GYM DATABASE MANAGEMENT PROJECT

Problem Statement :-

In these modern days when people all over the world have become so concerned about their health and diet, it is obvious that they continually seek out for Gym center. Gym Management System is an easy way to use the gym and health gym membership system. It can help to keep records of members and their memberships, and permit communication between members.

The project entitled gym management system is a web based system that manages the member records that includes the personal information, payment history and schedule of workout and exercises. The database will contain important information about the gym members and will be accessible to Gym Officials .

This database management system will help the Gym Administration to access various types of information quickly and provide resources to the members on time.This project is useful to manage customer information, equipment information and billing details.

Contents:

- Tables
- ER Model Key Points
- Functional Dependencies and Primary Keys
- Normalization
- ER Diagram
- SQL Code

Tables:-

1. STAFF :-

Attribute	Datatype	Constraints
NAMES	VARCHAR(20)	NOT NULL
MOB_NO	INT	NOT NULL
SALARY	INT	NOT NULL
STAFF_ID	INT	PRIMARY KEY
EXPERIENCE	INT	NOT NULL
LOGIN	INT	NOT NULL
PASSWORDS	VARCHAR(20)	NOT NULL

2) DIET_PLAN :-

Attribute	Datatype	Constraints
DIET_ID	INT	PRIMARY KEY
DESCRIPTION	VARCHAR(20)	NOT NULL

3. MEMBERSHIP_TYPE:-

Attribute	Datatype	Constraints
NAMES	VARCHAR(20)	NOT NULL
TYPE_ID	INT	PRIMARY KEY
MEMBERSHIP_PERIOD	INT	NOT NULL
AMMOUNT	INT	NOT NULL

4. MEMBER:-

Attribute	Datatype	Constraints
MEMBER_ID	INT	PRIMARY KEY
NAMES	VARCHAR(20)	NOT NULL
AGE	INT	NOT NULL
CONTACT	INT	NOT NULL
GENDER	VARCHAR(1)	NOT NULL
JOINING_DATE	DATE	NOT NULL
STAFF_ID	INT	NOT NULL
DIET_ID	INT	NOT NULL
TYPE_ID	INT	NOT NULL

5. PAYMENT:-

Attribute	Datatype	Constraints
AMOUNT	INT	NOT NULL
PAYMENT_ID	INT	PRIMARY KEY

MODE_OF_PAYMENT	VARCHAR(20)	NOT NULL
STAFF_ID	INT	NOT NULL
MEMBER_ID	INT	NOT NULL

6. INSTRUCTOR:-

Attribute	**Datatype**	**Constraints**
INSTRUCTOR_ID	INT	PRIMARY KEY
CONTACT	INT	NOT NULL
SALARY	INT	NOT NULL
ADDRESS	VARCHAR(200)	NOT NULL
NAMES	VARCHAR(20)	NOT NULL
STAFF_ID	NUMBER(38)	NOT NULL

7. EQUIPMENT:-

Attribute	**Datatype**	**Constraints**
E_NAME	VARCHAR(20)	NOT NULL
E-USED_FOR	VARCHAR(20)	NOT NULL
E_MODELNO	INT	PRIMARY KEY
INSTRUCTOR_ID	INT	NOT NULL

8. USES:-

Attribute	Datatype	Constraints
MEMBER_ID	INT	NOT NULL
E_MODELNO	INT	NOT NULL

9. BODY_DETAILS :-

Attribute	Datatype	Constraints
WEIGHT	INT	NOT NULL
HEIGHT	INT	NOT NULL
MEMBER_ID	INT	PRIMARY KEY

ER Model Key Points -

1) Each staff member has unique login details and for each login id , atmost 1 staff member is permissible . So the cardinality of "CAN" relationship set is 1:1 .

2) Each member has unique body details and for each body details , atmost 1 member is permissible . So the cardinality of "HAS" relationship set is 1:1 .

3) Each member owns only one type of membership but a particular membership type is shared by many people. Hence the relation member to membership_type is many to one.

4) The gym offers different types of membership with corresponding amount . The records of the membership type will be stored in membership_type table.

5) The database table that stores the payment of customers upon the registration and membership is the payment table. The table includes two foreign keys, one is the member_id that links to the member and the other one is the staff_id that represents the one who processed and received the payment.

Functional Dependencies and Primary Key :-

1) STAFF :-

STAFF_ID -> { NAMES , MOB_NO , SALARY , EXPERIENCE , LOGIN_ID , PASSWORDS }
Since all the fields depend on STAFF_ID , $(STAFF\_ID)^+$ -> R.
Hence, STAFF_ID is Primary Key

2) DIET_PLAN :-

DIET_ID -> { DESCRIPTIONS }
Since all the fields depend on DIET_ID , $(DIET\_ID)^+$ -> R.
Hence, DIET_ID is Primary Key

3) MEMBERSHIP_TYPE :-

TYPE_ID -> { NAMES , MEMBERSHIP_PERIOD , AMMOUNT }
Since all the fields depend on TYPE_ID , (TYPE_ID) $^+$ -> R.
Hence, TYPE_ID is Primary Key

4) MEMBER :-

MEMBER_ID -> { NAMES , AGE ,
CONTACT,GENDER,JOINING_DATE,STAFF_ID,DIET_ID,TYPE_ID}
Since all fields depend on MEMBER_ID , (MEMBER_ID) $^+$ -> R
Hence MEMBER_ID is primary key .

5) PAYMENT :-

PAYMENT_ID -> { AMMOUNT , MODE_OF_PAYMENT , STAFF_ID ,
MEMBER_ID , STAFF_ID , MEMBER_ID }
Since all fields depend on PAYMENT_ID,(PAYMENT_ID) $^+$ -> R .
Hence PAYMENT_ID is primary key

6) EQUIPMENT :-

E_MODELNO ->{E_NAME,E_USED_FOR,INSTRUCTOR_ID}

Since all fields depend on (E_MODEL_NO)$^+$-> R .

Hence E_MODELNO is primary key .

7) INSTRUCTOR :-

INSTRUCTOR_ID -> { CONTACT, SALARY, ADDRESS, NAMES, STAFF_ID}
Since all fields depend on INSTRUCTOR_ID, (INSTRUCTOR_ID)$^+$ -> R.
Hence INSTRUCTOR_ID is primary key .

Normalisation:-

1) STAFF :-

Primary key: STAFF_ID
All attributes depend on the STAFF_ID, hence the table is 2NF.
All attributes depend directly on STAFF_ID, hence the table is in 3NF.
All determinants(STAFF_ID) are candidate keys, hence the table is in BCNF.

2) DIET_PLAN :-

Primary key: DIET_ID
All attributes depend on the DIET_ID, hence the table is 2NF.
All attributes depend directly on DIET_ID, hence the table is in 3NF.
All determinants(DIET_ID) are candidate keys, hence the table is in BCNF.

3) MEMBERSHIP_TYPE :-

Primary key: TYPE_ID
All attributes depend on the TYPE_ID, hence the table is 2NF.
All attributes depend directly on TYPE_ID, hence the table is in 3NF.
All determinants(TYPE_ID) are candidate keys, hence the table is in BCNF.

4) MEMBER :-

Primary key: MEMBER_ID
All attributes depend on the MEMBER_ID, hence the table is 2NF.
All attributes depend directly on MEMBER_ID, hence the table is in 3NF.
All determinants(MEMBER_ID) are candidate keys, hence the table is in BCNF.

5) PAYMENT :-

Primary key: PAYMENT_ID
All attributes depend on the PAYMENT_ID, hence the table is 2NF.
All attributes depend directly on PAYMENT_ID, hence the table is in 3NF.

All determinants (PAYMENT_ID) are candidate keys, hence the table is in BCNF.

6) EQUIPMENT :-

Primary key: E_MODELNO
All attributes depend on the E_MODELNO, hence the table is 2NF.
All attributes depend directly on E_MODELNO, hence the table is in 3NF.
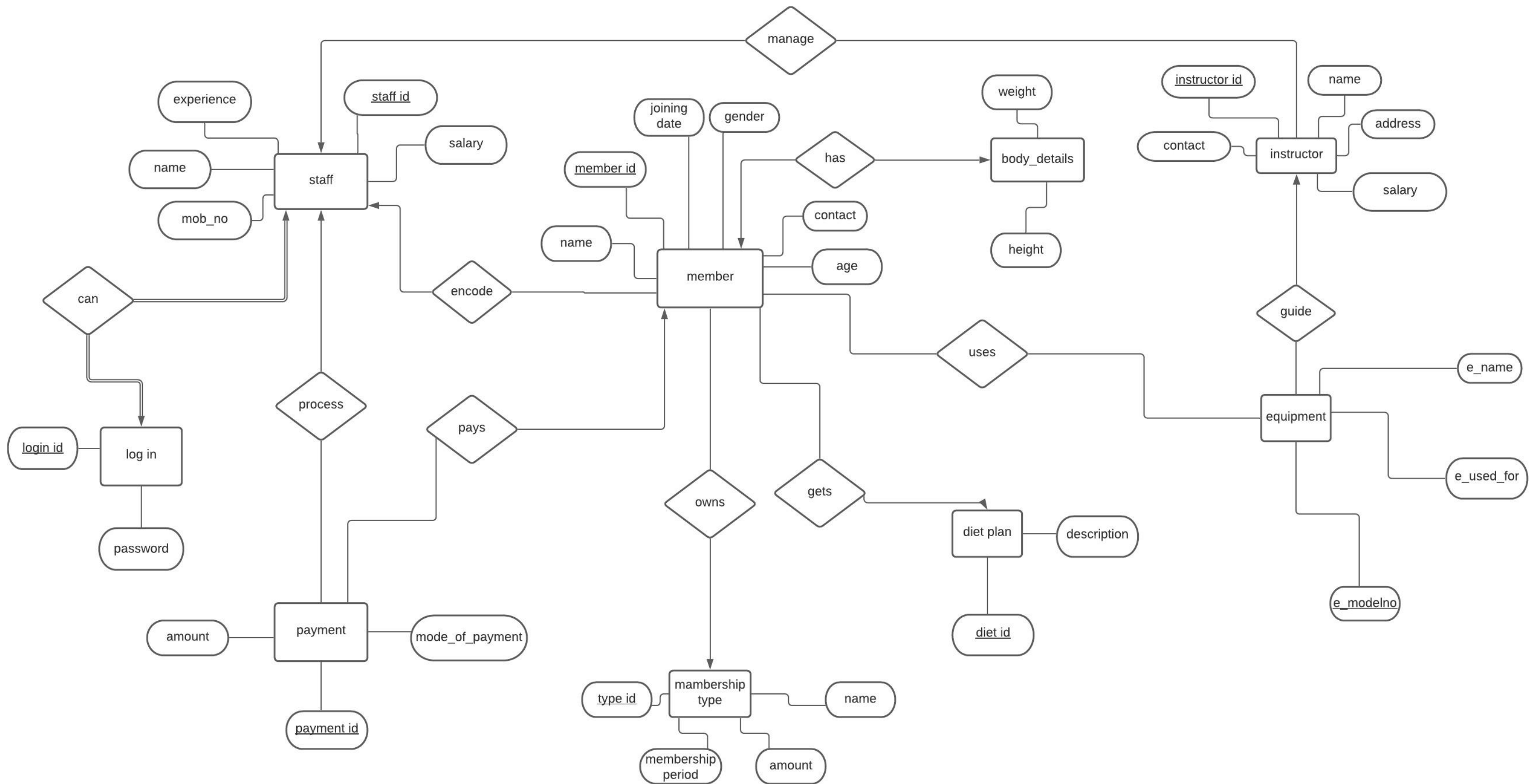All determinants (E_MODELNO) are candidate keys, hence the table is in BCNF.

7) INSTRUCTOR :-

Primary key: INSTRUCTOR_ID
All attributes depend on the INSTRUCTOR_ID, hence the table is 2NF.
All attributes depend directly on INSTRUCTOR_ID, hence the table is in 3NF.
All determinants (INSTRUCTOR_ID) are candidate keys, hence the table is in BCNF.

----

staff entity attributes: experience, name, mob_no, staff id, salary

manage relationship connects staff and instructor

can relationship connects staff and log in

log in entity attributes: login id, password

process relationship connects staff and payment

encode relationship connects staff and member

member entity attributes: member id, name, joining date, gender, contact, age

has relationship connects member and body_details

body_details entity attributes: weight, height

instructor entity attributes: instructor id, name, contact, address, salary

pays relationship connects member and payment

payment entity attributes: amount, payment id, mode_of_payment

owns relationship connects member and mambership type

mambership type entity attributes: type id, name, membership period, amount

gets relationship connects member and diet plan

diet plan entity attributes: description, diet id

uses relationship connects member and equipment

guide relationship connects instructor and equipment

equipment entity attributes: e_name, e_used_for, e_modelno

SQL CODE :-

```
CREATE TABLE STAFF (

        NAMES VARCHAR(20) NOT NULL,

        MOB_NO INT NOT NULL,

        SALARY INT NOT NULL,

        STAFF_ID INT PRIMARY KEY ,

        EXPERIENCE INT NOT NULL,

        LOGIN_ID INT NOT NULL,

        PASSWORDS VARCHAR(20) NOT NULL

        )


CREATE TABLE DIET_PLAN (

        DIET_ID INT PRIMARY KEY,

        DESCRIPTIONS VARCHAR(20) NOT NULL

        )


CREATE TABLE MEMBERSHIP_TYPE (

        NAMES VARCHAR(20) NOT NULL,

        TYPE_ID INT PRIMARY KEY,

        MEMBERSHIP_PERIOD INT NOT NULL,

        AMMOUNT INT NOT NULL

        )
```

```sql
CREATE TABLE MEMBER (

        MEMBER_ID INT PRIMARY KEY,

        NAMES VARCHAR(20) NOT NULL,

        AGE INT NOT NULL,

        CONTACT INT NOT NULL,

        GENDER VARCHAR(1) NOT NULL,

        JOINING_DATE DATE NOT NULL,

        STAFF_ID INT NOT NULL,

        DIET_ID INT NOT NULL,

        TYPE_ID INT NOT NULL,

        FOREIGN KEY(TYPE_ID) REFERENCES MEMBERSHIP_TYPE(TYPE_ID),

        FOREIGN KEY(STAFF_ID) REFERENCES STAFF(STAFF_ID),

        FOREIGN KEY(DIET_ID) REFERENCES DIET_PLAN(DIET_ID)

        )


CREATE TABLE PAYMENT (

        AMMOUNT INT NOT NULL,

        PAYMENT_ID INT PRIMARY KEY,

        MODE_OF_PAYMENT VARCHAR(20) NOT NULL,

        STAFF_ID INT NOT NULL,

        MEMBER_ID INT NOT NULL,

        FOREIGN KEY(STAFF_ID) REFERENCES STAFF(STAFF_ID),

        FOREIGN KEY(MEMBER_ID) REFERENCES MEMBER(MEMBER_ID)

        )


CREATE TABLE INSTRUCTOR (

        INSTRUCTOR_ID INT PRIMARY KEY,

        CONTACT INT NOT NULL,
```

```
        SALARY INT NOT NULL,

        ADDRESS VARCHAR(20) NOT NULL,

        NAMES VARCHAR(20) NOT NULL,

        STAFF_ID INT NOT NULL,

        FOREIGN KEY(STAFF_ID) REFERENCES STAFF(STAFF_ID)

        )


CREATE TABLE EQUIPMENT (

        E_NAME VARCHAR(20) NOT NULL,

        E_USED_FOR VARCHAR(20) NOT NULL,

        E_MODELNO INT PRIMARY KEY,

        INSTRUCTOR_ID INT NOT NULL,

        FOREIGN KEY(INSTRUCTOR_ID) REFERENCES INSTRUCTOR(INSTRUCTOR_ID)

        )


CREATE TABLE USES (

        MEMBER_ID INT NOT NULL,

        E_MODELNO INT NOT NULL,

        FOREIGN KEY(MEMBER_ID) REFERENCES MEMBER(MEMBER_ID),

        FOREIGN KEY(E_MODELNO) REFERENCES EQUIPMENT(E_MODELNO)

        )


CREATE TABLE BODY_DETAILS (

        WEIGHT INT NOT NULL,

        HEIGHT INT NOT NULL,

        MEMBER_ID INT PRIMARY KEY,

        FOREIGN KEY(MEMBER_ID) REFERENCES MEMBER(MEMBER_ID)

        )
```

INSERTION OF DATA:-

INSERT INTO STAFF VALUES('Yash', 8824922492, 21000, 101, 2, 101, 'gym@yash');

INSERT INTO STAFF VALUES('Harshit', 8826374833, 31000, 102, 3, 102, 'gym@harshit');

INSERT INTO STAFF VALUES('Pankaj', 7665503922, 5100, 103, 3, 103, 'gym@pankaj');

INSERT INTO STAFF VALUES('Apurv', 9374894683, 10000, 104, 2, 104, 'gym@apurv');

INSERT INTO STAFF VALUES('Rahul', 8467242842, 32000, 105, 3, 105, 'gym@rahul');

INSERT INTO STAFF VALUES('Yashpaal', 9726374834, 43000, 106, 2, 106, 'gym@rajput');

INSERT INTO DIET_PLAN VALUES (202, 'CARBOHYDRATES RICH');

INSERT INTO DIET_PLAN VALUES (201, 'PROTEINS RICH');

INSERT INTO DIET_PLAN VALUES (204, 'FATS RICH');

INSERT INTO DIET_PLAN VALUES (205, 'PROTEINS RICH');

INSERT INTO DIET_PLAN VALUES (203, 'FIBRE RICH');

INSERT INTO MEMBERSHIP_TYPE VALUES ('HULK', 502, 2, 2000);

INSERT INTO MEMBERSHIP_TYPE VALUES ('THOR', 501, 1, 1000);

INSERT INTO MEMBERSHIP_TYPE VALUES ('IRONMAN',503, 3, 3000);

INSERT INTO MEMBERSHIP_TYPE VALUES ('HULLE', 505, 2, 2000);

INSERT INTO MEMBERSHIP_TYPE VALUES ('IRONMAN',504, 4, 4000);

INSERT INTO MEMBER VALUES(1 , 'GANESH' , 18 , 4785961582 , 'M' , '1-02-21' , 101 , 201 , 501);

INSERT INTO MEMBER VALUES(2 , 'SURESH' , 19 , 1234567891 , 'F' , '2-02-21' , 102 , 202 , 502);

INSERT INTO MEMBER VALUES(3 , 'RAMESH' , 18 , 4128975634 , 'M' , '1-02-21' , 103 , 203 , 503);

```sql
INSERT INTO MEMBER VALUES(4 , 'PANKAJ' , 17 , 9987456321 , 'F' , '8-02-21' , 104 , 204 , 504);

INSERT INTO MEMBER VALUES(5 , 'SUFIAN' , 16 , 9875648925 , 'M' , '2-02-21' , 105 , 205 , 505);

INSERT INTO MEMBER VALUES(6 , 'NARESH' , 17 , 8764587459 , 'F' , '1-02-21' , 101 , 201 , 501);

INSERT INTO MEMBER VALUES(7 , 'RAJESH' , 18 , 4785545491 , 'M' , '4-02-21' , 102 , 202 , 502);

INSERT INTO MEMBER VALUES(8 , 'RITIK' , 19 , 9589224722 , 'M' , '2-02-21' , 103 , 203 , 503);


INSERT INTO PAYMENT VALUES(4000,23564132, 'DEBIT CARD', 104,1);

INSERT INTO PAYMENT VALUES(2000,23564134, 'PAYTM', 102,3);

INSERT INTO PAYMENT VALUES(3000,23564131, 'GPAY', 105,6);

INSERT INTO PAYMENT VALUES(5000,23564135, 'DEBIT CARD', 103,2);

INSERT INTO PAYMENT VALUES(1000,23564136, 'PHONE PE', 101,7);


INSERT INTO INSTRUCTOR VALUES(1001, 9536756324, 10000, 'Warangal', 'Rohit',101);

INSERT INTO INSTRUCTOR VALUES(1002, 8536756324, 14000, 'Jaipur', 'Vivek',103);

INSERT INTO INSTRUCTOR VALUES(1003, 9787563672, 13000, 'Jaipur', 'Arjun',102);

INSERT INTO INSTRUCTOR VALUES(1004, 9747587438, 20000, 'Nadbai', 'Johny',103);


INSERT INTO EQUIPMENT VALUES('Trademill', 'Legs', 401,1003);

INSERT INTO EQUIPMENT VALUES('ChestPress', 'Chest', 402,1002);

INSERT INTO EQUIPMENT VALUES('LegPress', 'Legs', 403,1001);

INSERT INTO EQUIPMENT VALUES('ShoulderPress','Shoulder',404,1001);

INSERT INTO EQUIPMENT VALUES('Rod', 'Biceps', 405,1003);
```

INSERT INTO USES VALUES(2,404);

INSERT INTO USES VALUES(3,402);

INSERT INTO USES VALUES(1,403);

INSERT INTO USES VALUES(4,405);

INSERT INTO USES VALUES(5,401);

INSERT INTO BODY_DETAILS VALUES (50 , 160 , 1);

INSERT INTO BODY_DETAILS VALUES (52 , 162 , 2);

INSERT INTO BODY_DETAILS VALUES (58 , 157 , 3);

INSERT INTO BODY_DETAILS VALUES (64 , 167 , 4);

INSERT INTO BODY_DETAILS VALUES (47 , 165 , 5);

INSERT INTO BODY_DETAILS VALUES (56 , 147 , 6);

INSERT INTO BODY_DETAILS VALUES (39 , 148 , 7);

INSERT INTO BODY_DETAILS VALUES (69 , 170 , 8);