Experiment No.06

PART A

(PART A: TO BE REFERRED BY STUDENTS)

A.1 Aim: To study and implement built in functions of SQL.

A.2 Prerequisite:

DML commands of SQL

A.3 Outcome:

After successful completion of this experiment students will be able to

1. Apply knowledge of relational algebra and structural query language to retrieve and manage data in relational databases using built in functions.

A.4 Theory:

The SQL has two types of in built functions as below:

1. Single row functions
2. Multiple row functions

Single row functions can

1. Manipulate data items
2. Accept arguments and return values
3. Act on each row returned
4. Return one result per row
5. May modify the data type
6. Can be nested
7. Accept arguments which can be a column or an expression

Syntax: function_name(arg_1, arg_2,…arg_n)

Types of single row functions:

1. character
2. General
3. Number
4. Conversion

5. Date

Character functions can be further divided into two categories:

1. Case manipulation functions
    a. Lower
    b. Upper
    c. Initcap
2. Character manipulation functions
    a. Concat
    b. Substr
    c. Length
    d. Instr
    e. Lpad\Rpad
    f. Trim
    g. Replace

Case Manipulation functions:

These functions convert case for character strings.

Function	Result
LOWER('SQL Course')	sql course
UPPER('SQL Course')	SQL COURSE
INITCAP('SQL Course')	Sql Course

Character Manipulation functions:

These functions manipulate character strings:

Function	Result
CONCAT('Hello', 'World')	HelloWorld
SUBSTR('HelloWorld',1,5)	Hello
LENGTH('HelloWorld')	10
INSTR('HelloWorld', 'W')	6
LPAD(salary,10,'*')	*****24000
RPAD(salary, 10, '*')	24000*****
TRIM('H' FROM 'HelloWorld')	elloWorld

Number functions:

Number Functions

- **ROUND: Rounds value to specified decimal**

  `ROUND(45.926, 2)` → `45.93`

- **TRUNC: Truncates value to specified decimal**

  `TRUNC(45.926, 2)` → `45.92`

- **MOD: Returns remainder of division**

  `MOD(1600, 300)` → `100`

Date functions:

Date Functions

Function	Description
MONTHS_BETWEEN	Number of months between two dates
ADD_MONTHS	Add calendar months to date
NEXT_DAY	Next day of the date specified
LAST_DAY	Last day of the month
ROUND	Round date
TRUNC	Truncate date

Using date functions:

- MONTHS_BETWEEN ('01-SEP-95','11-JAN-94')
  → 19.6774194
- ADD_MONTHS ('11-JAN-94',6) → '11-JUL-94'
- NEXT_DAY ('01-SEP-95','FRIDAY')
  → '08-SEP-95'
- LAST_DAY('01-FEB-95') → '28-FEB-95'

A.5 Task: For given tables solve below queries:

category_header

Category_header

Cat_code	Cate_desc
01	super delux
02	delux
03	super fast
04	normal

route_Header

Route_id	Route_no	Cate_code	Origin	Destination	Fare	Distance	Capacity
101	33	01	Madurai	Madras	35	250	50
102	25	02	Trichy	Madurai	40	159	50
103	15	03	Thanjavur	Madurai	59	140	50
104	36	04	Madras	Banglore	79	375	50
105	40	01	Banglore	Madras	80	375	50
106	38	02	Madras	Madurai	39	250	50
107	39	03	Hydrabad	Madras	50	430	50
108	41	04	Madras	Cochin	47	576	50

Place Header:

Place_id	Place_name	Place_address	Bus_station
01	Madras	10, ptc road	Parrys
02	Madurai	21, canal bank road	Kknagar
03	Trichy	11, first cross road	Bheltown
04	Banglore	15, first main road	Cubbon park
05	Hydrabad	115,lake view road	Charminar
06	Thanjavur	12, temple road	Railway jn.

Fleet Header:

Fleet_id	Day	Route_id	Cat_code
01	10-apr-96	101	01
02	10-apr-96	101	01
03	10-apr-96	101	01
04	10-apr-96	102	02
05	10-apr-96	102	03
06	10-apr-96	103	04

Ticket Header:

Fleet_id	Ticket_no	Doi	Dot
01	01	10-apr-96	10-may-96
02	02	12-apr-96	5-may-96
03	03	21-apr-96	15-may-96

Time_travel	Board_place	Origin	Destinition
15:00:00	Parrys	Madrsa	Madurai
09:00:00	Kknagar	Madurai	Madras
21:00:00	Cubbon park	Banglore	Madras

Adults	Children	Total_fare	Route_id
1	1	60	101
2	1	60	102
4	2	400	101

Ticket Detail:

~~Adults~~ ticket_no ~~Fleet_id~~	Name	Sex	Age	Fare
01	Charu	F	24	14.00
01	Lathu	F	10	15.55
02	Anand	M	28	17.80
02	Guatham	M	28	16.00
02	Bala	M	09	17.65
05	Sandip	M	30	18.00

Route Detail:

