College of Engineering, Trivandrum

Department of Computer Science and Engineering

CS333 APPLICATION SOFTWARE DEVELOPMENT LAB

LABORATORY REPORT 7

String and pattern matching

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1 Introduction

There are many SQL queries that help support string and pattern matching. Few of what we are going to discuss are listed below:

1. SUBSTR
   (a) The SUBSTR() function extracts a substring from a string (starting at any position).
   (b) Syntax: SUBSTR(string, start, length)
2. LENGTH
   (a) The LENGTH() function returns the length of a string (in bytes).
   (b) Syntax: LENGTH(string)
3. LOWER
   (a) The LOWER() function converts a string to lower-case.
   (b) Syntax: LOWER(text)
4. UPPER
   (a) The UPPER() function converts a string to upper-case.
   (b) Syntax: UPPER(text)
5. CONCAT
   (a) The CONCAT() function adds two or more expressions together.
   (b) Syntax: CONCAT(expression1, expression2, expression3,...)
6. LPAD
   (a) The LPAD() function left-pads a string with another string, to a certain length.
   (b) Syntax: LPAD(string, length, lpad_string)
7. RTRIM
   (a) The RTRIM() function removes trailing spaces from a string.
   (b) Syntax: RTRIM(string)
8. INSTR
   (a) The INSTR() function returns the position of the first occurrence of a string in another string.
   (b) Syntax: INSTR(string1, string2)

All these SQL queries are supported by PostgreSQL and can be implemented in a similar fashion.

2 Questions

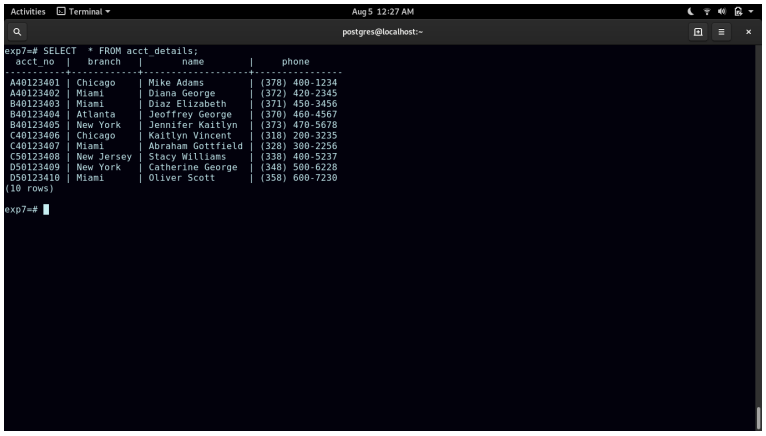

Figure 1: Entries in 'acct_details'

1. Find the names of all people starting on the alphabet 'D'

```
SELECT name
FROM acct_details
WHERE name LIKE 'D%';
```

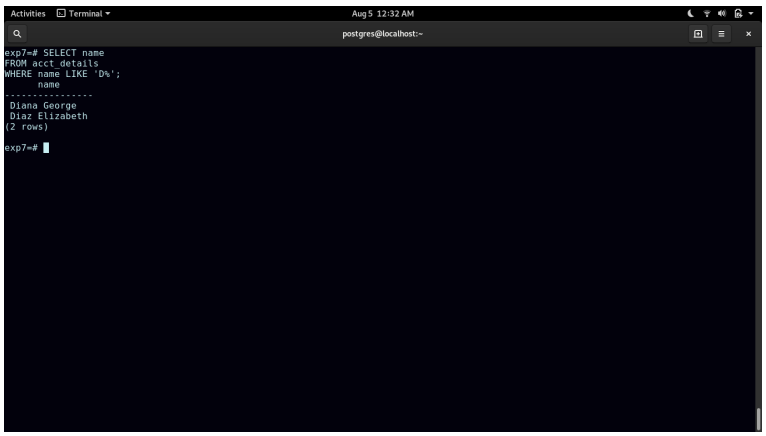

Figure 2: Question 1

2. List the names of all branches containing the substring 'New'

```
SELECT branch
FROM acct_details
WHERE branch LIKE 'New%';
```

