prepared By:

Devraj Neupane

Roll No: 7

Group: D

Create assignement4 schema

```
CREATE SCHEMA IF NOT EXISTS assignment4 AUTHORIZATION postgres;
```
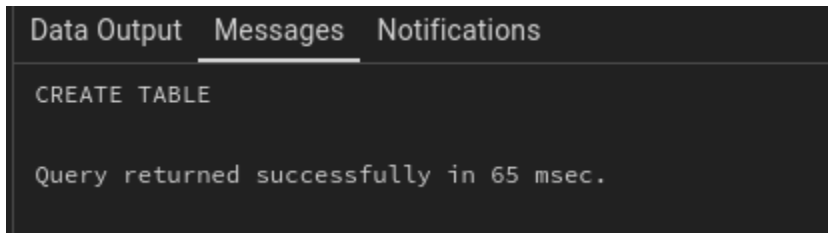
Screenshot:

Create employees table

```
CREATE TABLE IF NOT EXISTS assignment4.employees (
  employee_id SERIAL PRIMARY KEY,
  first_name VARCHAR(100) NOT NULL,
  last_name VARCHAR(100),
  sex CHAR(1) CHECK (sex IN ('M', 'F', 'O')) NOT NULL,
  doj DATE,
  current_date_ DATE DEFAULT CURRENT_DATE NOT NULL,
  designation VARCHAR(100) NOT NULL,
  age INTEGER,
  salary NUMERIC(10,2) CHECK (salary >= 0) NOT NULL,
  unit VARCHAR(100) NOT NULL,
  leaves_used INTEGER,
  leaves_remaining INTEGER,
  ratings NUMERIC,
  past_exp INTEGER NOT NULL
);
```
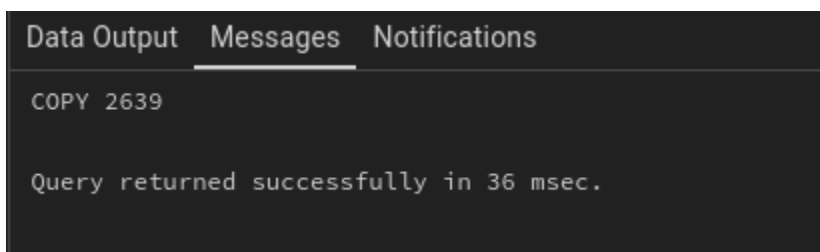
Screenshot:

```
Data Output    Messages    Notifications

CREATE TABLE


Query returned successfully in 65 msec.
```

Populate employees from csv file

```
COPY assignment4.employees (
  first_name,
  last_name,
  sex,
  doj,
  current_date_,
  designation,
  age,
  salary,
  unit,
  leaves_used,
  leaves_remaining,
  ratings,
  past_exp
)
FROM
 '/Salary Prediction of Data Professions.csv' DELIMITER ',' CSV
HEADER;
```

Screenshot:

```
Data Output    Messages    Notifications

COPY 2639


Query returned successfully in 36 msec.
```

Retrieves all the data from employees table

```sql
SELECT
  *
FROM
  assignment4.employees;
```

Screenshot:

