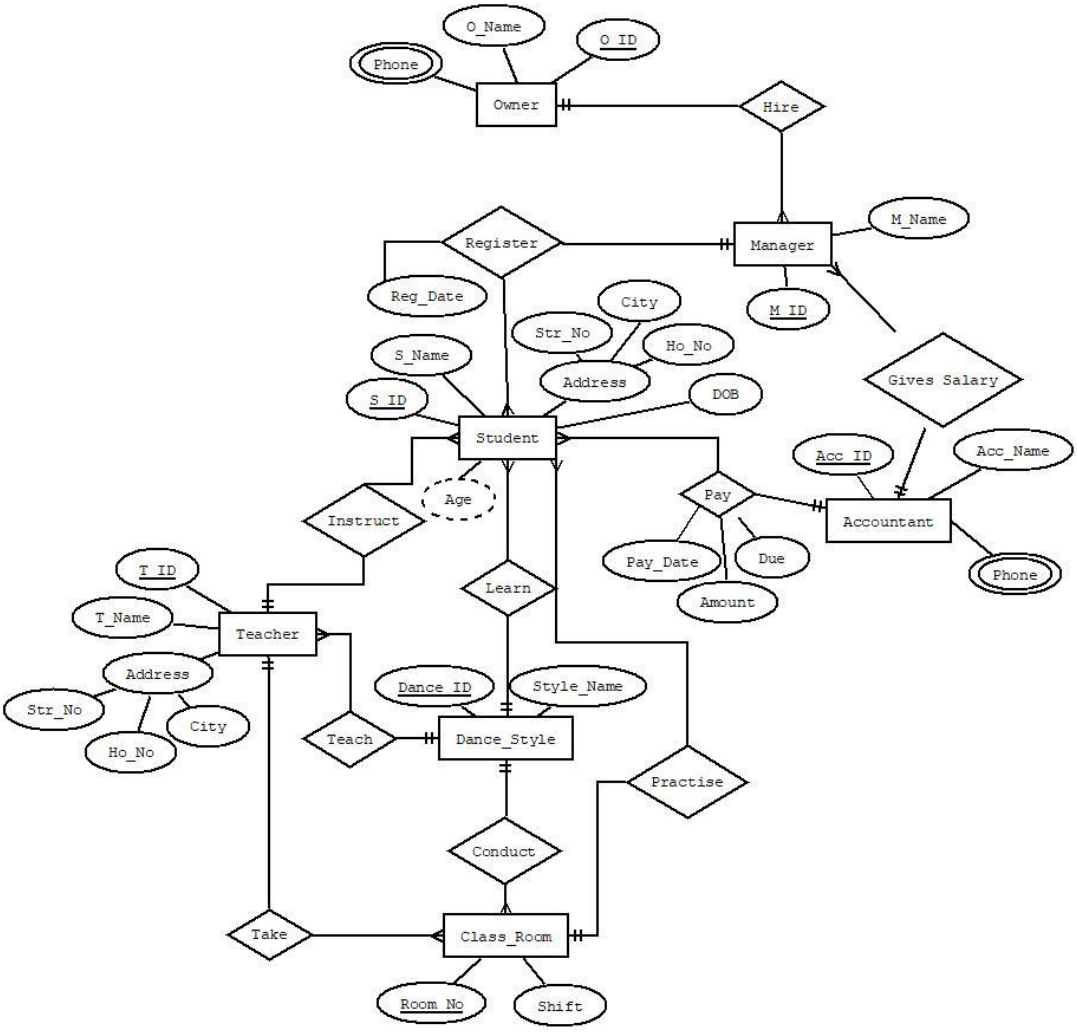
Introduction:

This project Dance School Management System is a database which provides a platform for all age groups of students to learn and excel in the field called Dance. It has various teachers available to train the students in various class rooms in different shifts. There are managers to manage the students the managers are hired by the Dance School owners.