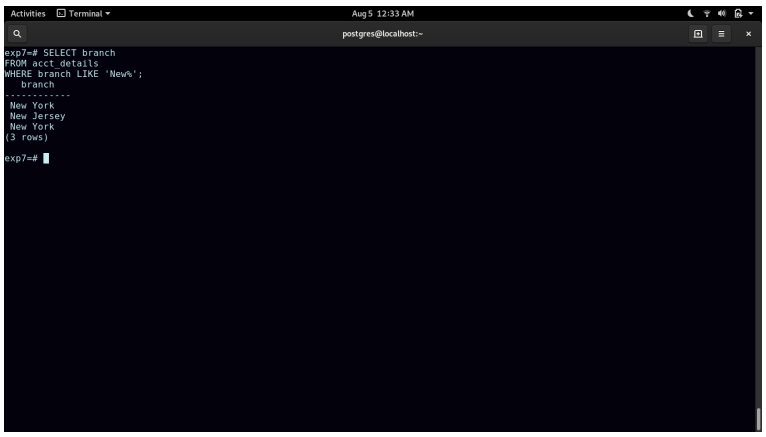

Figure 3: Question 2

3. List all the names in Upper Case Format

```
SELECT UPPER(name)
FROM acct_details;
```

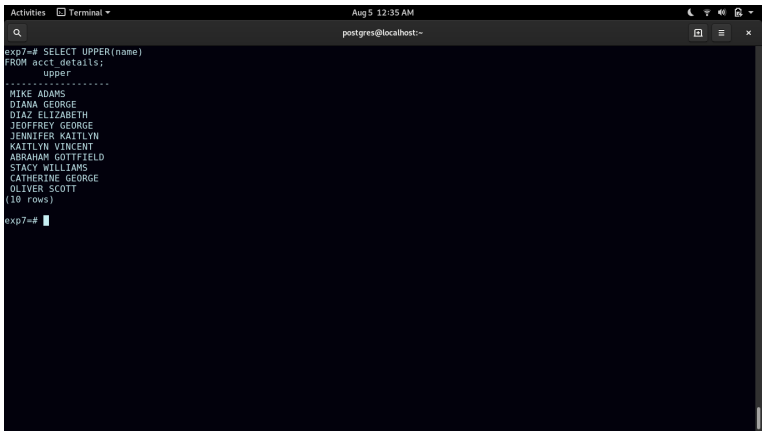

Figure 4: Question 3

4. List the names where the 4th letter is ‘n’ and last letter is ‘n’

```
SELECT name
FROM acct_details
WHERE name LIKE '___n%n';
```

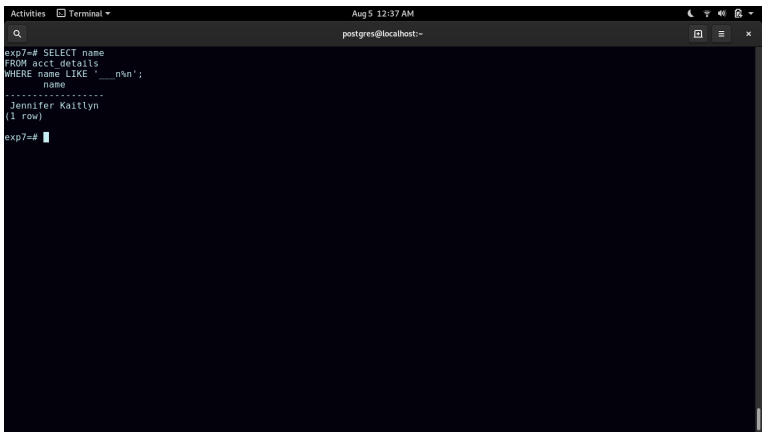

Figure 5: Question 4

5. List the names starting on ‘D’ , 3rd letter is ‘a’ and contains the substring ‘Eli’

```
SELECT name
FROM acct_details
WHERE name LIKE 'D_a%' AND
STRPOS(name, 'Eli') > 0;
```