	employee_id [PK] integer	first_name character varying (100)	last_name character varying (100)	sex character	doj date	current_date_ date	designation character varying (100)	age integer	salary numeric (10,2)	unit character varying (100)	leaves_used integer	leaves_remaining integer	ratings numeric	past_exp integer
1	1	TOMASA	ARMEN	F	2014-05-18	2016-01-07	Analyst	21	44570.00	Finance	24	6	2	0
2	2	ANNIE	[null]	F	[null]	2016-01-07	Associate	[null]	89207.00	Web	[null]	13	[null]	7
3	3	OLIVE	ANCY	F	2014-07-28	2016-01-07	Analyst	21	40955.00	Finance	23	7	3	0
4	4	CHERRY	AQUILAR	F	2013-04-03	2016-01-07	Analyst	22	45550.00	IT	22	8	3	0
5	5	LEON	ABOULAHOUD	M	2014-11-20	2016-01-07	Analyst	[null]	43161.00	Operations	27	3	[null]	3
6	6	VICTORIA	[null]	F	2013-02-19	2016-01-07	Analyst	22	48736.00	Marketing	20	10	4	0
7	7	ELLIOT	AGULAR	M	2013-09-02	2016-01-07	Analyst	22	40339.00	Marketing	19	11	5	0
8	8	JACQUES	AKMAL	M	2013-12-05	2016-01-07	Analyst	[null]	40058.00	Marketing	29	1	2	2
9	9	KATHY	ALSOP	F	2014-06-29	2016-01-07	Senior Analyst	28	63478.00	Operations	20	10	3	1
10	10	LILIAN	APELA	F	2014-11-11	2016-01-07	Analyst	22	43110.00	Finance	15	15	3	0
11	11	BELLE	ARDS	F	2014-03-10	2016-01-07	Analyst	24	41590.00	Marketing	22	8	4	1
12	12	VIRGIL	ACKIES	M	2010-02-01	2016-01-07	Senior Manager	36	160613.00	Finance	[null]	11	2	9
13	13	WELDON	AIVAO	M	2013-08-01	2016-01-07	Analyst	24	44828.00	Finance	15	15	5	1
14	14	BOYD	AFTON	M	2013-03-22	2016-01-07	Analyst	21	45830.00	Web	23	7	2	0
15	15	BART	AGUILLERA	M	2013-07-27	2016-01-07	Analyst	24	43457.00	Management	30	0	4	1
16	16	CORINNE	ANDRZEJCZYK	F	2014-08-13	2016-01-07	Analyst	21	44812.00	IT	16	[null]	5	0
17	17	ALONZO	ADSIDE	M	2013-09-16	2016-01-07	Analyst	25	47636.00	Finance	27	3	3	2
18	18	ROYCE	AGOSTO	M	2014-06-07	2016-01-07	Analyst	24	48651.00	Web	27	3	5	1
19	19	BURTON	AGUILER	M	2013-02-03	2016-01-07	Analyst	23	40411.00	Management	21	9	3	0
20	20	PHILLIP	ABDULA	M	2013-07-03	2016-01-07	Analyst	24	44665.00	Web	[null]	12	5	0
21	21	ORVILLE	ADNEY	M	2013-06-23	2016-01-07	Analyst	25	46941.00	Marketing	23	7	3	1
22	22	KORY	ALEGRIA	M	2013-10-11	2016-01-07	Analyst	22	47734.00	Marketing	28	2	5	0
23	23	NETTIE	ANDRADA	F	2014-07-11	2016-01-07	Analyst	23	40541.00	Operations	15	15	5	1
24	24	WENDI	APPERT	F	2013-12-02	2016-01-07	Analyst	25	43920.00	Web	28	[null]	2	2
25	25	BRENT	ABRIL	M	2013-02-11	2016-01-07	Analyst	21	45832.00	Management	28	2	2	0
26	26	HARRIETTE	ARMSTRONG	F	2014-01-22	2016-01-07	Analyst	23	48102.00	Marketing	17	13	2	0
27	27	GARLAND	AGLER	M	2014-09-07	2016-01-07	Analyst	21	48662.00	Management	30	0	5	0
28	28	OSWALDO	ALLENBAUGH	M	2013-02-15	2016-01-07	Analyst	25	49685.00	Operations	15	15	2	1

Total rows: 1000 of 2639   Query complete 00:00:00.147   Ln 45, Col 10

Common Table Expressions (CTEs):
Question 1: Calculate the average salary by department for all Analysts.

```sql
WITH
  analysts AS (
    SELECT
      unit,
      ROUND(AVG(salary), 2) AS average_salary
    FROM
      assignment4.employees
    WHERE
```

```
      designation LIKE '%Analyst'
    GROUP BY
      unit
  )
SELECT
  *
FROM
  analysts;
```

Screenshot:

unit character varying (100)	average_salary numeric
1	Operations	47305.42
2	Finance	47576.32
3	Web	47424.55
4	Management	47396.19
5	IT	46797.50
6	Marketing	47440.14

Question 2: List all employees who have used more than 10 leaves.

```
WITH
  employees AS (
    SELECT
      CONCAT(first_name, ' ', last_name) AS full_name,
      leaves_used
    FROM
      assignment4.employees
    WHERE
      leaves_used > 10
    ORDER BY
      leaves_used DESC
  )
```

```
SELECT
  *
FROM
  employees;
```

Screenshot:

	full_name text	🔒	leaves_used integer	🔒
1	GEOFFREY ADDISON		30	
2	EMMANUEL AGGERS		30	
3	FIDEL AHLE		30	
4	JUNG ARMON		30	
5	LYNDA AMIRAULT		30	
6	SETH ACKMAN		30	
7	MYRTLE AMBROSE		30	
8	SONYA AMMANN		30	
9	ELISHA ARCHILLA		30	
10	KERMIT AGURS		30	
11	LOUELLA ARBRY		30	
12	ORVAL ALEKNA		30	