Case Study:

In this Dance School Management System, a student can be instructed by only one teacher. But a teacher can instruct multiple students. A student is identified by a student ID. Student name, Date of Birth, age and address are also stored where address is composed of house number, street number and City. A teacher is identified by teacher ID. The system also stores the teacher's name and address. Address is composed of house number, street number and city. A student can sign in to learn only one dance style while a dance style can be learned by many students. Dance style is identified by dance ID and the style name is also stored in the system. A teacher can teach only one dance style. But a dance style can be taught by multiple teachers. A dance style can be conducted in multiple classrooms. A classroom can be used to conduct only one dance style. Class room is identified by a room number. Class shift and duration are also stored. A student can practise in only one classroom while a classroom can have multiple students. A teacher can take multiple classes but a classroom can be taken by only one teacher. A manager registers many students. But a student can get registered by one manager. Registration date is stored when a student gets registered. Manager is identified by manager ID and the name of manager is stored. Owners of the Dance School hire managers. A manager can be hired by only one owner but an owner can hire multiple managers. Owner is identified by owner ID and Owner name and phone numbers are also stored. A student can pay to only one accountant while an accountant can take payment from multiple students. To keep track of payment, the payment date, amount paid by student and due amount is also stored. Accountant is identified by Accountant_ID. Accountant_name and phone numbers are stored as well. The accountants also give salary to the managers. An account can give salary to multiple managers but a manager can take salary from only one accountant.

ER-Diagram:



Normalization:

1. **Hire**(O_ID, O_Name, Phone, M_ID, M_Name)

1NF:

Phone Multivalued Attribute

2NF:

O_ID, O_Name, Phone

M_ID, M_Name, O_ID

3NF:

O_ID, O_Name, Phone

M_ID, M_Name, O_ID

Table:

i) O_ID, O_Name, Phone

ii) M_ID, M_Name, O_ID

2. **Register**(S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Reg_Date, M_ID, M_Name)

1NF:

No Multivalued Attribute

2NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, M_ID

M_ID, M_Name

REG_ID, Reg_Date, S_ID, M_ID

3NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, M_ID

M_ID, M_Name

REG_ID, Reg_Date, S_ID, M_ID

DOB_ID, DOB, Age

Table:

i) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, M_ID

ii) M_ID, M_Name

iii) REG_ID, Reg_Date, S_ID, M_ID

iv) DOB_ID, DOB, Age

3. **Gives Salary**(M_ID, M_Name, Acc_ID, Acc_Name, Phone)

1NF:

Phone Multivalued Attributes

2NF:

M_ID, M_Name, Acc_ID

Acc_ID, Acc_Name, Phone

3NF:

M_ID, M_Name, Acc_ID

Acc_ID, Acc_Name, Phone

Table:

i) M_ID, M_Name, Acc_ID

ii) Acc_ID, Acc_Name, Phone

4. **Instruct**(S_ID, S_Name, Str_No, Ho_No, City, DOB, Age,T_ID, T_Name, Str_No, Ho_No, City)

1NF:

No Multivalued Attributes

2NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, T_ID

T_ID, T_Name, Str_No, Ho_No, City

3NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, T_ID

T_ID, T_Name, Str_No, Ho_No, City

DOB_ID, DOB, Age

Table:

i) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, T_ID

ii) T_ID, T_Name, Str_No, Ho_No, City

iii) DOB_ID, DOB, Age

5. **Learn**(S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Dance_ID, Style_Name)

1NF:

No Multivalued Attributes

2NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Dance_ID

Dance_ID, Style_Name

3NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Dance_ID

Dance_ID, Style_Name

DOB_ID, DOB, Age

Table:

i) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Dance_ID

ii) Dance_ID, Style_Name

iii) DOB_ID, DOB, Age

6. **Pay**(S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Pay_Date, Amount, Due, Acc_ID, Acc_Name, Phone)

1NF:

Phone Multivalued Attribute

2NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Acc_ID

Acc_ID,Acc_Name,Phone

Pay_ID, Pay_Date, Amount, Due, S_ID, Acc_ID

3NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Acc_ID

Acc_ID,Acc_Name,Phone

Pay_ID, Pay_Date, Amount, Due, S_ID, Acc_ID

DOB_ID, DOB, Age

Table:

i) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Acc_ID

ii) Acc_ID,Acc_Name,Phone

iii) Pay_ID, Pay_Date, Amount, Due, S_ID, Acc_ID

iv) DOB_ID, DOB, Age

7. **Teach**(T_ID, T_Name, Str_No, Ho_No, City, Dance_ID, Style_Name)