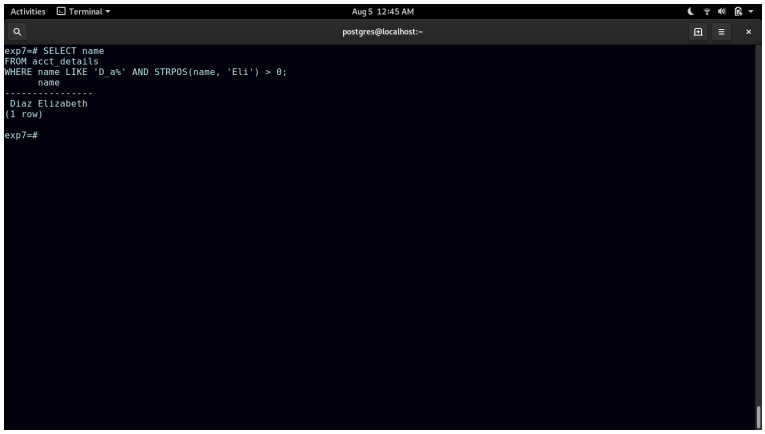

Figure 6: Question 5

6. List the names of people whose account number ends in ‘6’

```
SELECT name
FROM acct_details
WHERE acct_no LIKE '%6';
```

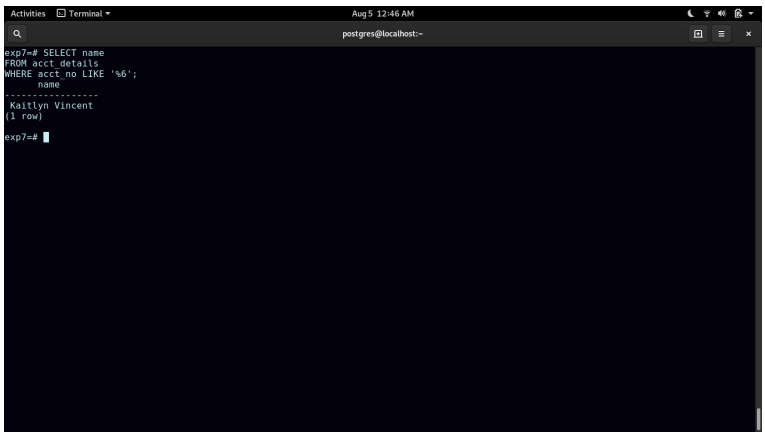

Figure 7: Question 6

7. Update the table so that all the names are in Upper Case Format

```
UPDATE acct_details
SET name = UPPER(name);

SELECT * FROM acct_details;
```

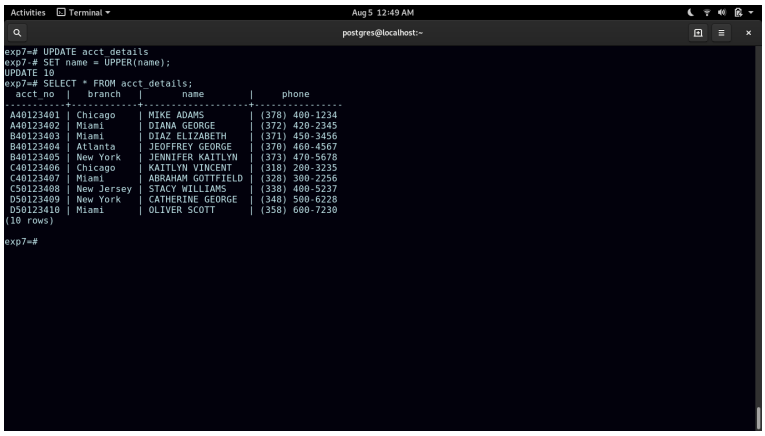

Figure 8: Question 7

8. List the names of all people ending on the alphabet ‘t’

```
SELECT name
FROM acct_details
WHERE LOWER(name) LIKE '%t';
```

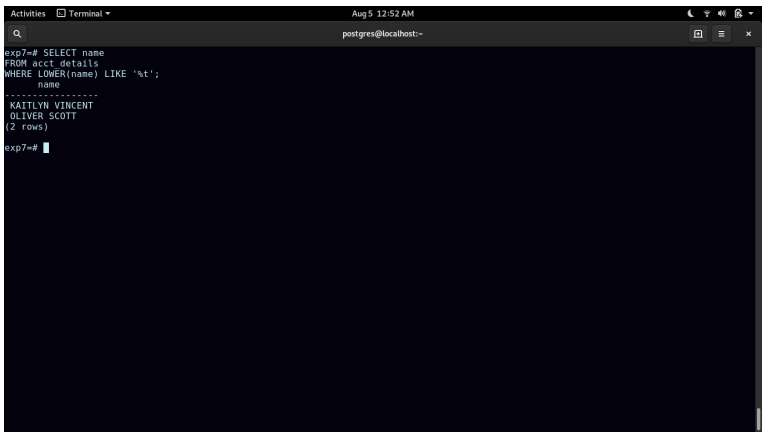

Figure 9: Question 8

9. List all the names in reverse

```
SELECT REVERSE(name)
FROM acct_details;
```

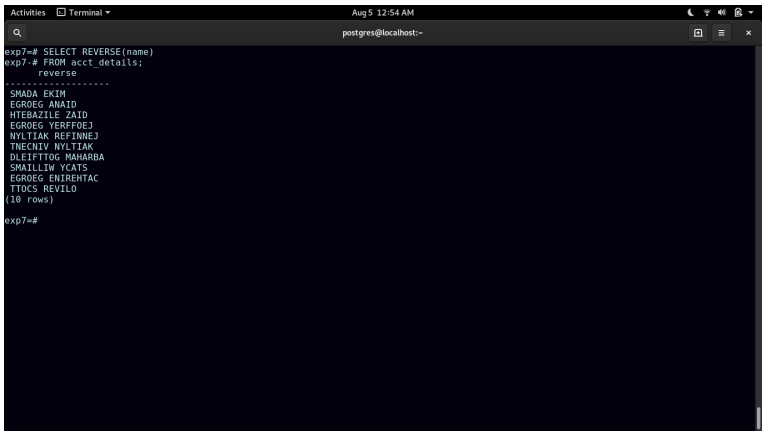

Figure 10: Question 9

10. Display all the phone numbers including US Country code (+1). For eg: (378)400-1234should be displayed as +1(378)400-1234. Use LPAD function

```
SELECT LPAD(phone, 16, '+1')
FROM acct_details;
```

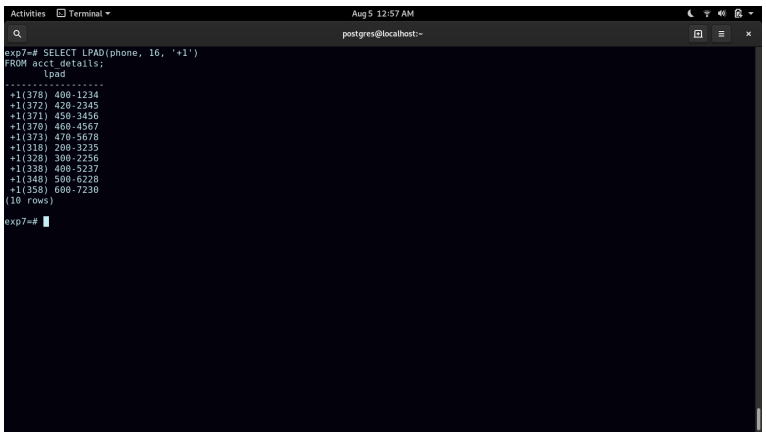

Figure 11: Question 10

11. Display all the account numbers. The starting alphabet associated with the Account_Noshould be removed. Use LTRIM function.

```
SELECT LTRIM(acct_no, '[ABCD]'),
branch, name, phone
FROM acct_details;
```

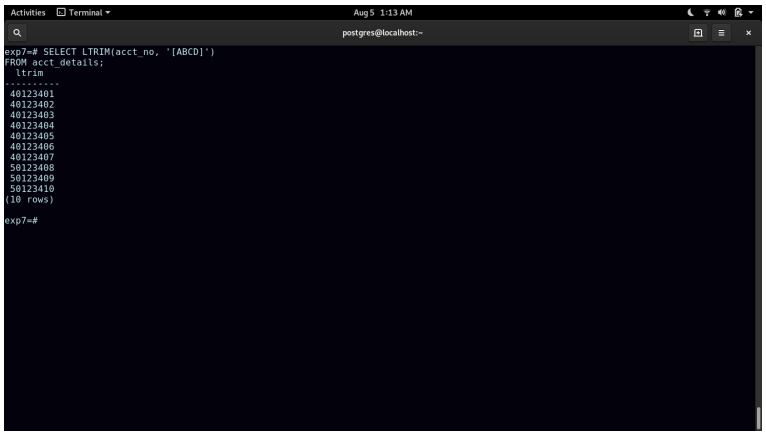

Figure 12: Question 11

12. Display the details of all people whose account number starts in '4' and name contains the substring 'Williams'.

```
ELECT *
FROM acct_details
WHERE TRIM(acct_no, '[ABCD]')
LIKE '5%'
AND STRPOS(name, 'WILLIAMS') > 0;
```

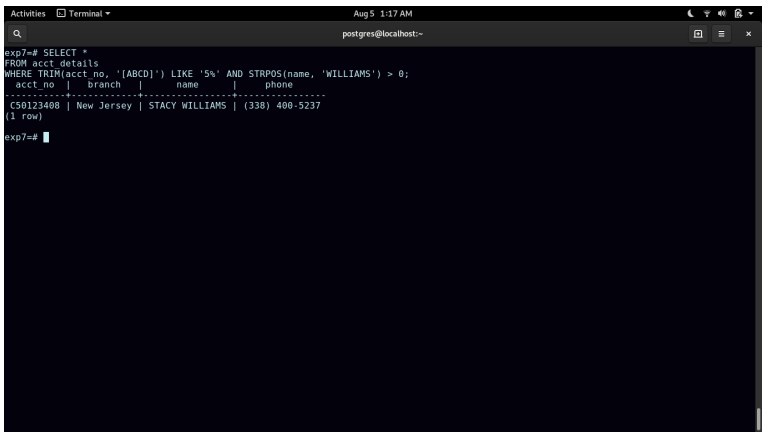

Figure 13: Question 12

Following questions done on system table DUAL:

13. Find the reverse of the string ‘ nmutuAotedOehT’

```
SELECT
REVERSE( 'NMUTUAOTEDOEHT' ) ;
```

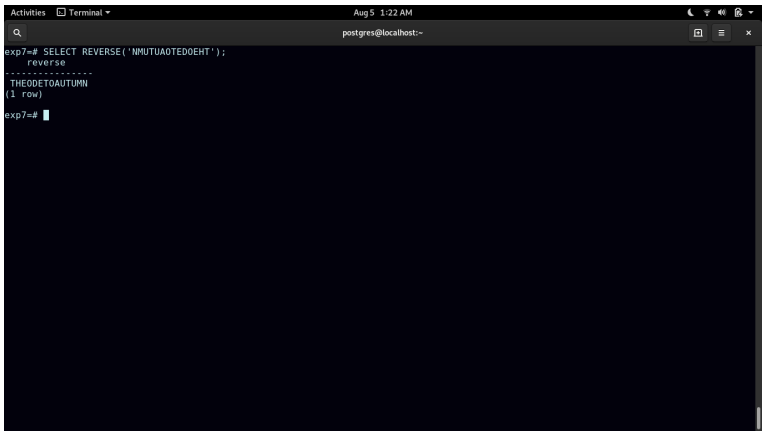

Figure 14: Question 13

14. Find the reverse of the string ‘ nmutuAotedOehT’

```
SELECT
LTRIM( '123231XYZTECH' , '123XYZ' ) ;
```

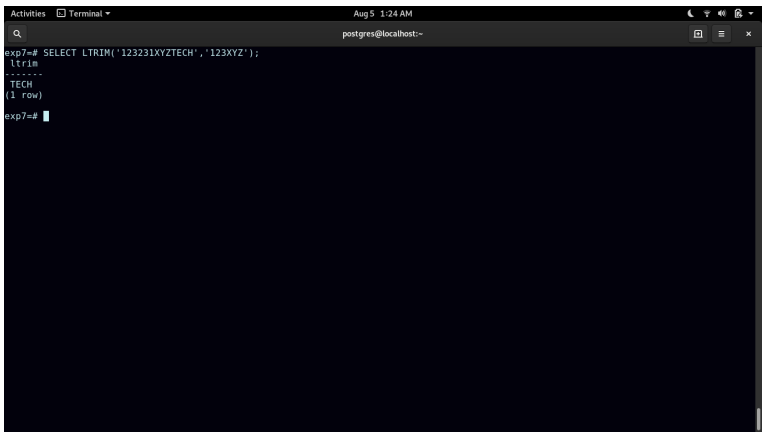

Figure 15: Question 14

15. Use RTRIM function on ‘Computer ‘ to remove the trailing spaces.

```
SELECT
RTRIM('COMPUTER      ');
```

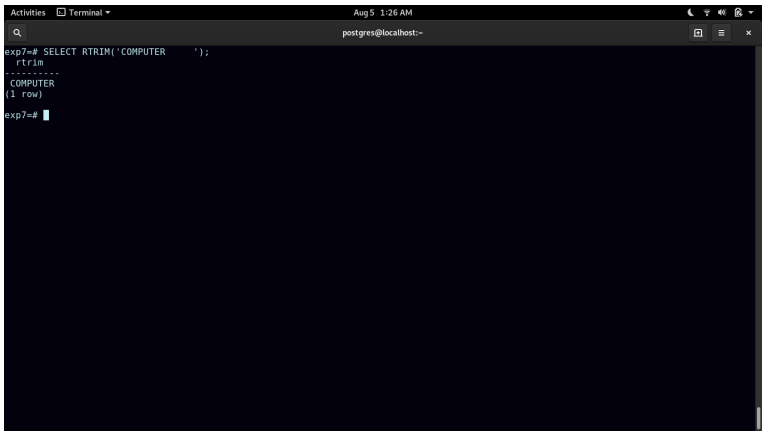

Figure 16: Question 15

16. Perform RPAD on ‘computer’ to obtain the output as ‘computerXXXX’

```
SELECT
RPAD('COMPUTER',12,'X');
```

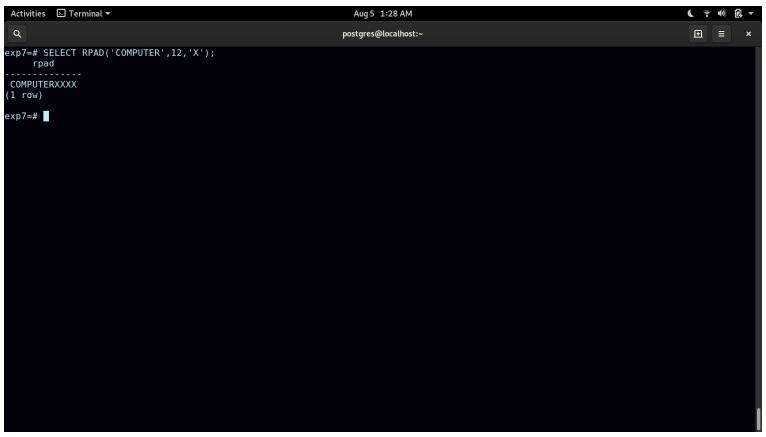

Figure 17: Question 16

17. Use INSTR function to find the first occurrence of 'e' in the string 'Welcome to Kerala'

```
SELECT
STRPOS('WELCOME TO KERALA','E');
```

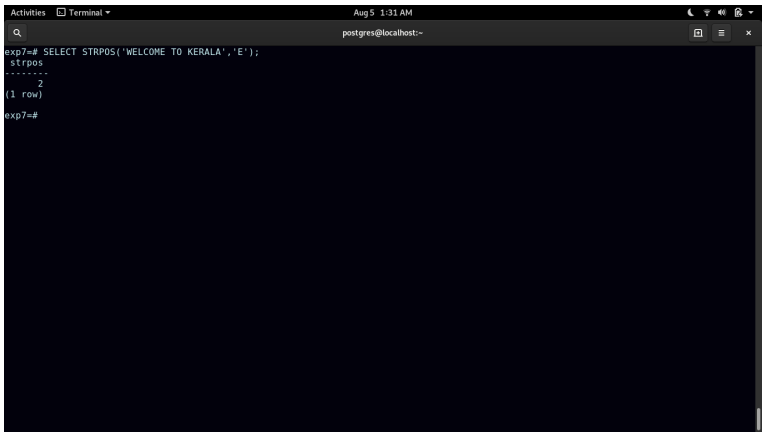

Figure 18: Question 17

18. Perform INITCAP function on 'mARKcALAwaY'

```
SELECT
INITCAP('MARKCALAWAY');
```

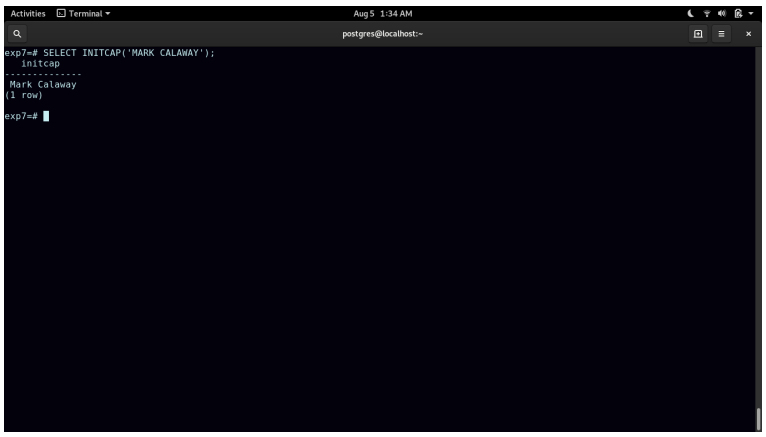

Figure 19: Question 18

19. Find the length of the string ‘Database Management Systems’.

```
SELECT
LENGTH('DATABASE MANAGEMENT SYSTEMS');
```

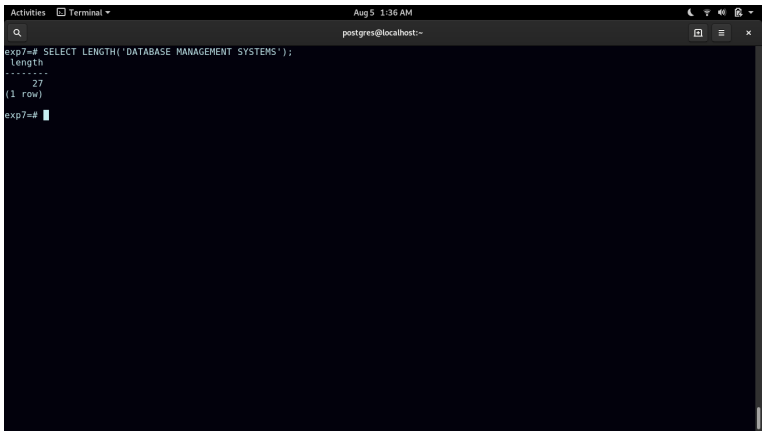

Figure 20: Question 19

20. Concatenate the strings ‘Julius’ and ‘Caesar’

```
SELECT
CONCAT('JULIUS', 'CAESAR');
```

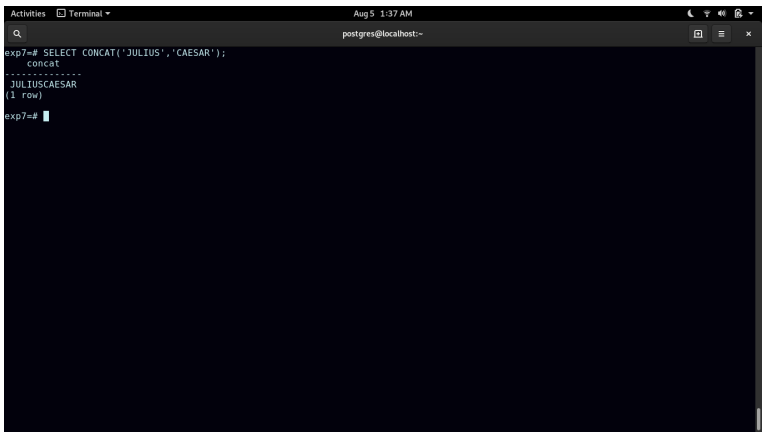