Route_id	Place_id	Nonstop
105	01	N
012	02	S
106	01	S
108	05	N
106	02	N

Queries:

1. Write a query to display all bus_station name into upper case.
2. Write a query to display category description of those categories for which cat_code is either 01 or 02 or 04. Display category description with first character in upper case and remaining characters in lower case.
3. Write a query to concatenate and display place_name and place_address column of place_header table.
4. Write a query to display route_id along with substring "MAD" from its destination column.
5. Write a query to display category code along with total number of characters for category description.
6. Write a query to display fare of ticket_detail table with total 15 character space and padding of '*' on left side.
   For example : **********14.00
7. Write a query to display fare of ticket_detail table with total 15 character space and padding of '*' on right side.
   For example : 14.00**********
8. Write a query to round fare from ticke_detail column upto one decimal point.
9. Write a query to find system date.
10. Write a query to display fleet_id, ticket_id, origin, destination and dot column of ticket_header after adding 6 months to it for those records for which number of adults traveling is more than one and number of children traveling is also more than one.

PART B

(PART B: TO BE COMPLETED BY STUDENTS)

(Students must submit the soft copy as per following segments within two hours of the practical. The soft copy must be uploaded on the student portal or emailed to the concerned lab in charge faculties at the end of the practical in case the there is no student portal access available)

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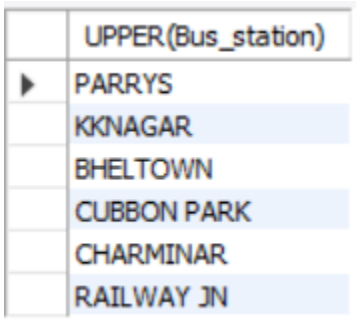
Batch: B3	Date of Experiment: 23/09/2022
Date of Submission: 23/09/2022	Grade :

B.1 Tasks given in PART A to be completed here

Query 1:

SELECT UPPER(Bus_station) FROM place_header;



	UPPER(Bus_station)
▶	PARRYS
	KKNAGAR
	BHELTOWN
	CUBBON PARK
	CHARMINAR
	RAILWAY JN

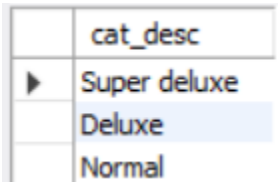
Query 2

SELECT INITCAP(cate_desc) FROM category_header where cat_code in (1, 2, 4);

Runs only in Oracle versions.

This works in SQL:

select CONCAT(UCASE(LEFT(cat_desc,1)), LCASE(SUBSTRING(cat_desc,2))) as cat_desc from category_header where cat_code=1 or cat_code=2 or cat_code=4;



	cat_desc
▶	Super deluxe
	Deluxe
	Normal

Query 3:

SELECT concat(place_name, place_address) FROM place_header;

	concat(place_name, place_address)
▶	Madras10, ptc road
	Madurai21 Canal Bank road
	Trichy11 First Cross Road
	Bangalore15 First Main Road
	Hyderabad115 Lake View Road
	Thanjavur12 Temple Road

Query 4:

SELECT concat(route_id, 'MAD') FROM route_header where destination LIKE '%MAD%';

	concat(route_id, 'MAD')
▶	101MAD
	102MAD
	103MAD
	105MAD
	106MAD
	107MAD

Query 5:

SELECT cat_desc, LENGTH(cat_desc) FROM category_header;

	cat_desc	LENGTH(cat_desc)
▶	super deluxe	12
	deluxe	6
	super fast	10
	normal	6

Query 6

SELECT lpad(fare, 15, '*') FROM ticket_detail;

	lpad(fare, 15, '*')
▶	**********14.00
	**********15.55
	**********17.80
	**********16.00
	**********17.65
	**********18.00

Query 7:

SELECT rpad(fare, 15, '*') FROM ticket_detail;

	rpad(fare, 15, '*')
▶	14.00**********
	15.55**********
	17.80**********
	16.00**********
	17.65**********
	18.00**********

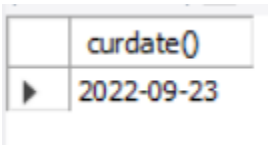
Query 8:

SELECT round(fare, 1) FROM ticket_detail;

	round(fare, 1)
▶	14
	15.6
	17.8
	16
	17.6
	18

Query 9:

SELECT curdate();



	curdate()
▶	2022-09-23

Query 10

SELECT fleet_id, ticket_no, origin, destination, dot, DATEADD(month, 6, dot) FROM TICKET_HEADER WHERE adult > 1 and children > 1;

Runs only in Oracle versions.

This works in SQL:

select fleet_id,ticket_no,origin,destination,DATE_ADD(dot,INTERVAL +6 month) from ticket_header where adult and children>1;

	fleet_id	ticket_no	origin	destination	DATE_ADD(dot,INTERVAL +6 month)
▶	3	3	Bangalore	Madras	1996-11-15

B.3 Conclusion:

Applied knowledge of relational algebra and structured query language to retrieve and manage data in relational databases using built in functions.