1NF:

No Multivalued Attribute

2NF:

T_ID, T_Name, Str_No, Ho_No, City, Dance_ID

Dance_ID, Style_Name

3NF:

T_ID, T_Name, Str_No, Ho_No, City, Dance_ID

Dance_ID, Style_Name

Table:

i) T_ID, T_Name, Str_No, Ho_No, City, Dance_ID

ii) Dance_ID, Style_Name

8. **Practise**(S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Room_No, Shift)

1NF:

No Multivalued Attribute

2NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB, Age, Room_No

Room_No, Shift

3NF:

S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Room_No

Room_No, Shift

DOB_ID, DOB, Age

Table:

i) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Room_No

ii) Room_No, Shift

iii) DOB_ID, DOB, Age

9. **Conduct**(Dance_ID, Style_Name, Room_No, Shift)

1NF:

No Multivalued Attributes

2NF:

Dance_ID, Style_Name

Room_No, Shift, Dance_ID

3NF:

Dance_ID, Style_Name

Room_No, Shift, Dance_ID

Table:

i) Dance_ID, Style_Name

ii) Room_No, Shift, Dance_ID

10. **Take**(T_ID, T_Name, Str_No, Ho_No, City, Room_No, Shift)

1NF:

No Multivalued Attributes

2NF:

T_ID, T_Name, Str_No, Ho_No, City

Room_No, Shift, T_ID

3NF:

T_ID, T_Name, Str_No, Ho_No, City

Room_No, Shift, T_ID

Table:

i) T_ID, T_Name, Str_No, Ho_No, City

ii) Room_No, Shift, T_ID

Total Table:

1. O_ID, O_Name, Phone
2. M_ID, M_Name, O_ID
3. S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, M_ID
4. M_ID, M_Name
5. REG_ID, Reg_Date, S_ID, M_ID
6. DOB_ID, DOB, Age
7. M_ID, M_Name, Acc_ID
8. Acc_ID, Acc_Name, Phone
9. S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, T_ID
10. T_ID, T_Name, Str_No, Ho_No, City
11. DOB_ID, DOB, Age
12. S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Dance_ID
13. Dance_ID, Style_Name
14. DOB_ID, DOB, Age
15. S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Acc_ID
16. Acc_ID,Acc_Name,Phone
17. Pay_ID, Pay_Date, Amount, Due, S_ID, Acc_ID
18. DOB_ID, DOB, Age
19. T_ID, T_Name, Str_No, Ho_No, City, Dance_ID
20. Dance_ID, Style_Name
21. S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, Room_No
22. Room_No, Shift

23. DOB_ID, DOB, Age
24. Dance_ID, Style_Name
25. Room_No, Shift, Dance_ID
26. T_ID, T_Name, Str_No, Ho_No, City
27. Room_No, Shift, T_ID

Selected Total Table:

1) O_ID, O_Name,Phone
2) M_ID, M_Name, O_ID, Acc_ID
3) S_ID, S_Name, Str_No, Ho_No, City, DOB_ID, M_ID, T_ID, Dance_ID, Acc_ID, Room_No
4) Acc_ID, Acc_Name, Phone
5) T_ID, T_Name, Str_No, Ho_No, City, Dance_ID
6) Dance_ID, Style_Name
7) Room_No, Shift, T_ID, Dance_ID
8) REG_ID, Reg_Date, S_ID, M_ID
9) DOB_ID, DOB, Age
10) Pay_ID, Pay_Date, Amount, Due, S_ID, Acc_ID

Table Creation & Data Insertion:

1.

```
Create Table Owner
( O_ID Number(2) Primary Key,
 O_Name Varchar2(30) Not Null,
Phone Varchar2(15) )

Insert into Owner
Values (01, 'Juboraz', '+8801738294012')
 Insert into Owner
Values (02, 'Imdadul', '+8801737594013')
Insert into Owner
Values (03, 'Arif', '+8801846294011')
Insert into Owner
Values (04, 'Ariyan', '+8801817274124')
Insert into Owner
Values (05, 'Russhi', '+8801874394012')
```

O_ID	O_NAME	PHONE
1	Juboraz	+8801738294012
2	Imdadul	+8801737594013
3	Arif	+8801846294011
4	Ariyan	+8801817274124
5	Russhi	+8801874394012

2.

