EXPERIMENT 5-6

Date: 17th February 2023

TITLE: Use of Inbuilt functions and relational algebra operation

OBJECTIVE: To understand the use of inbuilt function and relational algebra with SQL query.

1. **Consider the given Table Structures and**

   a) **Create Table**

SUPPLIER - (SCODE, SNAME, SCITY, TURNOVER)

```
CREATE TABLE SUPPLIER (
   SCODE VARCHAR(5) PRIMARY KEY,
   SNAME VARCHAR(30),
   SCITY VARCHAR(20),
   TURNOVER INTEGER
);
```

Field	Type	Null	Key	Default	Extra
SCODE	varchar(5)	NO	PRI	NULL	
SNAME	varchar(30)	YES		NULL	
SCITY	varchar(20)	YES		NULL	
TURNOVER	int	YES		NULL	

PART - (PCODE, WEIGH, COLOR, COST, SELLINGPRICE)

```
CREATE TABLE PART (
   PCODE VARCHAR(5) PRIMARY KEY,
   WEIGH DECIMAL(3,2),
   COLOR VARCHAR(10),
   COST INTEGER,
   SELLINGPRICE INTEGER
);
```

Field	Type	Null	Key	Default	Extra
PCODE	varchar(5)	NO	PRI	NULL	
WEIGH	decimal(3,2)	YES		NULL	
COLOR	varchar(10)	YES		NULL	
COST	int	YES		NULL	
SELLINGPRICE	int	YES		NULL	

SUPPLIER_PART - (SCODE, PCODE, QTY)

```
CREATE TABLE SUPPLIER_PART(
   SCODE VARCHAR(5),
   PCODE VARCHAR(5),
   QTY INTEGER,
   FOREIGN KEY (SCODE) REFERENCES SUPPLIER(SCODE),
   FOREIGN KEY (PCODE) REFERENCES PART(PCODE)
);
```

Field	Type	Null	Key	Default	Extra
SCODE	varchar(5)	YES	MUL	NULL	
PCODE	varchar(5)	YES	MUL	NULL	
QTY	int	YES		NULL	

b) Populate the tables.

```
INSERT INTO SUPPLIER VALUES('S01','TOM','BOMBAY',50);
INSERT INTO SUPPLIER VALUES('S02','TONY','NEW YORK',NULL);
INSERT INTO SUPPLIER VALUES('S03','PETER','CHENNAI',80);
INSERT INTO SUPPLIER VALUES('S04','JACK','AHEMDABAD',120);
```

SCODE	SNAME	SCITY	TURNOVER
s01	Tom	Bombay	50
s02	Tony	New York	NULL
s03	Peter	Chennai	80
s04	Jack	Ahemdabad	120
NULL	NULL	NULL	NULL

```
INSERT INTO PART VALUES("P01", 28, "RED", 30, 1000);
INSERT INTO PART VALUES("P02", 30, "BLUE",20, 800);
INSERT INTO PART VALUES("P03", 32, "PURPLE", 40, 100);
INSERT INTO PART VALUES("P04", 40, "ORANGE", 70, 700);
```

PCODE	WEIGH	COLOR	COST	SELLINGPRICE
p01	28	Red	30	1000
p02	30	Blue	20	800
p03	32	Purple	40	100
p04	40	Orange	70	700
NULL	NULL	NULL	NULL	NULL

INSERT INTO SUPPLIER_PART VALUES('S01',"P01",50);

INSERT INTO SUPPLIER_PART VALUES('S02','P02',150);

INSERT INTO SUPPLIER_PART VALUES('S03','P03',30);

INSERT INTO SUPPLIER_PART VALUES('S04','P04',100);

SCODE	PCODE	QTY
s01	p01	50
s02	p02	150
s03	p03	30
s04	p04	100

2. Write appropriate SQL Statement for the following:

a) Get the supplier number and part number in ascending order of supplier number.

$$\prod_{SCODE,PCODE}(\sigma_{SUPPLIER.SCODE=PART.PCODE}((SUPPLIER) \bowtie (PART)))$$

SELECT SCODE, PCODE FROM SUPPLIER, PART ORDER BY SUPPLIER.SCODE;

SCODE	PCODE
s01	p01
s02	p02
s03	p03
s04	p04

b) Get the details of supplier who operate from Bombay with turnover 50.

$$\prod_{SNAME}(\sigma_{SCITY = "BOMBAY" \wedge TURNOVER = 50}(SUPPLIER))$$

SELECT SNAME FROM SUPPLIER WHERE (SCITY = "BOMBAY" AND TURNOVER = 50);

SNAME
Tom

c) Get the total number of suppliers.

$$\prod_{COUNT(SCODE)}(\sigma(SUPPLIER))$$

SELECT COUNT(SCODE) AS TOTAL_NO_OF_SUPPLIER FROM SUPPLIER;

TOTAL_NO_OF_SUPPLIER
4

d) Get the part number weighing between 25 and 35.

$$\prod_{\text{PCODE}} (\sigma_{\text{WEIGH>25} \wedge \textit{WEIGH<35}} (\text{PART}))$$

SELECT PCODE AS PART FROM PART WHERE (WEIGH BETWEEN 25 AND 35);

PART
p01
p02
p03

e) Get the supplier number whose turnover is null.

$$\prod_{\text{SCODE}} (\sigma_{\text{TURNOVER IS NULL}} (\text{SUPPLIER}))$$

SELECT SCODE AS SUPPLIER_NUMBER FROM SUPPLIER WHERE TURNOVER IS NULL;

SUPPLIER_NUMBER
s02

f) Get the part number that cost 20, 30 or 40 rupees.

$$\prod_{\text{PCODE}} (\sigma_{\text{COST IN (20, 30, 40)}} (\text{PART}))$$

SELECT PCODE FROM PART WHERE COST IN (20, 30, 40);

PCODE
p01
p02
p03
NULL

g) Get the total quantity of part 2 that is supplied.

$$\prod_{\text{SUM(QTY)}} (\sigma_{\text{PCODE='2'}} (\text{SUPPLIER\_PART}))$$

SELECT SUM(QTY) AS TOTAL_QUANTITY FROM SUPPLIER_PART WHERE PCODE = "2";

TOTAL_QUANTITY
NULL

h) Get the name of supplier who supply part 2.

$$\Pi_{SNAME}(\sigma_{PCODE='2'}(SUPPLIER \bowtie SUPPLIER\_PART))$$

SELECT SNAME FROM SUPPLIER WHERE SCODE IN (SELECT SCODE FROM SUPPLIER_PART WHERE PCODE = '2');

SNAME
Tony

i) Get the part number whose cost is greater than the average cost.

$$\Pi_{PCODE}(\sigma_{COST > (\Pi_{AVG(COST)}(PART))})$$

SELECT PCODE FROM PART WHERE COST > (SELECT AVG(COST) FROM PART);

PCODE
p04
NULL

j) Get the supplier number and turnover in descending order of turnover.

$$\Pi_{SNAME, TURNOVER}(SUPPLIER)$$

SELECT SNAME, TURNOVER FROM SUPPLIER ORDER BY TURNOVER DESC;

SNAME	TURNOVER
Jack	120
Peter	80
Tom	50
Tony	NULL