

EXPERIMENT NO.4

Aim- To perform various DDL, DML and TCL commands, applying constraints, Joins and use aggregate functions like count, avg on Book Database.

Query 1: Create the tables shown below with given constraints, and then add the records in the tables.

Constraint on tables are:

Publisher table: Publisher_code Primary key, publisher_state in ('WI', 'NY', 'MA', 'CA').

Author table: Author_number Primary key.

Book table: Book_code Primary key, default value of paper back is 'N' and publisher code on Deletion set to NULL.

Wrote table: Book_code, Author_number as foreign key, both on Deletion set to NULL.

Solution-

```
create table publisher(  
publisher_code char(2),  
publisher_name varchar(40),  
publisher_city varchar(40),  
publisher_state char(2),  
primary key(publisher_code)  
);
```

```
create table author(  
author_number int,  
author_last varchar(40),  
author_first varchar(40),  
primary key(author_number) );  
create table book(  
book_code char(4) default NULL,  
book_title varchar(40),  
publisher_code char(2),  
book_type char(3),  
book_price decimal(5,2),  
paper_back char default 'N',  
primary key(book_code),
```

```

foreign key(publisher_code) references publisher(publisher_code)
);

create table wrote(
book_code char(4),
author_number int,
sequence_number int,
foreign key(book_code) references book(book_code),
foreign key(author_number) references author(author_number) on delete cascade
);

insert into publisher values ('AH', 'Arkham House Publ.', 'Sauk City', 'WI');
insert into publisher values ('AP', 'Arcade Publishing', 'New York', 'NY');
insert into publisher values ('AW', 'Addison Wesley', 'Reading', 'MA');
insert into publisher values ('BB', 'Bantam Books', 'New York', 'NY');
insert into publisher values ('BF', 'Best and Furrow', 'Boston', 'MA');
insert into publisher values ('JT', 'Jeremy P. Tarcher', 'Los Angeles', 'CA');
insert into publisher values ('MP', 'McPherson and Co', 'Kingston', 'NY');
insert into publisher values ('PB', 'Pocket Books', 'New York', 'NY');
insert into publisher values ('RH', 'Random House', 'New York', 'NY');
insert into publisher values ('RZ', 'Rizzoli', 'New York', 'NY');
insert into publisher values ('SB', 'Schoken Books', 'New York', 'NY');
insert into publisher values ('SI', 'Signer', 'New York', 'NY');
insert into publisher values ('TH', 'Thames and Hudson', 'New York', 'NY');
insert into publisher values ('WN', 'W. W. Norton and Co.', 'New York', 'NY');

insert into author values ('01', 'Archer', 'Jeffrey');
insert into author values ('02', 'Christie', 'Agatha');
insert into author values ('03', 'Clarke', 'Arthur C.');
insert into author values ('04', 'Francis', 'Dick');
insert into author values ('05', 'Cussler', 'Clive');
insert into author values ('06', 'King', 'Stephen');
insert into author values ('07', 'Pratt', 'Philip');
insert into author values ('08', 'Adamski', 'Joseph');
insert into author values ('10', 'Harmon', 'Wills');

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insert into author values ('11', 'Rheingold', 'Howard');

insert into author values ('12', 'Qwen', 'Barbara');

insert into author values ('13', 'Wiliams', 'Peter');

insert into author values ('14', 'Kafka', 'Franz');

insert into author values ('15', 'Novalis', '');

insert into author values ('16', 'Lovecraft', 'H. P.');

insert into author values ('17', 'Paz', 'Octavio');

insert into author values ('18', 'Camus', 'Albert');

insert into author values ('19', 'Castleman', 'Riva');

insert into author values ('20', 'Zimbardo', 'Philip');

insert into author values ('21', 'Gimferrer', 'Pere');

insert into author values ('22', 'Southworth', 'Rod');

insert into author values ('23', 'Wray', 'Robert');

insert into book values ('0180', 'Shyness', 'BB', 'PSY', '7.65', 'Y');

insert into book values ('0189', 'Kane and Abel', 'PB', 'FIC', '5.55', 'Y');

insert into book values ('0200', 'Stranger', 'BB', 'FIC', '8.75', 'Y');

insert into book values ('0378', 'Dunwich Horror and Others', 'PB', 'HOR', '19.75', 'N');

insert into book values ('079X', 'Smokescreen', 'PB', 'MYS', '4.55', 'Y');

insert into book values ('0808', 'Knockdown', 'PB', 'MYS', '4.75', 'Y');

insert into book values ('1351', 'Cujo', 'SI', 'HOR', '6.65', 'Y');

insert into book values ('1382', 'Marcel Duchamp', 'PB', 'ART', '11.25', 'Y');

insert into book values ('138X', 'Death on the Nile', 'BB', 'MYS', '3.95', 'Y');

insert into book values ('2226', 'Ghost from the Grant Banks', 'BB', 'SFI', '19.95', 'N');

insert into book values ('2281', 'Prints of the 20th Century', 'PB', 'ART', '13.25', 'Y');

insert into book values ('2766', 'Prodigal Daughter', 'PB', 'FIC', '5.45', 'Y');

insert into book values ('2908', 'Hymns to the Night', 'BB', 'POE', '6.75', 'Y');

insert into book values ('3350', 'Higher Creativity', 'PB', 'PSY', '9.75', 'Y');

insert into book values ('3743', 'First Among Equals', 'PB', 'FIC', '3.95', 'Y');

insert into book values ('3906', 'Vortex', 'BB', 'SUS', '5.45', 'Y');

insert into book values ('5163', 'Organ', 'SI', 'MUS', '16.95', 'Y');

insert into book values ('5790', 'Database System', 'BF', 'CS', '54.95', 'N');

insert into book values ('6128', 'Evil Under the Sun', 'PB', 'MYS', '4.45', 'Y');

insert into book values ('6328', 'Vixer07', 'BB', 'SUS', '5.55', 'Y');

insert into book values ('669X', 'A Guode to SQL', 'BF', 'CS', '23.95', 'Y');
insert into book values ('6908', 'DOS Essentials', 'BF', 'CS', '20.50', 'Y');
insert into book values ('7405', 'Night Probe', 'BB', 'SUS', '5.65', 'Y');
insert into book values ('7443', 'Carrie', 'SI', 'HOR', '6.75', 'Y');
insert into book values ('7559', 'Risk', 'PB', 'MYS', '3.95', 'Y');
insert into book values ('7947', 'dBASE Programming', 'BF', 'CS', '39.90', 'Y');
insert into book values ('8092', 'Magritte', 'SI', 'ART', '21.95', 'N');
insert into book values ('8720', 'Castle', 'BB', 'FIC', '12.15', 'Y');
insert into book values ('9611', 'Amerika', 'BB', 'FIC', '10.95', 'Y');

insert into wrote values ('0180', '20', '1');
insert into wrote values ('0189', '01', '1');
insert into wrote values ('0200', '18', '1');
insert into wrote values ('0378', '16', '1');
insert into wrote values ('079X', '04', '1');
insert into wrote values ('0808', '04', '1');
insert into wrote values ('1351', '06', '1');
insert into wrote values ('1382', '17', '1');
insert into wrote values ('138X', '02', '1');
insert into wrote values ('2226', '03', '1');
insert into wrote values ('2281', '19', '1');
insert into wrote values ('2766', '01', '1');
insert into wrote values ('2908', '15', '1');
insert into wrote values ('3350', '10', '1');
insert into wrote values ('3350', '11', '2');
insert into wrote values ('3743', '01', '1');
insert into wrote values ('3906', '05', '1');
insert into wrote values ('5163', '12', '2');
insert into wrote values ('5163', '13', '1');
insert into wrote values ('5790', '07', '1');
insert into wrote values ('5790', '08', '2');
insert into wrote values ('6128', '02', '1');
insert into wrote values ('6328', '05', '1');
insert into wrote values ('669X', '07', '1');

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insert into wrote values ('6908', '22', '1');
insert into wrote values ('7405', '05', '1');
insert into wrote values ('7443', '06', '1');
insert into wrote values ('7559', '04', '1');
insert into wrote values ('7947', '07', '1');
insert into wrote values ('7947', '23', '2');
insert into wrote values ('8092', '21', '1');
insert into wrote values ('8720', '14', '1');
insert into wrote values ('9611', '14', '1');

```

```
select * from publisher;
```

Output-

PUBLISHER_CODE	PUBLISHER_NAME	PUBLISHER_CITY	PUBLISHER_STATE
AH	Arkham House Publ.	Sauk City	WI
AP	Arcade Publishing	New York	NY
AW	Addison Wesley	Reading	MA
BB	Bantam Books	New York	NY
BF	Best and Furrow	Boston	MA
JT	Jeremy P. Tarcher	Los Angeles	CA
MP	McPherson and Co	Kingston	NY
PB	Pocket Books	New York	NY
RH	Random House	New York	NY
RZ	Rizzoli	New York	NY
SB	Schoken Books	New York	NY
SI	Signer	New York	NY
TH	Thames and Hudson	New York	NY
WN	W. W. Norton and Co.	New York	NY

```
Select * from author;
```

Output-

AUTHOR_NUMBER	AUTHOR_LAST	AUTHOR_FIRST
1	Archer	Jeffrey
2	Christie	Agatha
3	Clarke	Arthur C.
4	Francis	Dick
5	Cussler	Clive
6	King	Stephen
7	Pratt	Philip
8	Adamski	Joseph
10	Harmon	Wills
11	Rheingold	Howard
12	Qwen	Barbara
13	Williams	Peter
14	Kafka	Franz
15	Novalis	
16	Lovecraft	H. P.
17	Paz	Octavio
18	Camus	Albert
19	Castleman	Riva
20	Zimbardo	Philip
21	Gimferrer	Pere
22	Southworth	Rod
23	Wray	Robert

Select * from book;

Output-

BOOK_CODE	BOOK_TITLE	PUBLISHER_CODE	BOOK_TYPE	BOOK_PRICE	PAPER_BACK
0180	Shyness	BB	PSY	7.42	Y
0189	Kane and Abel	PB	FIC	5.55	Y
0200	Stranger	BB	FIC	8.49	Y
0378	Dunwich Horror and Others	PB	HOR	19.75	N
079X	Smokescreen	PB	MYS	4.55	Y
0808	Knockdown	PB	MYS	4.75	Y
1351	Cujo	SI	HOR	6.65	Y
1382	Marcel Duchamp	PB	ART	11.25	Y
138X	Death on the Nile	BB	MYS	3.83	Y
2226	Ghost from the Grant Banks	BB	SFI	19.35	N
2281	Prints of the 20th Century	PB	ART	13.25	Y
2766	Prodigal Daughter	PB	FIC	5.45	Y
2908	Hymns to the Night	BB	POE	6.55	Y
3350	Higher Creativity	PB	PSY	9.75	Y
3743	First Among Equals	PB	FIC	3.95	Y
3906	Vortex	BB	SUS	5.29	Y
5163	Organ	SI	MUS	16.95	Y
5790	Database System	BF	CS	54.95	N
6128	Evil Under the Sun	PB	MYS	4.45	Y
6328	Vixer07	BB	SUS	5.38	Y
669X	A Guode to SQL	BF	CS	23.95	Y
6908	DOS Essentials	BF	CS	20.5	Y
7405	Night Probe	BB	SUS	5.48	Y
7443	Carrie	SI	HOR	6.75	Y
7559	Risk	PB	MYS	3.95	Y
7947	dBASE Programming	BF	CS	39.9	Y
8092	Magritte	SI	ART	21.95	N
8720	Castle	BB	FIC	11.79	Y
9611	Amerika	BB	FIC	10.62	Y

Select * from wrote;

Output-

BOOK_CODE	AUTHOR_NUMBER	SEQUENCE_NUMBER
0180	20	1
0189	1	1
0200	18	1
0378	16	1
079X	4	1
0808	4	1
1351	6	1
1382	17	1
138X	2	1
2226	3	1
2281	19	1
2766	1	1
2908	15	1
3350	10	1
3350	11	2
3743	1	1
3906	5	1
5163	12	2
5163	13	1
5790	7	1
5790	8	2
6128	2	1
6328	5	1
669X	7	1
6908	22	1
7405	5	1
7443	6	1
7559	4	1
7947	7	1
7947	23	2
8092	21	1
8720	14	1
9611	14	1

Query 2: List the book code of each book where book type is 'HOR' AND the paperback.

Solution-

```
select book_code from book where book_type = 'HOR' and paper_back = 'Y';
```


Output-

BOOK_CODE
1351
7443

Query 3: List the code and title of each paperback book whose type is ART and whose price is less than RS. 12.00.

Solution-

```
select book_code, book_title from book where paper_back = 'Y' and book_type = 'ART' and book_price <= '12.00';
```

Output-

BOOK_CODE	BOOK_TITLE
1382	Marcel Duchamp

Query 4: Find the code and name of each publisher for which the word 'and' appears in the publisher's name.

Solution:

```
select publisher_code, publisher_name from publisher where publisher_name like '%and%';
```

Output-

PUBLISHER_CODE	PUBLISHER_NAME
BF	Best and Furrow
MP	McPherson and Co
RH	Random House
TH	Thames and Hudson
WN	W. W. Norton and Co.

Query 5: How many books are of type 'MYS'.

Solution-

```
select count(*) as Number_of_books from book where book_type = 'MYS';
```

Output-

NUMBER_OF_BOOKS
5

Query 6: Find the average price for books of type 'HOR'.

Solution-

```
select avg(book_price) as Average_Price from book where book_type = 'HOR';
```

Output-

AVERAGE_PRICE
11.05

Query 7: List the name of every publisher not located in New Year state.

Solution-

```
select publisher_name from publisher where publisher_city != 'New York';
```

Output-

PUBLISHER_NAME
Arkham House Publ.
Addison Wesley
Best and Furrow
Jeremy P. Tarcher
McPherson and Co

Query 8: List the code, title and price for each book with a price than is greater than Rs. 10 but less than Rs. 20.

Solution-

```
select book_code, book_title, book_price from book where book_price between '10.00' and '20.00';
```

Output-

BOOK_CODE	BOOK_TITLE	BOOK_PRICE
0378	Dunwich Horror and Others	19.75
1382	Marcel Duchamp	11.25
2226	Ghost from the Grant Banks	19.35
2281	Prints of the 20th Century	13.25
5163	Organ	16.95
8720	Castle	11.79
9611	Amerika	10.62
9700	Using Microsoft access 2000	19.97

Query 9: List the book code and title of every book whose type is FIC, MYS, or ART. Use the IN operator in your command.

Solution-

```
select book_code, book_title from book where book_type in ('FIC', 'MYS', 'ART');
```

Output-

BOOK_CODE	BOOK_TITLE
0189	Kane and Abel
0200	Stranger
079X	Smokescreen
0808	Knockdown
1382	Marcel Duchamp
138X	Death on the Nile
2281	Prints of the 20th Century
2766	Prodigal Daughter
3743	First Among Equals
6128	Evil Under the Sun
7559	Risk
8092	Magritte
8720	Castle
9611	Amerika

Query 10: Repeat 9 and list the books in alphabetical order by title.

Solution-

select book_code, book_title from book where book_type in ('FIC', 'MYS', 'ART') order by book_title;

Output-

BOOK_CODE	BOOK_TITLE
9611	Amerika
8720	Castle
138X	Death on the Nile
6128	Evil Under the Sun
3743	First Among Equals
0189	Kane and Abel
0808	Knockdown
8092	Magritte
1382	Marcel Duchamp
2281	Prints of the 20th Century
2766	Prodigal Daughter
7559	Risk
079X	Smokescreen
0200	Stranger

Query 11: Repeat 9 and list the books in descending order by book code.

Solution-

```
select book_code, book_title from book where book_type in ('FIC', 'MYS', 'ART') order by book_code desc;
```

Output-

BOOK_CODE	BOOK_TITLE
9611	Amerika
8720	Castle
8092	Magritte
7559	Risk
6128	Evil Under the Sun
3743	First Among Equals
2766	Prodigal Daughter
2281	Prints of the 20th Century
138X	Death on the Nile
1382	Marcel Duchamp
0808	Knockdown
079X	Smokescreen
0200	Stranger
0189	Kane and Abel

Query 12:Find out how many distinct book types available.

Solution-

```
select count(distinct book_type) as Count_of_book_types from book;
```

Output-

COUNT_OF_BOOK_TYPES
10

Query 13:Calculate the average price for each type of book.

Solution-

```
select distinct book_type, avg(book_price) from book group by book_type;
```

Output-