Data Output   Messages   Notifications

Total rows: 1000 of 2636   Query complete 00:00:00.062   Ln 72, Col 9

Views:
Question 3: Create a view to show the details of all Senior Analysts.

```
CREATE VIEW assignment4.senior_analysts AS
SELECT
  *
FROM
  assignment4.employees
WHERE
  designation = 'Senior Analyst';
```

```sql
SELECT
    *
FROM
    assignment4.senior_analysts;
```

Screenshot:

	employee_id integer	first_name character varying (100)	last_name character varying (100)	sex character	doj date	current_date_ date	designation character varying (100)	age integer	salary numeric (10,2)	unit character varying (100)	leaves_used integer	leaves_remaining integer	ratings numeric	past_exp integer
1	9	KATHY	ALSOP	F	2014-06-29	2016-01-07	Senior Analyst	28	63478.00	Operations	20	10	3	1
2	29	SEYMOUR	ALBEN	M	2014-12-21	2016-01-07	Senior Analyst	25	57488.00	Operations	25	5	3	0
3	33	FOSTER	ALDERMAN	M	2014-05-22	2016-01-07	Senior Analyst	26	68295.00	Operations	28	2	5	3
4	54	CARI	ARENALES	F	2014-04-10	2016-01-07	Senior Analyst	28	66338.00	Web	24	6	3	5
5	58	PAULINE	ALTSHULER	F	2014-12-13	2016-01-07	Senior Analyst	28	61647.00	Finance	28	2	4	3
6	69	RILEY	AIKINS	M	2013-06-16	2016-01-07	Senior Analyst	25	60712.00	Finance	26	4	4	0
7	73	MARYJANE	ARES	F	2012-08-24	2016-01-07	Senior Analyst	25	65212.00	Management	29	1	5	1
8	76	MARY	ALMESTICA	F	2013-10-12	2016-01-07	Senior Analyst	27	53339.00	Finance	26	4	2	1
9	83	WILMER	AKIONA	M	2014-05-30	2016-01-07	Senior Analyst	25	50739.00	IT	25	5	3	0
10	91	ELOISA	ARGIE	F	2013-08-07	2016-01-07	Senior Analyst	28	52690.00	Marketing	30	0	5	3
11	93	KATELYN	APPENZELLER	F	2014-11-02	2016-01-07	Senior Analyst	28	56314.00	Finance	16	14	5	3
12	103	ELIZA	ANSBACHER	F	2013-09-30	2016-01-07	Senior Analyst	25	50813.00	Marketing	26	4	2	0
13	105	CARI	ARENALES	F	2014-04-10	2016-01-07	Senior Analyst	28	66338.00	Web	24	6	3	5
14	116	ELEANORE	ARENA	F	2013-03-20	2016-01-07	Senior Analyst	26	62537.00	Management	27	3	2	0
15	121	KENDRICK	AHIMUD	M	2013-04-26	2016-01-07	Senior Analyst	26	68245.00	Finance	26	4	3	0
16	125	TERESITA	ARENTZ	F	2013-11-03	2016-01-07	Senior Analyst	27	53275.00	Finance	16	14	4	4
17	138	JON	ABOLT	M	2013-02-01	2016-01-07	Senior Analyst	25	50130.00	Marketing	22	8	3	0
18	139	JORDON	ALLARA	M	2014-12-01	2016-01-07	Senior Analyst	28	55472.00	Finance	30	0	3	0
19	143	DEIDRA	ARCHANGEL	F	2012-10-05	2016-01-07	Senior Analyst	28	69316.00	Operations	24	6	3	0
20	145	MANUAL	ALLFORD	M	2014-08-14	2016-01-07	Senior Analyst	28	65566.00	Marketing	17	13	3	5
21	153	ULYSSES	AILTS	M	2012-09-28	2016-01-07	Senior Analyst	25	61221.00	Marketing	19	11	3	0
22	163	ELIAS	ADSIT	M	2012-05-27	2016-01-07	Senior Analyst	25	53218.00	Marketing	18	12	5	0
23	171	DARREN	ACERO	M	2013-12-26	2016-01-07	Senior Analyst	25	64232.00	Operations	23	7	4	2
24	176	JUAN	ABBASSI	M	2013-07-01	2016-01-07	Senior Analyst	27	61575.00	Finance	20	10	2	1
25	183	FELIX	ACHESON	M	2014-09-16	2016-01-07	Senior Analyst	26	61046.00	Finance	28	2	5	1
26	185	GALE	ANNARUMO	F	2013-06-23	2016-01-07	Senior Analyst	27	51053.00	Operations	23	7	3	1
27	188	LOUELLA	ARBRY	F	2012-06-04	2016-01-07	Senior Analyst	28	68432.00	IT	30	0	2	0
28	190	MARGUERITE	AMICK	F	2012-02-13	2016-01-07	Senior Analyst	26	63882.00	Operations	27	3	2	1

