American International University- Bangladesh

INTODUCTION TO DATABASE

PROJECT FALL REPORT

SECTION: -[G]

COURSE TEACHER: KAZI SADIA

PROJECT TITLE: LIBRARY MANAGEMENT SYSTEM

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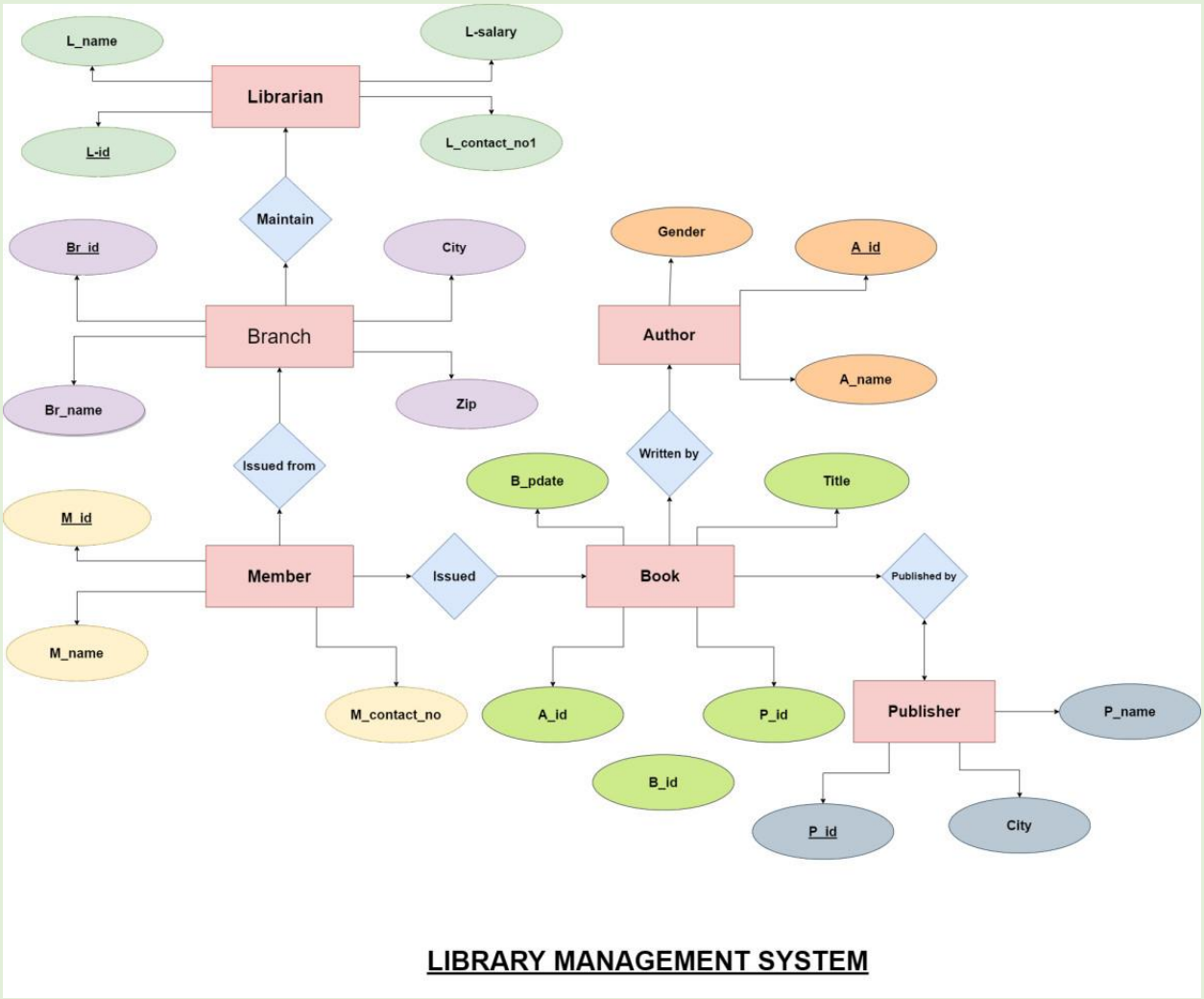
Introduction about the Project:

Library management system is a database management system for a Library. This project is developed by using SQL. In our project, first of all we have done a case study with ER Diagram. Then We applied Normalization Concept. After that We have Created Tables from the Normalization then we inserted data into the tables. After that We have Created Simple and Complex View with the concept of views. Finally, we created Sequence and showed the tables below.

CASE STUDY:

In the library, the management system library has librarians, books, that it issues to its members and is available at the premises of the library for the authorized users. For systematic arrangements, all library material has a unique id. Every library is maintained by a librarian. The librarians are identified by librarian id. The system stores the librarian's name, salary, and contacts no. The libraries have branches which are identified by branch id. The system stores the name of the branch, city of a branch, and zip code of the area. From every branch, the library members can issue books. The members can be identified by member id. The system stores member's names and their contact no as well. There are several books stored in the library. Every book is identified by its unique id. The management system also stores names of every book, publish dates of every book as well as book author id and publisher id. The books are published by various publishers. The system can also store the data of publishers. Each publisher is identified by publisher id. Publisher name, location of the publisher can also be stored in the system. The books are published by a publisher. Every Book is written by an author. The management system stores id, name, and gender of every author. Each author is identified by author id.

ER-DIAGRAM:


L_name
L-salary
Librarian
L-id
L_contact_no1
Maintain
Br_id
City
Gender
A_id
Branch
Author
A_name
Br_name
Zip
Written by
Issued from
B_pdate
Title
M_id
Member
Issued
Book
Published by
M_name
M_contact_no
A_id
P_id
Publisher
P_name
B_id
P_id
City
LIBRARY MANAGEMENT SYSTEM

Normalization:

Maintain

UNF:

Maintain (L_id, L_name, L_ contact no, L_Salary , Br_id, Br_name, City, Zip)

1NF:

L_ contact no is a multivalued attribute.

1. L_id, L.name, L_ contact no, L_Salary, Br_id, Br_name, City, Zip.

2NF:

1. L.id, L.name, L. contact no, L_Salary.
2. Br.id, Br.name, City, Zip.

3NF:

1. L_id, L_name, L_ contact no, L_Salary.
2. Br_id, Br_name.
3. City, Zip.

Table Creation:

1. L_id, L_name, L_contact no, L_Salary.
2. Br_id, Br_name, Ar_id.
3. City, Zip, Ar.id.

ISSUED FROM

UNF:

Issued From (Br_id, Br_name, City, Zip, M_id, M_name, M_contact no)

1NF:

M. contact no is a multivalued attribute.

1. Br_id, Br_name, City, Zip, M_id, M_name, M_contact no.

2NF:

1. Br_id, Br_name, City, Zip.
2. M_id, M_name, M_contact no.

3NF:

1. Br_id, Br_name.
2. City, Zip.
3. M_id, M_name, M_contact no.

Table Creation:

1. Br_id, Br.name, Ar_id.
2. City, Zip, Ar_id.
3. M_id, M_name, M_ contact no.

ISSUED:

UNF:

Issued (M_id, M_name, M_contact no, B_id, B.pdate, A_id, P_id, Title)

1NF:

M. contact no is a multivalued attribute.

1. M_id, M_name, M_ contact no, B_id, B_pdate, A_id, P_id, Title.

2NF:

1. M_id, M_name, M_contact no.
2. B_id, B_pdate, A_id, P_id, Title.

3NF:

There is no transitive dependency.

1. M_id, M_name,M_contact no.
2. B_id, B_pdate, A_id, P_id, Title.

Table Creation:

1 M_id, M_name, M_contact no.

2. B_id, B_pdate, M_id, A_id, P_id, Title.

PUBLISHED BY:

UNF:

Published by (B_id, B_pdate, A_id, P_id, Title, P_name, P_ city)

1NF:

1. B_id, B.pdate, A_id, P_id, Title, P_name, P_city.

2NF:

1. B_id, B_pdate, A_id, P_id, Title.
2. P_id, P_name, P_city.

3NF:

There is no transitive dependency.

1. B_id, B_pdate, A_id, P_id, Title.
2. P_id, P_name, P_city.

Table Creation:

1. B_id, B_pdate, A_id, P_id, Title.
2. P_id, P_name, P_city, B_id.

WRITTEN BY:

UNF:

Written By (B_id, B_pdate, P_id, A_id, Title, A_name, Gender)

1NF:

1. B_id, B_pdate, P_id, A_id, Title, A_name, Gender.

2NF:

1. B_id, B_pdate, A_id, P_id, Title.
2. A_id, A_name, Gender.

3NF:

There is no transitive dependency.

1. B_id,B_pdate, A_id, P_id, Title.
2. A_id, A_name, Gender.

Table Creation:

1. B_id, B_pdate, A_id, P_id, Title.
2. A_id, A_name, Gender, B_id.

Temporary Tables

1. L_id, L_name, L_contact no.
2. Br_id, Br_name, ar_id.
3. City, Zip, Ar_id.
4. Br_id, Br_name, Ar_id.
5. City, Zip, Ar_id.
6. M_id, M.name, M. contact no.
7. M_id, M.name, M. contact no.
8. B_id, B_pdate, A_id, P_id, Title, M_id.
9. B_id, B_pdate, A_id, P_id, Title.
10. P_id, P_name, P_ city, B_id.
11. B_id, B_pdate, A_id, P_id, Title.
12. A_id, A_name, Gender, B_id.

Final Tables

1.Liberian (L_id, L_name, L_ contact no1, L_contact no2,L_sal).

2.Branch (Br_id, Br_name, ar_id).

3.Area (City, Zip, Ar_id).

4.Member (M_id, M_name, M_contact no1, M_ contact no2).

5.Book (B_id, B_pdate, A_id, P_id, Title, M_id).

6.Publisher (P_id, P_name, P_ city, B_id).

7. Author (A_id, A_name, Gender, B_id).

Table Creation

Liberian table:

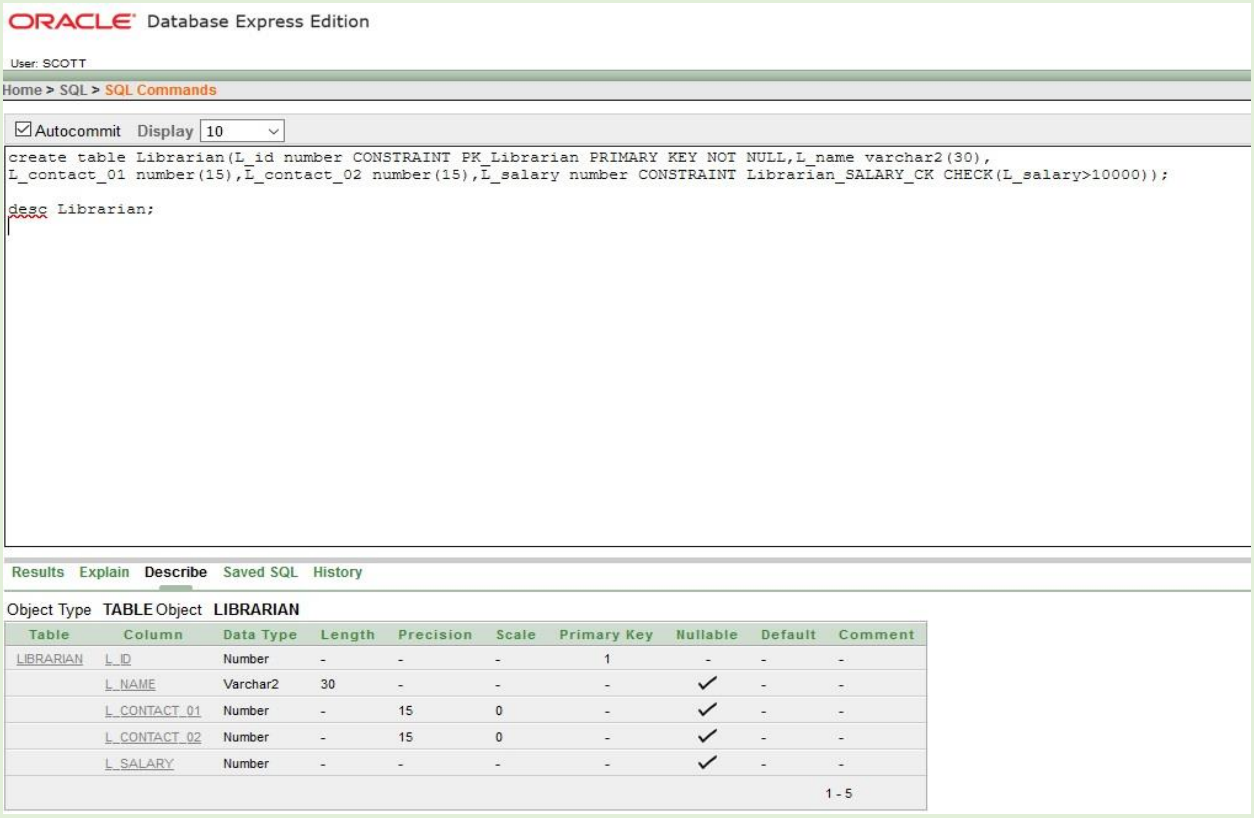


Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
LIBRARIAN	L_ID	Number	-	-	-	1	-	-	-
	L_NAME	Varchar2	30	-	-	-	✓	-	-
	L_CONTACT_01	Number	-	15	0	-	✓	-	-
	L_CONTACT_02	Number	-	15	0	-	✓	-	-
	L_SALARY	Number	-	-	-	-	✓	-	-

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Branch table:

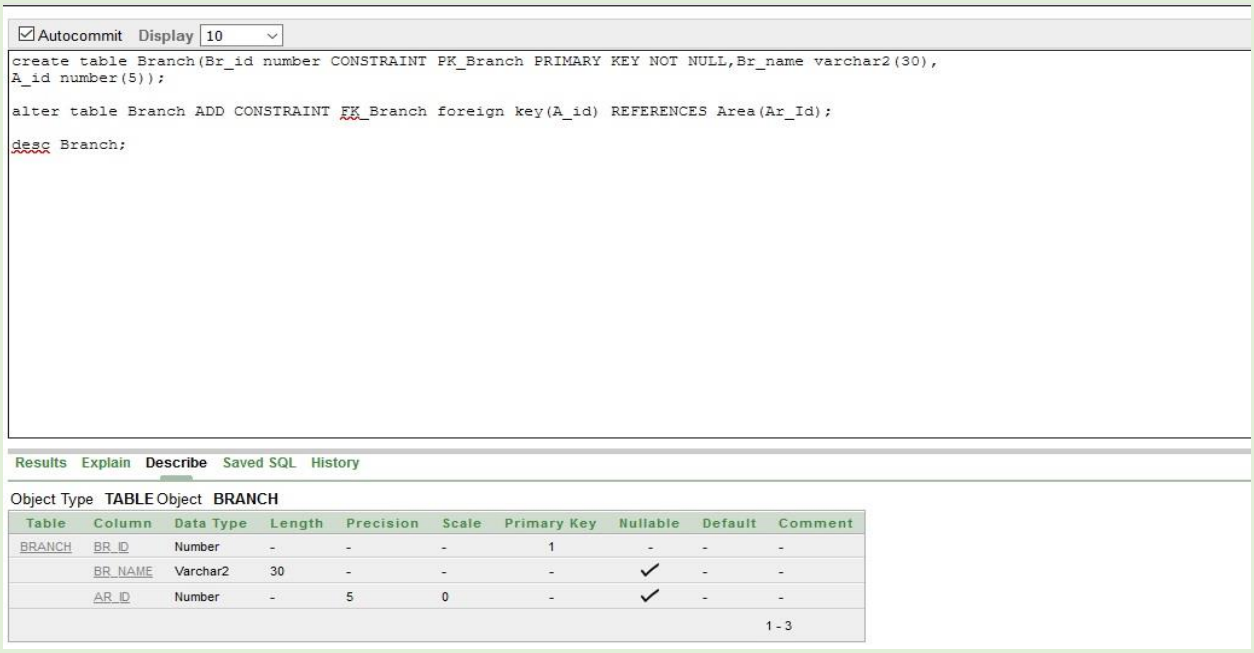
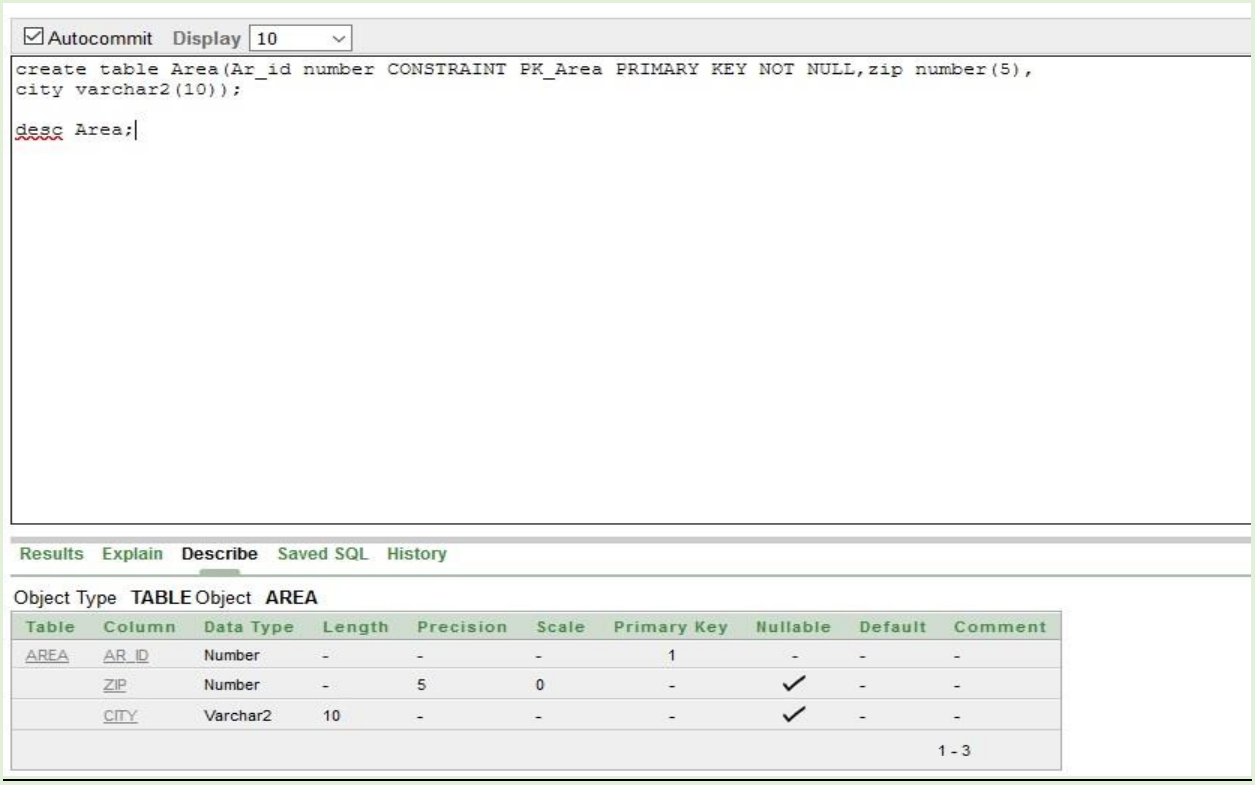


Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BRANCH	BR_ID	Number	-	-	-	1	-	-	-
	BR_NAME	Varchar2	30	-	-	-	✓	-	-
	AR_ID	Number	-	5	0	-	✓	-	-

1 - 3

Area table:



Autocommit Display 10

```
create table Area(Ar_id number CONSTRAINT PK_Area PRIMARY KEY NOT NULL,zip number(5),
city varchar2(10));

desc Area;
```

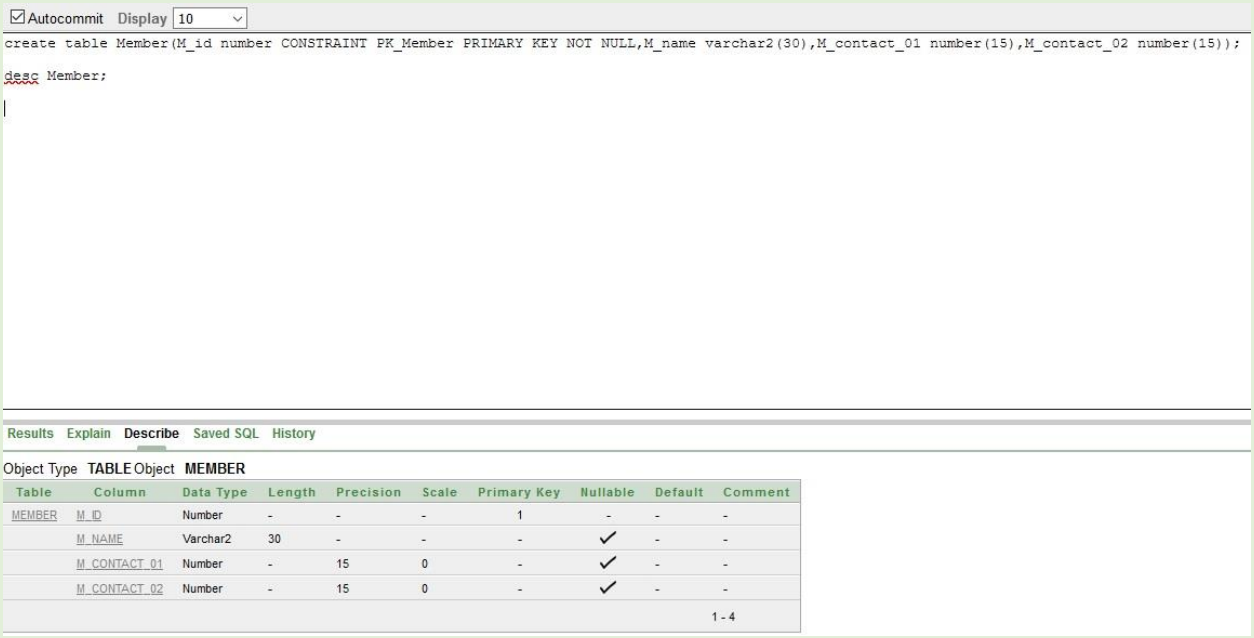
Results Explain Describe Saved SQL History

Object Type **TABLE** Object **AREA**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
AREA	AR_ID	Number	-	-	-	1	-	-	-
	ZIP	Number	-	5	0	-	✓	-	-
	CITY	Varchar2	10	-	-	-	✓	-	-

1 - 3

Member table:



Autocommit Display 10

```
create table Member(M_id number CONSTRAINT PK_Member PRIMARY KEY NOT NULL,M_name varchar2(30),M_contact_01 number(15),M_contact_02 number(15));

desc Member;
```

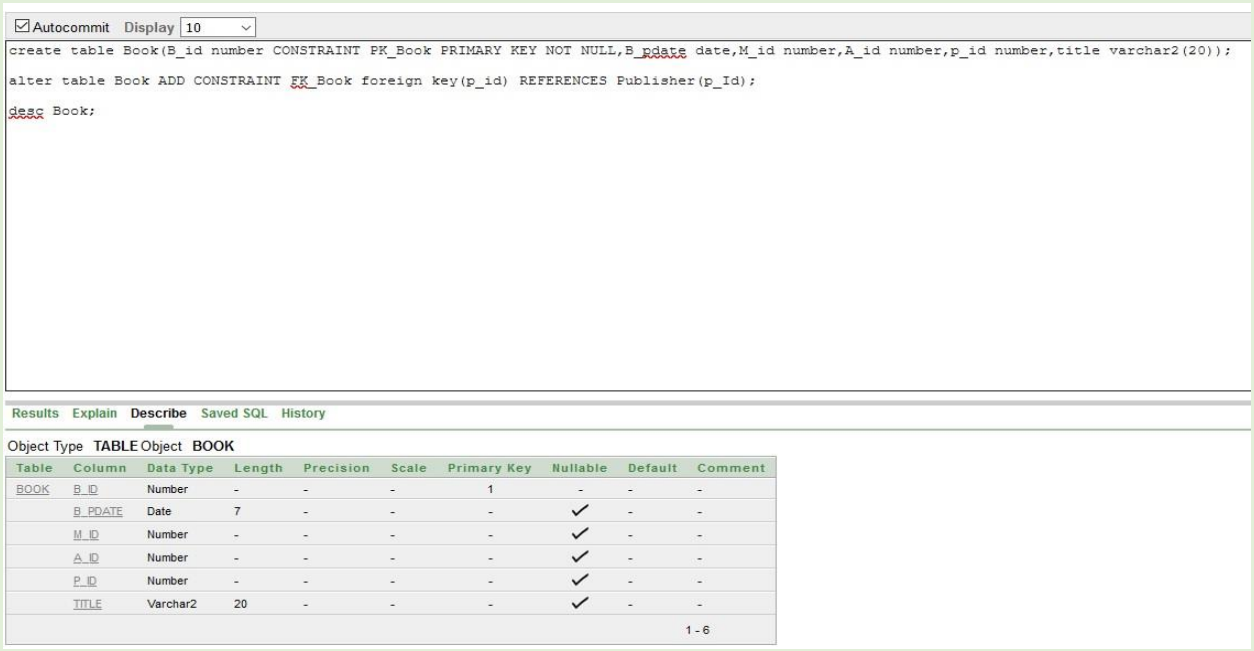
Results Explain Describe Saved SQL History

Object Type **TABLE** Object **MEMBER**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
MEMBER	M_ID	Number	-	-	-	1	-	-	-
	M_NAME	Varchar2	30	-	-	-	✓	-	-
	M_CONTACT_01	Number	-	15	0	-	✓	-	-
	M_CONTACT_02	Number	-	15	0	-	✓	-	-

1 - 4

Book table:



Autocommit Display 10

```
create table Book(B_id number CONSTRAINT PK_Book PRIMARY KEY NOT NULL,B_pdate date,M_id number,A_id number,p_id number,title varchar2(20));

alter table Book ADD CONSTRAINT FK_Book foreign key(p_id) REFERENCES Publisher(p_Id);

desc Book;
```

Results Explain Describe Saved SQL History

Object Type TABLE Object BOOK

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
BOOK	B_ID	Number	-	-	-	1	-	-	-
	B_PDATE	Date	7	-	-	-	✓	-	-
	M_ID	Number	-	-	-	-	✓	-	-
	A_ID	Number	-	-	-	-	✓	-	-
	P_ID	Number	-	-	-	-	✓	-	-
	TITLE	Varchar2	20	-	-	-	✓	-	-

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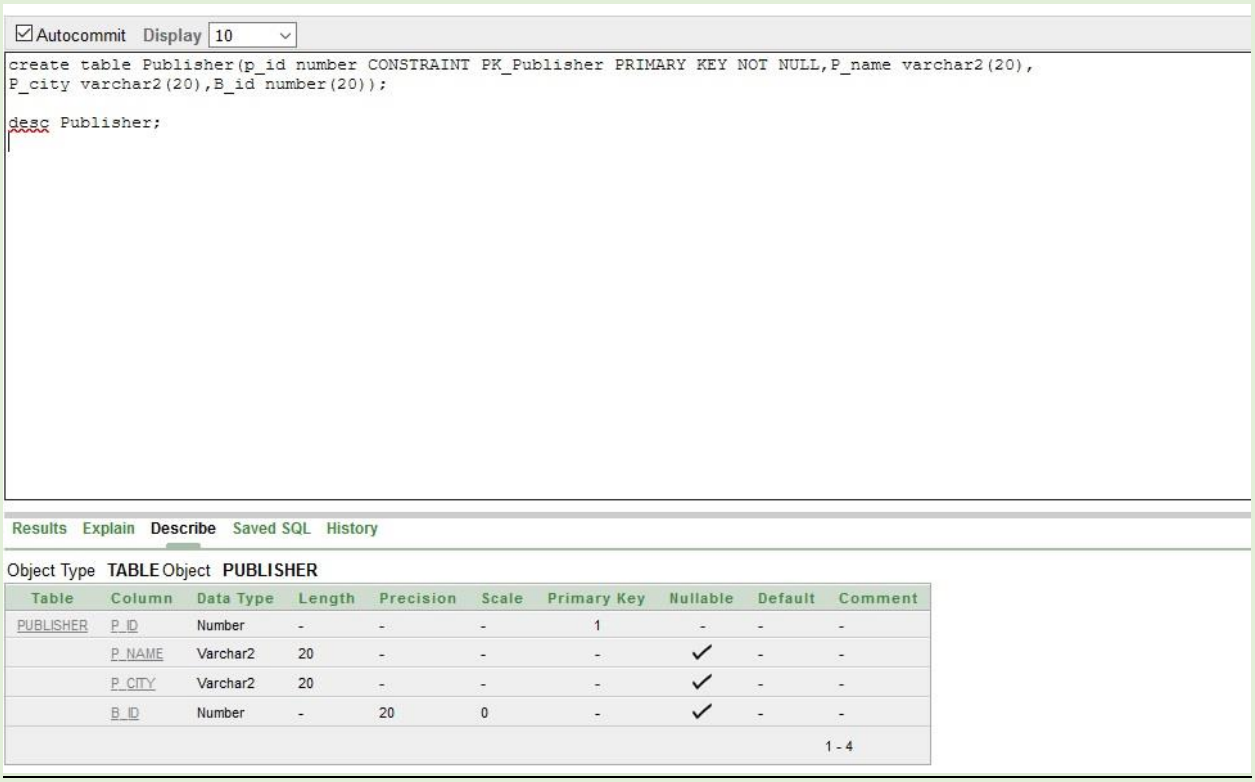
Publisher table:



Autocommit Display 10

```
create table Publisher(p_id number CONSTRAINT PK_Publisher PRIMARY KEY NOT NULL,P_name varchar2(20),
P_city varchar2(20),B_id number(20));

desc Publisher;
```

Results Explain Describe Saved SQL History

Object Type TABLE Object PUBLISHER

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
PUBLISHER	P_ID	Number	-	-	-	1	-	-	-
	P_NAME	Varchar2	20	-	-	-	✓	-	-
	P_CITY	Varchar2	20	-	-	-	✓	-	-
	B_ID	Number	-	20	0	-	✓	-	-

1 - 4

Author table:

```
Autocommit  Display 10

create table Author(A_id number CONSTRAINT PK_Author PRIMARY KEY NOT NULL,A_name varchar2(20),
gender varchar2(20),B_id number(20));

alter table Author ADD CONSTRAINT FK_Author foreign key(B_id) REFERENCES Book(B_Id);

desc Author;
```

Results Explain Describe Saved SQL History

Object Type **TABLE** Object **AUTHOR**

Table	Column	Data Type	Length	Precision	Scale	Primary Key	Nullable	Default	Comment
AUTHOR	A_ID	Number	-	-	-	1	-	-	-
	A_NAME	Varchar2	20	-	-	-	✓	-	-
	GENDER	Varchar2	20	-	-	-	✓	-	-
	B_ID	Number	-	20	0	-	✓	-	-

1 - 4

Data Insertion

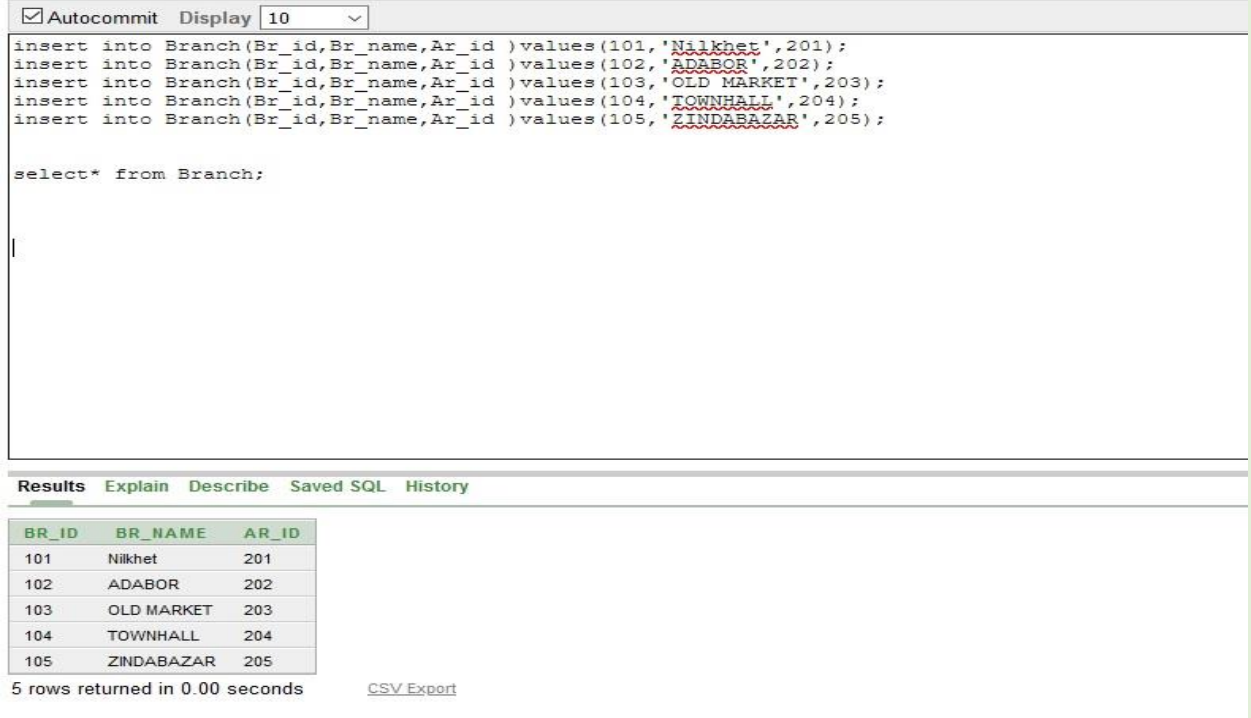
Liberian table:

```
Autocommit  Display 10

insert into Librarian(L_id,L_name,L_contact_01,L_contact_02,L_salary)values(111,'FAHAD',01711178911,01811178911,15000);
insert into Librarian(L_id,L_name,L_contact_01,L_contact_02,L_salary)values(112,'SHAHRIAR',01726226522,01826226522,13000);
insert into Librarian(L_id,L_name,L_contact_01,L_contact_02,L_salary)values(113,'FAHIM',01735633323,01835633323,25000);
insert into Librarian(L_id,L_name,L_contact_01,L_contact_02,L_salary)values(114,'SAZZAD',01740445424,01840445424,20000);
insert into Librarian(L_id,L_name,L_contact_01,L_contact_02,L_salary)values(115,'EVAN',01744574444,01844574444,18000);


select* from Librarian;
```

Results Explain Describe Saved SQL History

L_ID	L_NAME	L_CONTACT_01	L_CONTACT_02	L_SALARY
111	FAHAD	1711178911	1811178911	15000
112	SHAHRIAR	1726226522	1826226522	13000
113	FAHIM	1735633323	1835633323	25000
114	SAZZAD	1740445424	1840445424	20000
115	EVAN	1744574444	1844574444	18000

Branch table:



```
insert into Branch(Br_id,Br_name,Ar_id )values(101,'Nilkhet',201);
insert into Branch(Br_id,Br_name,Ar_id )values(102,'ADABOR',202);
insert into Branch(Br_id,Br_name,Ar_id )values(103,'OLD MARKET',203);
insert into Branch(Br_id,Br_name,Ar_id )values(104,'TOWNHALL',204);
insert into Branch(Br_id,Br_name,Ar_id )values(105,'ZINDABAZAR',205);

select* from Branch;
```

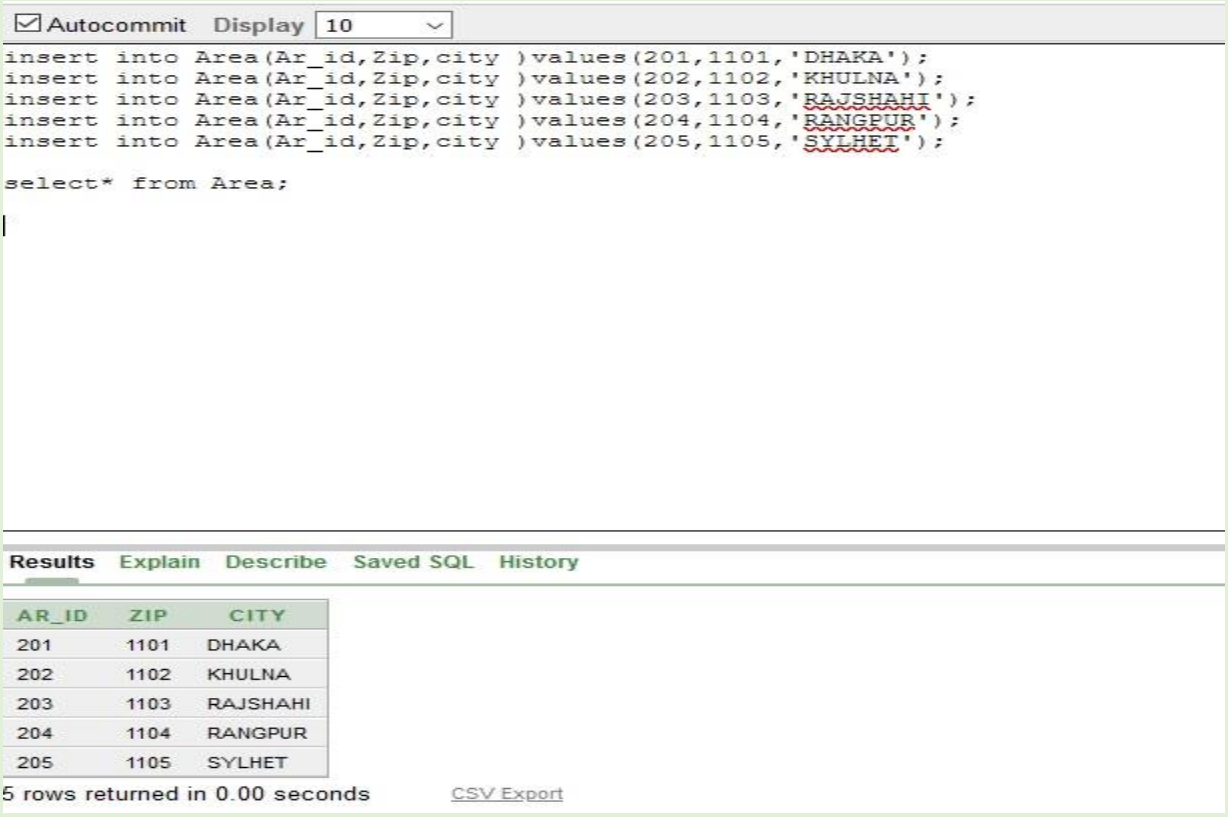
Autocommit Display 10

Results Explain Describe Saved SQL History

BR_ID	BR_NAME	AR_ID
101	Nilkhet	201
102	ADABOR	202
103	OLD MARKET	203
104	TOWNHALL	204
105	ZINDABAZAR	205

5 rows returned in 0.00 seconds CSV Export

Area table:



```
insert into Area(Ar_id,Zip,city )values(201,1101,'DHAKA');
insert into Area(Ar_id,Zip,city )values(202,1102,'KHULNA');
insert into Area(Ar_id,Zip,city )values(203,1103,'RAJSHAHI');
insert into Area(Ar_id,Zip,city )values(204,1104,'RANGPUR');
insert into Area(Ar_id,Zip,city )values(205,1105,'SYLHET');

select* from Area;
```

Autocommit Display 10

Results Explain Describe Saved SQL History

AR_ID	ZIP	CITY
201	1101	DHAKA
202	1102	KHULNA
203	1103	RAJSHAHI
204	1104	RANGPUR
205	1105	SYLHET

5 rows returned in 0.00 seconds CSV Export

Member table:

```
insert into Member(M_id,M_name,M_contact_01,M_contact_02)values(301,'MUNIM',016346845862,019346845862);
insert into Member(M_id,M_name,M_contact_01,M_contact_02)values(302,'AKASH',01656383473,01956383473);
insert into Member(M_id,M_name,M_contact_01,M_contact_02)values(303,'HIMEL',016345768965,019345768965);
insert into Member(M_id,M_name,M_contact_01,M_contact_02)values(304,'RAFI',016123654890,019123654890);
insert into Member(M_id,M_name,M_contact_01,M_contact_02)values(305,'NOYON',016435678099,019435678099);

select* from Member;
```

Results Explain Describe Saved SQL History

M_ID	M_NAME	M_CONTACT_01	M_CONTACT_02
301	MUNIM	16346845862	19346845862
302	AKASH	1656383473	1956383473
303	HIMEL	16345768965	19345768965
304	RAFI	16123654890	19123654890
305	NOYON	16435678099	19435678099

Book table:

Autocommit Display 10

```
insert into Book (B_id,B_pdate,M_id,A_id,p_id,title)values(401,'11-MAY-19',301,601,501,'FANTASY');
insert into Book (B_id,B_pdate,M_id,A_id,p_id,title)values(402,'11-JAN-19',302,602,502,'SCI-FI');
insert into Book (B_id,B_pdate,M_id,A_id,p_id,title)values(403,'21-JUL-19',303,603,503,'CRIME');
insert into Book (B_id,B_pdate,M_id,A_id,p_id,title)values(404,'11-AUG-19',304,604,504,'JOKES');
insert into Book (B_id,B_pdate,M_id,A_id,p_id,title)values(405,'11-SEP-19',305,605,505,'THRILLER');


select* from BOOK;
```

Results Explain Describe Saved SQL History

B_ID	B_PDATE	M_ID	A_ID	P_ID	TITLE
401	11-MAY-19	301	601	501	FANTASY
402	11-JAN-19	302	602	502	SCI-FI
403	21-JUL-19	303	603	503	CRIME
404	11-AUG-19	304	604	504	JOKES
405	11-SEP-19	305	605	505	THRILLER

Publisher table:

Autocommit Display 10

```
insert into Publisher (p_id,P_name,P_city,B_id)values(501,'NIDROSHON','DHAKA',402);
insert into Publisher (p_id,P_name,P_city,B_id)values(502,'PROTIK','KHULNA',402);
insert into Publisher (p_id,P_name,P_city,B_id)values(503,'ANONDO','CHITTAGONG',403);
insert into Publisher (p_id,P_name,P_city,B_id)values(504,'GYANKOSH','RAJSHAHI',404);
insert into Publisher (p_id,P_name,P_city,B_id)values(505,'NIDORSHON','RANGPUR',405);

select* from Publisher;
```

Results Explain Describe Saved SQL History

P_ID	P_NAME	P_CITY	B_ID
501	NIDORSHON	DHAKA	401
502	PROTIK	KHULNA	402
503	ANONDO	CHITTAGONG	403
504	GYANKOSH	RAJSHAHI	404
505	NIDORSHON	RANGPUR	405

Author table:

```
insert into Author (A_id,A_name,gender,B_id)values(601,'HRIDOY','MALE',401);
insert into Author (A_id,A_name,gender,B_id)values(602,'AFROZA','FEMALE',402);
insert into Author (A_id,A_name,gender,B_id)values(603,'SAIFUL','MALE',403);
insert into Author (A_id,A_name,gender,B_id)values(604,'MIRAZ','MALE',404);
insert into Author (A_id,A_name,gender,B_id)values(605,'AFRIN','FEMALE',405);


select* from Author;
```

Results Explain Describe Saved SQL History

A_ID	A_NAME	GENDER	B_ID
601	HRIDOY	MALE	401
602	AFROZA	FEMALE	402
603	SAIFUL	MALE	403
604	MIRAZ	MALE	404
605	AFRIN	FEMALE	405

ONE SIMPLE VIEW

Autocommit Display 10

```
CREATE VIEW publisher100 AS SELECT p_id, P_name,P_city FROM Publisher WHERE P_name='NIDORSHON';

select* from publisher100;
```

Results Explain Describe Saved SQL History

P_ID	P_NAME	P_CITY
501	NIDORSHON	DHAKA
505	NIDORSHON	RANGPUR

2 rows returned in 0.00 seconds CSV Export

ONE COMPLEX VIEW

Autocommit Display 10

```
create view librarian100 as select L.L_id L_ID,MIN(L.L_salary) MIN_SAL,MAX(L.L_salary) MAX_SAL from Librarian L group by L.L_id;

select* from librarian100;
```

Results Explain Describe Saved SQL History

L_ID	MIN_SAL	MAX_SAL
113	25000	25000
112	13000	13000
114	20000	20000
115	18000	18000
111	15000	15000

SEQUENCE

Autocommit Display 10

```
CREATE SEQUENCE library_librarian INCREMENT BY 1 START WITH 1 MAXVALUE 100 NOCACHE;

CREATE SEQUENCE Publisher10 INCREMENT BY 1 START WITH 1 MAXVALUE 200 NOCACHE;


select sequence_name, min_value, max_value,increment_by, last_number
FROM user_sequences;
```

Results Explain Describe Saved SQL History

SEQUENCE_NAME	MIN_VALUE	MAX_VALUE	INCREMENT_BY	LAST_NUMBER
LIBRARY_LIBRARIAN	1	100	1	1
PUBLISHER10	1	200	1	1

2 rows returned in 0.00 seconds CSV Export