Create Table Accountant
(Acc_ID Number(2) Primary Key,
Acc_Name Varchar2(30) Not Null,
Phone Varchar2(15))

Insert into Accountant
Values (11, 'Joshim', '+8801348375')
Insert into Accountant
Values (22, 'Maleque', '+8801392614')
Insert into Accountant
Values (33, 'Mostafiz', '+8801301857')
Insert into Accountant
Values (44, 'Debashish', '+8801327815')
Insert into Accountant
Values (55, 'Zerin', '+8801340813')

ACC_ID	ACC_NAME	PHONE
11	Joshim	+8801348375
22	Maleque	+8801392614
33	Mostafiz	+8801301857
44	Debashish	+8801327815
55	Zerin	+8801340813

3.

Create Table Dance_Style
(Dance_ID Varchar2(2) Primary Key,
Style_Name Varchar2(30) Not NUll)

Insert into Dance_style
Values ('D1', 'Classical Dance')

```
Insert into Dance_style
Values ('D2', 'Salsa Dance')
Insert into Dance_style
Values ('D3', 'Break Dance')
Insert into Dance_style
Values ('D4', 'Hip-Hop Dance')
Insert into Dance_style
Values ('D5', 'Tap Dance')
```

DANCE_ID	STYLE_NAME
D1	Classical Dance
D2	Salsa Dance
D3	Break Dance
D4	Hip-Hop Dance
D5	Tap Dance

4.

```
Create Table Date_Of_Birth
( DOB_ID Number(10) Primary Key,
DOB Date Not Null,
Age Number(3) )

Insert into Date_Of_Birth
Values (1, '15-JUN-99', 19)
Insert into Date_Of_Birth
Values (2, '18-JAN-99', 20)
Insert into Date_Of_Birth
Values (3, '19-JAN-98', 21)
Insert into Date_Of_Birth
Values (4, '29-DEC-98', 20)
Insert into Date_Of_Birth
Values (5, '20-JUL-98', 21)
```

DOB_ID	DOB	AGE
1	15-JUN-99	20
2	18-JAN-99	20
3	19-JAN-98	21
4	29-DEC-98	20
5	20-JUL-98	21

5.

Create Table Manager
(M_ID Number(5) Primary Key,
M_Name Varchar2(30) Not Null,
O_ID Number(2) Constraint FK1 References Owner(O_ID),
Acc_ID Number(2) Constraint FK2 References Accountant(Acc_ID))

Insert into Manager
Values (1001, 'Shihab', 4, 22)
Insert into Manager
Values (1002, 'Pabitra', 1, 11)
Insert into Manager
Values (1003, 'Asif', 2, 22)
Insert into Manager
Values (1004, 'Bhuiyyaa', 4, 55)
Insert into Manager
Values (1005, 'Gomez', 5, 33)

M_ID	M_NAME	O_ID	ACC_ID
1001	Shihab	4	22
1002	Pabitra	1	11
1003	Asif	2	22
1004	Bhuiyyaa	4	55
1005	Gomez	5	33

6.

Create Table Teacher
(T_ID Number(5) Primary Key,
T_Name Varchar2(30) Not Null,
Str_No Number(2),
Ho_No Number(5),

City Varchar2(30),
Dance_ID Varchar2(2) Constraint FK3 References Dance_Style(Dance_ID))

Insert into Teacher
Values (111,'Ahona',7,241,'Dhaka', 'D1')
Insert into Teacher
Values (222,'Manzurul',6,251,'Dhaka', 'D2')
Insert into Teacher
Values (333,'Jaman',2,246,'Dhaka', 'D3')
Insert into Teacher
Values (444,'Razib',9,244,'Dhaka', 'D4')
Insert into Teacher
Values (555,'Rouf',4,141,'Dhaka', 'D5')

T_ID	T_NAME	STR_NO	HO_NO	CITY	DANCE_ID
111	Ahona	7	241	Dhaka	D1
222	Manzurul	6	251	Dhaka	D2
333	Jaman	2	246	Dhaka	D3
444	Razib	9	244	Dhaka	D4
555	Rouf	4	141	Dhaka	D5

7.
Create Table Class_Room
(Room_No Number(4) Primary Key,
Shift Varchar2(10) Not Null,
T_ID Number(5) Constraint Fk4 References Teacher(T_ID),
Dance_ID Varchar2(4) Constraint Fk5 References Dance_Style(Dance_ID))

Insert into Class_Room
Values (6102, 'Morning',111, 'D1')
Insert into Class_Room
Values (6103, 'Morning',222, 'D2')
Insert into Class_Room
Values (6104, 'Day',333, 'D3')
Insert into Class_Room
Values (6105, 'Day',444, 'D4')
Insert into Class_Room

Values (6106, 'Morning',555, 'D5')

ROOM_NO	SHIFT	T_ID	DANCE_ID
6102	Morning	111	D1
6103	Morning	222	D2
6105	Day	444	D4
6106	Morning	555	D5
6104	Day	333	D3

8.

Create Table Student
(S_ID Number(10) Primary Key,
S_Name Varchar2(30) Not Null,
Str_No Number(2),
Ho_No Number(5),
City Varchar2(30),
DOB_ID Number(10) Not Null Constraint Fk6 References Date_Of_Birth(DOB_ID),
M_ID Number(5) Not Null Constraint Fk7 References Manager(M_ID),
T_ID Number(5) Not Null Constraint Fk8 References Teacher(T_ID),
Dance_ID Varchar2(4) Not Null Constraint Fk9 References Dance_Style(Dance_ID),
Acc_ID Number(2) Not Null Constraint Fk10 References Accountant(Acc_ID),
Room_No Number(4) Not Null Constraint Fk11 References Class_Room(Room_No)
)

Insert into Student
Values (1101, 'Sakib', 1, 29, 'Dhaka', 1, 1001, 333, 'D3', 22, 6104)
Insert into Student
Values (1102, 'Hasan', 1, 30, 'Chittagong', 2, 1003, 111, 'D1', 55, 6102)
Insert into Student
Values (1103, 'Kishor', 5, 37, 'Rajshahi', 3, 1001, 222, 'D2', 22, 6103)
Insert into Student
Values (1104, 'Natasha', 4, 27, 'Dhaka', 4, 1002, 111, 'D1', 44, 6102)
Insert into Student
Values (1105, 'Mithila', 8, 30, 'Sylhet', 5, 1005, 555, 'D5', 33, 6106)

S_ID	S_NAME	STR_NO	HO_NO	CITY	DOB_ID	M_ID	T_ID	DANCE_ID	ACC_I
1101	Sakib	1	29	Dhaka	1	1001	333	D3	22
1102	Hasan	1	30	Chittagong	2	1003	111	D1	55
1103	Kishor	5	37	Rajshahi	3	1001	222	D2	22
1104	Natasha	4	27	Dhaka	4	1002	111	D1	44
1105	Mithila	8	30	Sylhet	5	1005	555	D5	33

9.

Create Table Registration
(REG_ID Number(10) Primary Key,
Reg_Date Date,
S_ID Number(10) Not Null Constraint Fk12 References Student(S_ID),
M_ID Number(5) Not Null Constraint Fk13 References Manager(M_ID))

Insert into Registration
Values (501,'14-JUN-19',1105,1005)
Insert into Registration
Values (502,'15-JUN-19',1104,1002)
Insert into Registration
Values (503,'14-JUN-19',1103,1001)
Insert into Registration
Values (504,'22-JUN-19',1102,1003)
Insert into Registration
Values (505,'14-JUN-19',1101,1001)

REG_ID	REG_DATE	S_ID	M_ID
501	14-JUN-19	1105	1005
502	15-JUN-19	1104	1002
503	14-JUN-19	1103	1001
504	22-JUN-19	1102	1003
505	14-JUN-19	1101	1001

10.