Total rows: 356 of 356   Query complete 00:00:00.067   Ln 86, Col 1

Materialized Views:

Question 4: Create a materialized view to store the count of employees by department.

```sql
CREATE MATERIALIZED VIEW assignment4.employees_by_department AS
SELECT
    unit AS department,
    COUNT(employee_id) AS employees_count
FROM
    assignment4.employees
GROUP BY
    department
ORDER BY
    employees_count DESC;
```

```
SELECT
  *
FROM
  assignment4.employees_by_department;
```

Screenshot:

	department character varying (100) 🔒	employees_count 🔒 bigint
1	IT	461
2	Finance	446
3	Operations	438
4	Marketing	438
5	Web	431
6	Management	425

Data Output   Messages   Notifications

Procedures (Stored Procedures):

Question 6: Create a procedure to update an employee's salary by their first name and last name.

```
CREATE
OR REPLACE PROCEDURE assignment4.update_salary (
  firstName VARCHAR,
  lastName VARCHAR,
  updatePercentage DECIMAL
)
LANGUAGE PLPGSQL AS $$
BEGIN
  UPDATE
    assignment4.employees
  SET
    salary = salary + salary * updatePercentage
  WHERE
    first_name = firstName
```

```
      AND last_name = lastName;

  COMMIT;

END;$$;
```
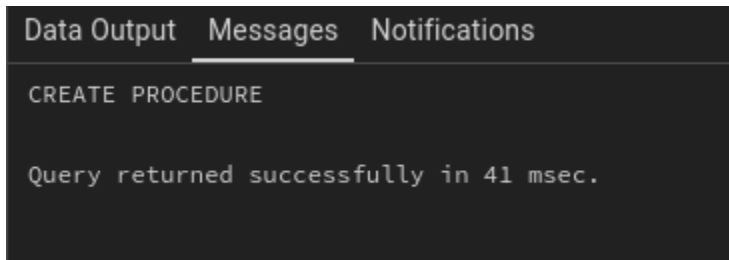
Screenshot:
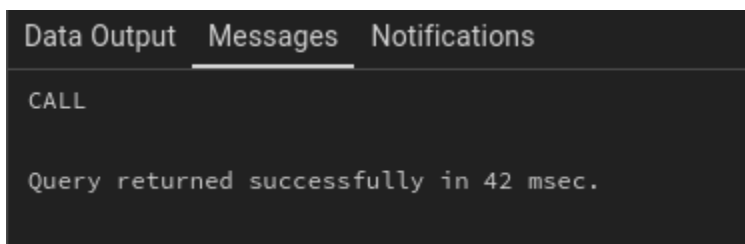
```
Data Output   Messages   Notifications

CREATE PROCEDURE

Query returned successfully in 41 msec.
```

Call update_salary procedure

```
CALL assignment4.update_salary ('BELLE', 'ARDS', 0.2);
```

Screenshot:

```
Data Output   Messages   Notifications

CALL

Query returned successfully in 42 msec.
```

Retrieve updated details of given employee

```
SELECT
  *
FROM
  assignment4.employees e
WHERE
  e.first_name = 'BELLE'
```

```
   AND e.last_name = 'ARDS';
```

Screenshot:

Question 7: Create a procedure to calculate the total number of leaves used across all departments.

```
CREATE
OR REPLACE PROCEDURE assignment4.calculate_total_leaves (
  INOUT total_leaves INT DEFAULT 0
)
LANGUAGE PLPGSQL AS $$
BEGIN
  SELECT
    sum(leaves_used)
  FROM
    assignment4.employees

  INTO total_leaves;

END;$$;
```

Screenshot:

Call calculate_total_leaves procedure

```
CALL assignment4.calculate_total_leaves ();
```

Screenshot: