QASSIM UNIVIRSITY LIBRARY

QASSIM UNIVERSITY
almulaida

DATABASE PROJECT

Group names

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Requirement

1.1 Data Requirements for Qassim university database.

Description: Qassim University has been interested in the development of the university library so as to make it easier for students and faculty members to easily search and obtain information correctly

Member:
There are a number of Member work at in the library. The data stored on each member is unique ID, Name , Type member , Date joined , Date expiry , contract number and address

Book:

There are many different books and classifications that the student or faculty can search for the book by type_Book , Name_Book , Nu_Book , Tittle , Editionnumber and Author name

Room:

there are many different type of room such as room's type (lab, reading room, or working room).and Room number and Status available or not

Privilege:

Each member has Privilege such as type_m (student, doctor , teacher , staff) , ID loan period and nu_m.

Loan:

Each member has a loan period includes (loan period , nu_record , max_b , Data joined , name_m , Edition number)

Circulation Services:

The circulation service provides facilities to issue and to return library resources include(name_m, ID, name_book, Date joined , availbal or not)

Catalog Services:

Facilities to search the Catalog on various criteria including keywords, title and authors

Short loan service:

A short metaphor in the same time that is associated with a particular time include ID , type loan ,time joined, time expiry, data joined and data expiry.

1.2 Transaction requirements:

Data entry:

- Enter the details of a new member such as Postgraduate or Undergraduate student or Staff
- Enter the details of new Book such as Edition Number 7or 6 date of Edition Number
- Enter the details of new Room such as Meetings room or number
- Identify Privilege for each member
- Enter the details of Loan

Data update/deletion

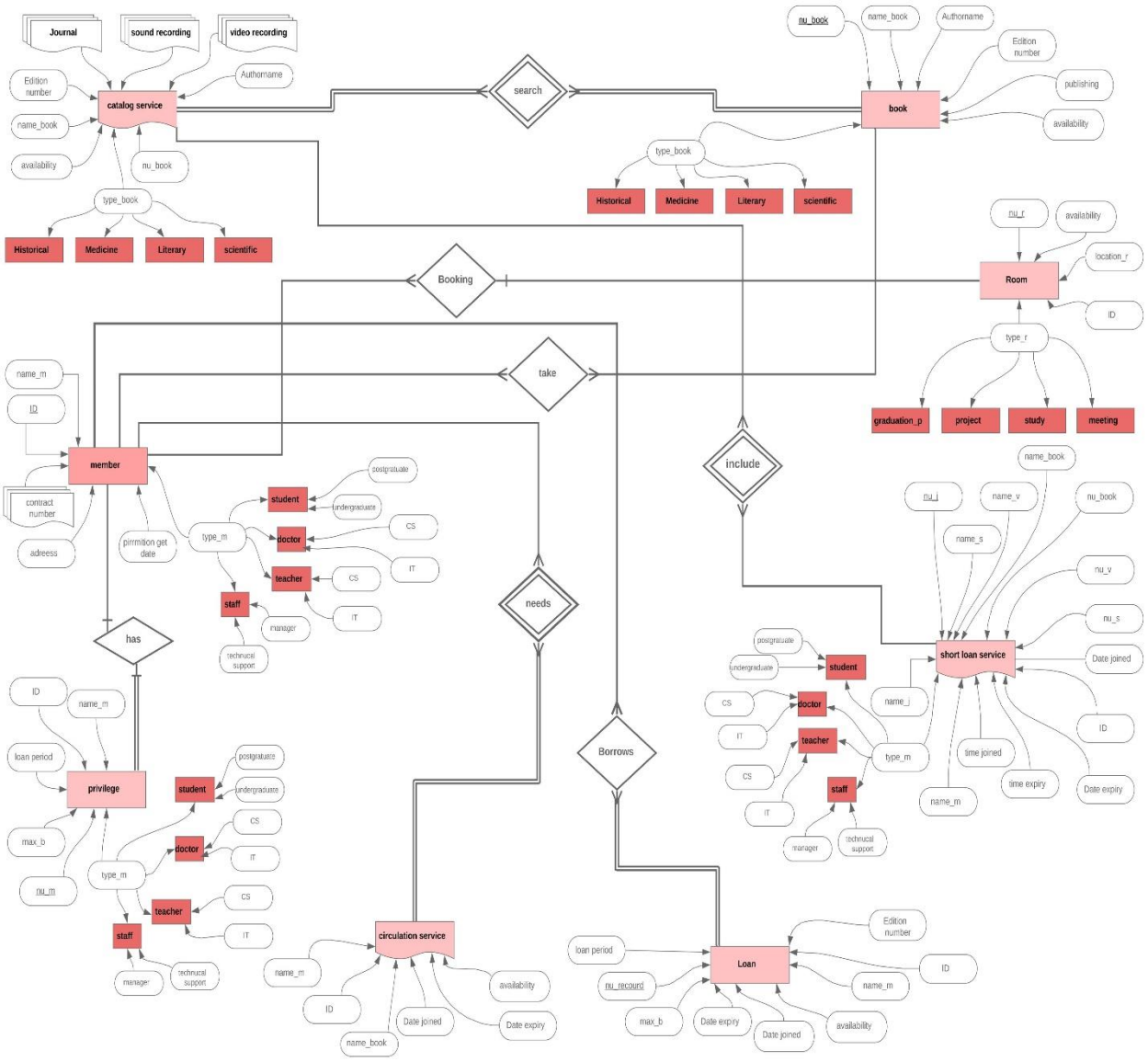
- Update/delete the details of a member such as member type .
- Update/delete the details of a Book for specific classifications .
- Update/delete the details of a Catalog add new Sound or video recording Lectures for some international universities (Type of lecture and name of the lecturer)or Journal.
- Update/delete the details of a Privilege member.
- Update/delete the details of a short loan service such as time expiry.
- Update/delete the details of a Room such as Room number or type

Data queries:

Examples of some queries that can be views by the library users:

- List the details of book in Each classification
- List all member in the library of all type member
- List all Status of Room available or not
- Determine the total number of loans for each member
- List the Privilege for each member
- List the Circulation Services in library
- List the Catalog services book type , book number , sound and video.

2.1Documented EER



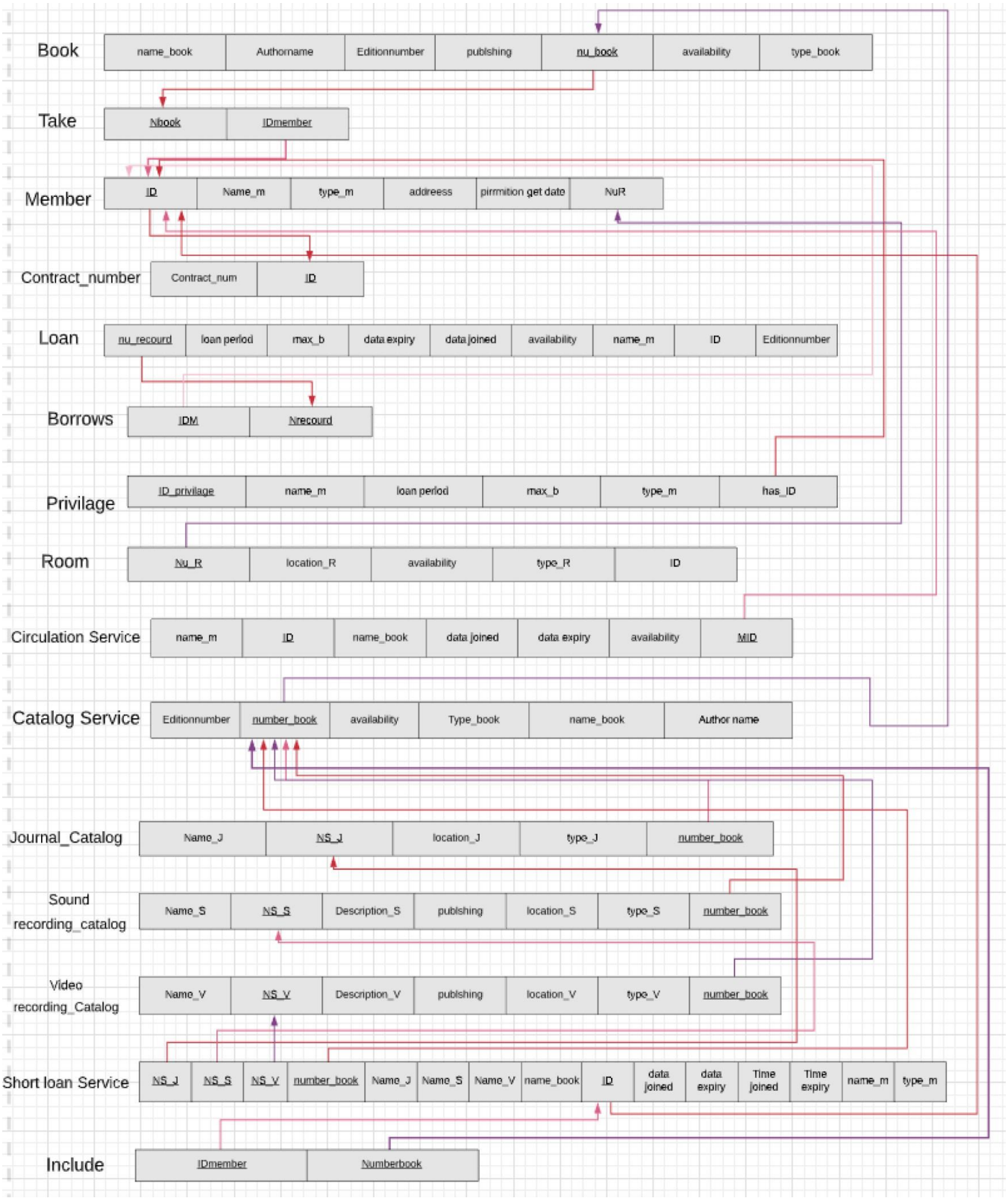
EER-to-Relational Mapping

To convert an Entity-Relationship design to a relational database schema, a procedure which include the following steps may be followed.

Process Steps

1. Map Regular Entity types
2. Map weak Entity types
3. Map Binary 1:1 Relation types
4. Map Binary 1:N Relationship types
5. Map Binary M:N Relationship types
6. Map Multivalued attributes
7. Map N-ary Relationship types

3.1Relational Mapping



3.2Normalization

Process of decomposing bad relation by breaking up their attribute into smaller relation Functional

There are number of NORMAL FORM like steps you should to follow to have a good database:

1. First normalform
2. Second normalform
3. Third normalform
4. Bocyce-Codd normalform
5. Fourth normalform
6. Fifth normalform

first normal form 1st NF Disallow

1.composite attribute

2.Multi valued attribute

3. nested relation

second normal form 2nd NF

Already first normal form and disallow partial dependency .

Third normal form 3rd NF

Already second normal form and disallow transitive dependency.

Normlization

Book Table

Name book	Author name	Eiditi namber	publishing	Nu_book	availability	type_book

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-key depend on non key

Take Table

Nu_book	ID_member

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-key depend on non key

Member Table

ID	Name_m	type_m	addreess	pirrmition get date	NuR

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-key depend on non key

Contract_number

Contract_num	ID

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-key depend on non key

Loan Table

nu_recourd	loan period	max_b	data expiry	data joined	availability	name_m	ID	Edition_number

It is already in 1st NF and 2nd NF Since all attribute have unique name and it isatomic And all attribute depends on primary key but not in 3rd NFthere are non-kaydepend on non- key to solve that :

Loan

nu_recourd	ID	Name_m

Loan_data

ID	Loan period	max_b	dataexpiry	data joined	availability	Editionnumber

Brorrows Table

IDM	Nrecourd

It is already in1st NF and 2nd NF and3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-keydepend on non key

Privilage Table

ID_privilage	name_m	loan period	max_b	type_m	has_ID

It is already in 1st NF and 2nd NF Since all attribute have unique name and it isatomic And all attribute depends on primary key but not in 3rd NFthere are non-kaydepend on non- key to solve that :

Privilage

ID_privilage	has_ID	name_m

Privilage_data

has_ID	loan period	max_b	type_m

Room Table

Nu_R	location_R	availability	type_R	ID

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Circulation ServiceTable

name_m	ID	name_book	data joined	data expiry	availability	MID

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Cataloge Service Table

Editionnumber	number_book	availability	Type_book	name_book	Author name

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Jaurnal_Cataloge table

Name_J	NS_J	location_J	type_J	number_book

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Sound_Cataloge table

Name_S	NS_S	Description_S	publshng	location_S	type_S	number_book

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Video_Cataloge table

Name_V	NS_V	Description_V	publshing	location_V	type_V	number_book

It is already in 1st NF and 2nd NF and 3rd NF Since all attribute have unique name and it is atomic And all attribute depends on primary key And there are not non-key depend on non key

Short loan Service

NS_J	NS_S	NS_ V	number_book	Name_J	Nam e_S	Name _V	name_b ook	ID	dat a join d	data expi ry	Tim e join ed	Time expir y	nam e_m	type_m

It is already in 1st NF and 2nd NF Since all attribute have unique name and it isatomic And all attribute depends on primary key but not in 3rd NFthere are non-kaydepend on non- key to solve that :

Short Loan

ID	Ns_j	Nu_book	Ns_v	Ns_s

Short Loan_data

ID	data joined	data expiry	Time joined	Time expiry	name_m	type_m	Name_J	Name_S	Name V	name_book

Include Table

IDmember	Numberbook

It is already in1st NF and 2nd NF and3rd NF Since all attribute have unique name andit is atomic And all attribute depends on primary key And there are not non-keydepend on non key

4.1Script

Create

```
CREATE TABLE Book (
book_no int primary key,
book_name VARCHAR(30),
Author_name VARCHAR (30),
Edition_number DECIMAL (2,2),
Avalability  CHAR (1),
Publisher CHAR(30),
book_type CHAR(30) NOT NULL);

CREATE TABLE Take (
Member_ID int  REFERENCES Member(ID),
Book_number int  REFERENCES Book(book_no));

CREATE TABLE Member (
ID int primary key,
member_name CHAR(30) NOT NULL,
Address VARCHAR(15),
Member_type CHAR(10) NOT NULL,
Permission_data VARCHAR (35));


CREATE TABLE Contract_member(
Member_ID int foreign key REFERENCES Member(ID),
Contract_number int);
```

```
CREATE TABLE Loan(
Record_number int primary key,
Member_ID int REFERENCES Member(ID),
Member_name CHAR(30));

CREATE TABLE Loan_data
(max_books int,
Member_ID int REFERENCES Member(ID),
loan_period VARCHAR(10),
Expiry_Date DATE,
Join_Date DATE,
Avalibility CHAR(1),Edition_number int);

CREATE TABLE Borrows(
Member_ID int REFERENCES Member(ID),
Record_no int REFERENCES Loan(Record_number));

CREATE TABLE Privilage(
Privilage_ID int primary key,
has_ID INT REFERENCES Member(ID),
member_name CHAR(30));

CREATE TABLE Privilage_data(
has_ID int REFERENCES Member(ID),
max_books INT,
loan_period VARCHAR(10),
Member_type CHAR(10) NOT NULL);
```

```
CREATE TABLE Room(
Room_number INT PRIMARY KEY,
Member_ID int REFERENCES Member(ID),
Room_location VARCHAR(20),
Room_type VARCHAR(20),
Avaliability CHAR(1));

CREATE TABLE Catalog_Service(
Book_number int REFERENCES Book(book_no),
book_type CHAR(30) NOT NULL,
book_name VARCHAR(30) NOT NULL,
Edition_number DECIMAL (2,2),
Author_name VARCHAR (30),
Avalability  CHAR (1));

CREATE TABLE Circulation_Service(
Member_ID int REFERENCES Member(ID),
member_name CHAR(30) NOT NULL,
book_name VARCHAR(30),
Expiry_Date DATE,
Join_Date DATE,
Avalibility CHAR(1));
```

```
CREATE TABLE Shortloan_nService(
Journal_name VARCHAR (25),
book_name VARCHAR(30) NOT NULL,
Sound_name VARCHAR(25),
Viedo_name VARCHAR(30),
Member_name CHAR(30) NOT NULL,
Member_ID int REFERENCES Member(ID),
Member_type CHAR(10) NOT NULL);


CREATE TABLE Shortloan_noService(
Expiry_Date DATE,
Join_Date DATE,
Time_Expiry TIMESTAMP,
Time_Joined TIMESTAMP,
v_num int REFERENCES VedioRecording(Viedo_num),
s_num int REFERENCES SoundRecording(Sound_num),
j_num int REFERENCES Journal(Journal_num),
Book_number int  REFERENCES Book(book_no),
Member_ID int REFERENCES Member(ID)
);

Create TABLE Include(
Book_number int  REFERENCES Book(book_no),
Member_ID int REFERENCES Member(ID)
);
```

```
CREATE TABLE Journal(
Journal_num int primary Key,
Journal_name VARCHAR (25),
Journal_location VARCHAR(40),
Journal_type CHAR(30));

CREATE TABLE SoundRecording(
Sound_num int primary key,
Sound_name VARCHAR(25),
SoundDescribtion CHAR (40),
publisher CHAR (20),
S_location VARCHAR(40),
Sound_Type CHAR(30)NOT NULL);

CREATE TABLE VedioRecording(
Viedo_num int primary key,
Viedo_name VARCHAR(30),
ViedoDescribtion VARCHAR(40),
Publisher CHAR(30),
V_location VARCHAR(40),
Viedo_type CHAR(30)NOT NULL);
```

4.2View

```
CREATE VIEW vBookStatus as(
 SELECT book_name , Author_name ,Avalability
 FROM Book
 WHERE Avalability ='Y');
```

4.3User & Role

```
create user c##User1
IDENTIFIED by U123123
DEFAULT TABLESPACE users
TEMPORARY TABLESPACE temp
QUOTA 500K on users;

grant connect to c##User1;

create role BookRole;

GRANT SELECT ON Book TO BookRole;
```

4.4Insert

INSERT INTO Book VALUES(102,'Gentle Propositions','J Economos',3,'Y','Casemate','Historical');

INSERT INTO Book VALUES(103,'Prairie Fire','Kent White ',1,'N','Booklocker','Historical');

INSERT INTO Book VALUES(104,'Walking on Water ','Raymond Hunter Pyle',1,'Y','Booklocker','Historical');

INSERT INTO Book VALUES(2004,'Nursing2020 Drug Handbook','Lippincott',14,'Y','LWW','Medical');

INSERT INTO Book VALUES(2009,'Chemical Dependency Counseling: A Practical Guide','Robert R. Perkinson',4,'Y','SAGE Publications','Medical');

INSERT INTO Book VALUES(2006,'Pharmacology for Chemists','Joseph G. Cannon ',2,'N','American Chemical Society','Medical');

INSERT INTO Book VALUES(3006,'CALCULUS 2010 STUDENT EDITION ','PRENTICE HALL ',3,'N','PRENTICE HALL','scientific');

INSERT INTO Book VALUES(3009,'The Order of Time ','Carlo Rovelli',1,'Y',' Riverhead Books','scientific');

INSERT INTO Book VALUES(4009,'Dune','Frank Herbert',25,'Y',' ACE','Literary');

INSERT INTO Book VALUES(4013,'Fhrenheit 451','Ray Bradbury',12,'N',' Simon & Schuster','Literary');

INSERT INTO member VALUES(23099812,'Khaled M',NULL,'Student',NULL);

INSERT INTO member VALUES(21109882,'Mohammad A',NULL,'Staff',NULL);

INSERT INTO member VALUES(37891129,'Ali K',NULL,'Doctor',NULL);

INSERT INTO member VALUES(34009123,'Nasser S',NULL,'Staff',NULL);

INSERT INTO TAKE VALUES(34009123,103);

INSERT INTO TAKE VALUES(23099812,3006);

INSERT INTO TAKE VALUES(37891129,4013);

```
INSERT INTO catalog_service VALUES(102,'Historical','Gentle
Propositions',NULL,NULL,NULL);

INSERT INTO catalog_service VALUES(2004,'Medical','Nursing2020 Drug
Handbook',NULL,NULL,NULL);

INSERT INTO catalog_service VALUES(4009,'Literary','Dune',NULL,NULL,NULL);

INSERT INTO catalog_service VALUES(4013,'Literary','Fhrenheit 451',NULL,NULL,NULL);



INSERT INTO shortloan_noservice
VALUES(NULL,NULL,NULL,NULL,NULL,NULL,NULL,4013,NULL);

INSERT INTO shortloan_noservice
VALUES(NULL,NULL,NULL,NULL,NULL,NULL,NULL,2006,NULL);

INSERT INTO shortloan_noservice
VALUES(NULL,NULL,NULL,NULL,NULL,NULL,NULL,3006,NULL);


INSERT INTO Include VALUES(103,34009123);

INSERT INTO Include VALUES(3006,23099812);

INSERT INTO Include VALUES(4013,37891129);
```