Create Table Payment
(Pay_ID Number(10) Primary Key,
Pay_Date Date,
Amount Number(5) Not Null,

Due Number(5),
S_ID Number(10) Not Null Constraint Fk14 References Student(S_ID),
Acc_ID Number(5) Not Null Constraint Fk15 References Accountant(Acc_ID))

Insert into Payment
Values (1101, '21-DEC-19',2000,500,1101,11)
Insert into Payment
Values (1102, '24-DEC-19',1500,1000,1102,22)
Insert into Payment
Values (1103, '25-DEC-19',1000,1000,1103,33)
Insert into Payment
Values (1104, '21-DEC-19',2000,500,1104,44)
Insert into Payment
Values (1105, '21-DEC-19',2000,500,1105,55)

PAY_ID	PAY_DATE	AMOUNT	DUE	S_ID	ACC_ID
1101	21-DEC-19	2000	500	1101	11
1102	24-DEC-19	1500	1000	1102	22
1103	25-DEC-19	1000	1000	1103	33
1104	21-DEC-19	2000	500	1104	44
1105	21-DEC-19	2000	500	1105	55

Queries:

Sub Query:

1. Find out Students ID, Name and City whose manager ID is equal to Kishor's Manager ID

Ans:

```
Select S_ID, S_NAME, CITY
From Student
Where M_ID = (Select M_ID
                From Student
                 Where S_NAME = 'Kishor')
```

S_ID	S_NAME	CITY
1101	Sakib	Dhaka
1103	Kishor	Rajshahi

2. Find out Students ID, Name and Room Number whose Dance_ID is equal to Natasha's Dance_ID

Ans:

```
Select S_ID, S_NAME, ROOM_NO
From Student
Where DANCE_ID = (Select DANCE_ID
                  From Student
                  Where S_NAME = 'Natasha')
```

S_ID	S_NAME	ROOM_NO
1102	Hasan	6102
1104	Natasha	6102

3. Find out Students ID and Name whose Age is 20

Ans:

```
Select S_ID, S_NAME
From Student
Where DOB_ID in (Select DOB_ID
                 From Date_Of_Birth
                 Where Age = 20)
```

S_ID	S_NAME
1101	Sakib
1102	Hasan
1104	Natasha

Joining:

4. Find out Teacher ID, Name and Style name for all (Teacher & Dance_Style Table)

Ans:

```
Select t.T_NAME ,t.T_ID , d.STYLE_NAME
From Teacher t, Dance_Style d
Where t.DANCE_ID = d.DANCE_ID
```

T_NAME	T_ID	STYLE_NAME
Ahona	111	Classical Dance
Manzurul	222	Salsa Dance
Jaman	333	Break Dance
Razib	444	Hip-Hop Dance
Rouf	555	Tap Dance

5. Find out Student ID, Name and Teacher Name for all (Student & Teacher Table)

Ans:

Select s.S_ID, s.S_NAME , t.T_NAME

From Student s, Teacher t

Where s.T_ID = t.T_ID

S_ID	S_NAME	T_NAME
1101	Sakib	Jaman
1102	Hasan	Ahona
1103	Kishor	Manzurul
1104	Natasha	Ahona
1105	Mithila	Rouf

6. Find out Registration ID, Date and Student Name for all (Registration & Student Table)

Ans:

Select r.REG_ID, r.REG_DATE, s.S_NAME

From Registration r, Student s

Where r.S_ID = s.S_ID

REG_ID	REG_DATE	S_NAME
501	14-JUN-19	Mithila
502	15-JUN-19	Natasha
503	14-JUN-19	Kishor
504	22-JUN-19	Hasan
505	14-JUN-19	Sakib

Single Row Function:

7. Find out the Length of student name whose name starts with letter 'S'

Ans:

Select S_NAME, Length(S_NAME) As “NAME LENGTH”

From Student

Where S_NAME like ‘S%’

S_NAME	NAME LENGTH
Sakib	5

Group Function:

8. Find out the total due amount from Payment table

Ans:

Select Sum(Due)

From Payment

SUM(DUE)
3500

9. Find out the average amount paid by students from payment table

Ans:

Select Avg(Amount)

From Payment

AVG(AMOUNT)
1700

View:

10. Create a view to show student name, student Id, teacher ID and room number for all

Ans: Create or Replace View

S_info as

Select S_ID, S_Name, T_ID, Room_No

From Student;

Select * From S_info;

S_ID	S_NAME	T_ID	ROOM_NO
1101	Sakib	333	6104
1102	Hasan	111	6102
1103	Kishor	222	6103
1104	Natasha	111	6102
1105	Mithila	555	6106

Relational Algebra:

1. Find Out all details of students whose S_ID =1103

Ans:

$$\sigma_{S\_ID=1103}(\text{Student})$$

2. Find Out Teachers name for all Teachers.

Ans:

$$\pi_{T\_NAME}(\text{Teacher})$$

3. Find Out All the Payment Details.

Ans:

$$\pi_{PAY\_ID,PAY\_DATE,AMOUNT,DUE,S\_ID,ACC\_ID}(\text{Payment})$$

4. Find Out Students name whose City is Dhaka.

Ans:

$$\pi_{S\_NAME}[\sigma_{CITY='Dhaka'},(\text{Student})]$$

5. Find Out Teachers name whose ID = 222

Ans:

$$\pi_{T\_NAME}[\sigma_{T\_ID=222}(\text{Teacher})]$$

6. Find Out Students name and Teachers name for all

Ans:

$$\pi_{T\_NAME,S\_NAME}[\sigma_{Student.T\_ID=Teacher.T\_ID}(\text{Student X Teacher})]$$

7. Find Out Students Name and Registration Date for all

Ans:

$$\pi_{S\_NAME,\ REG\_DATE}[\sigma_{Student.S\_ID=Registration.S\_ID}(\text{Student X Registration})]$$

8. Find Out Student Name, Paid Amount and Due Amount for all

Ans:

$$\pi_{S\_NAME,AMOUNT,DUE}(\text{Student} \bowtie \text{Payment})$$

9. Find Out Manager Name and Owner Name for all Managers

Ans:

$$\pi_{M\_NAME,O\_NAME}(Manager \bowtie Owner)$$

10. Find Out Student Name and Room Number along with Room number that have no students.

Ans:

$$\pi_{S\_NAME,ROOM\_NO}(Class\_Room \bowtie Student)$$

11. Find Out Student Name and Dance Style Name along with Style names that no students learn.

Ans:

$$\pi_{S\_NAME,STYLE\_NAME}(Dance\_Style \bowtie Student)$$

12. Find Out Student Name and Manager Name along with Managers who did not register any student.

Ans:

$$\pi_{S\_NAME.\ M\_NAME}(Student \bowtie Manager)$$

13. Find Out Accountant Name, Phone Number and Student Name along with Accountants whom no students pay to.

Ans:

$$\pi_{ACC\_NAME,PHONE,S\_NAME}(Student \bowtie Accountant)$$

14. Find Out Student Name and Teachers Name along with all the students which are under no teachers and teachers which teach no students.

Ans:

$$\pi_{S\_NAME,T\_NAME}(Student \bowtie Teacher)$$

15. Find Out Manager Name and Accountant Name along with all the Managers which take salary from no accountants and accountants which give salary to no manager.

Ans:

$$\pi_{M\_NAME,ACC\_NAME}(Manager \bowtie Accountant)$$

Conclusion:

We created a database that a dance school can use for keeping track of its employees, students and payment information. Employees are divided into teachers, managers and accountants. Owners hire managers and managers register the students while students pay to the accountants. Teachers teach student specific dance styles in class rooms.

During our database management course, we have learned about the basics of database design. This project gave us the opportunity to try our new skills in practice. We have had some minor difficulties in the midst of inserting data into the tables but we corrected them properly. While doing this project we also gained deeper understanding on database design and how it can be implemented in real life situations. We believe we can use our database designing skills in other projects as well.