Figure 21: Question 20

21. Use SUBSTR function to retrieve the substring ‘is’ from the string ‘India is my country’

```
SELECT
SUBSTR('INDIA IS MY COUNTRY',7,2);
```

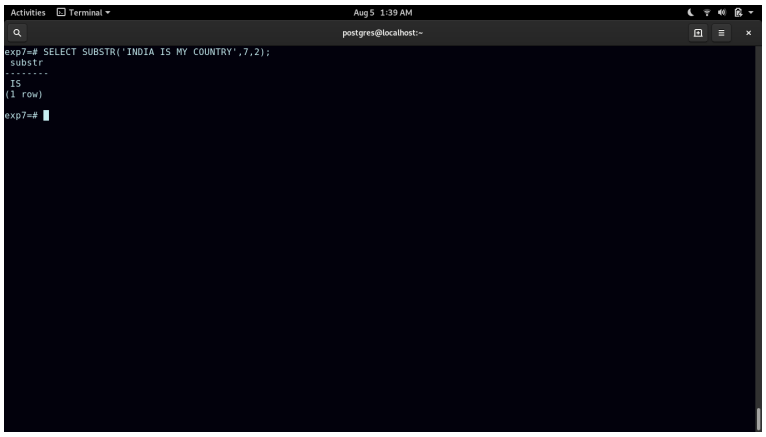

Figure 22: Question 21

22. Use INSTR function to find the second occurrence of ‘k’ from the last. The string is ‘Making of a King’.

```
SELECT
INSTR('MAKING OF A KING','K', -1,2);
```

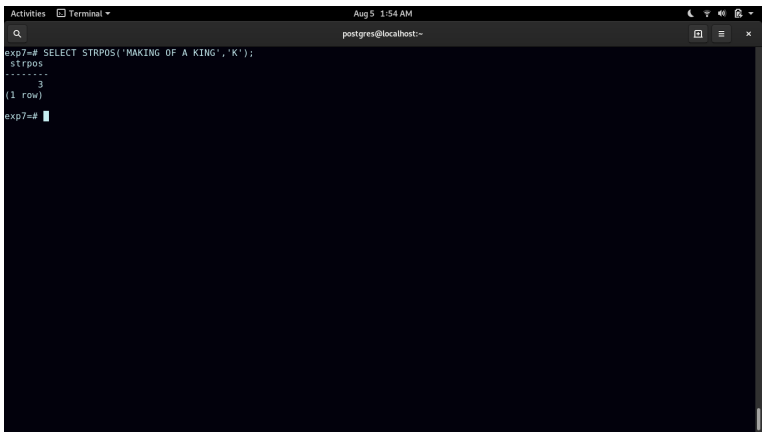

Figure 23: Question 22

3 Result

- Successfully implemented pattern matching and string operation queries on PostgreSQL.