

PROJECT

ON

SCHOOL MANAGEMENT SYSTEM



COURSE CODE:-COCS05

SUBMITTED TO:-SUSHMA NAGPAL MA'AM

Names and Roll No of Students:-

Parth (2022UCS1502)

Ayush Bansal (2022UCS1513)

Vinay Khatri (2022UCS1552)

Mohit (2022UCS1558)

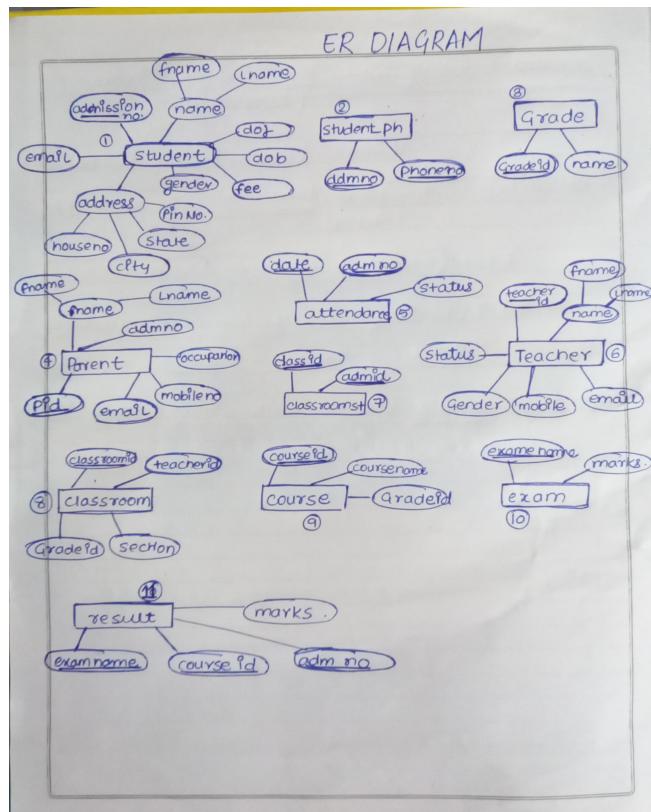
INDEX

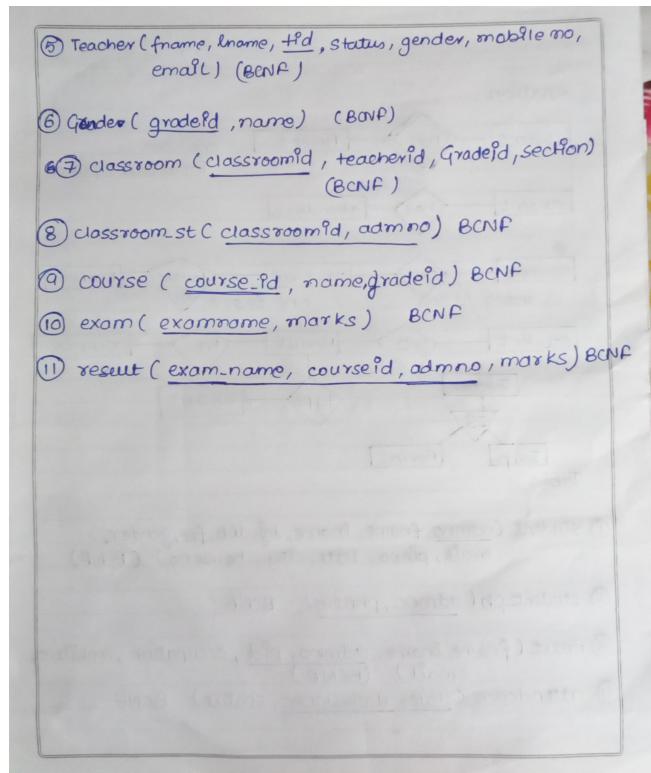
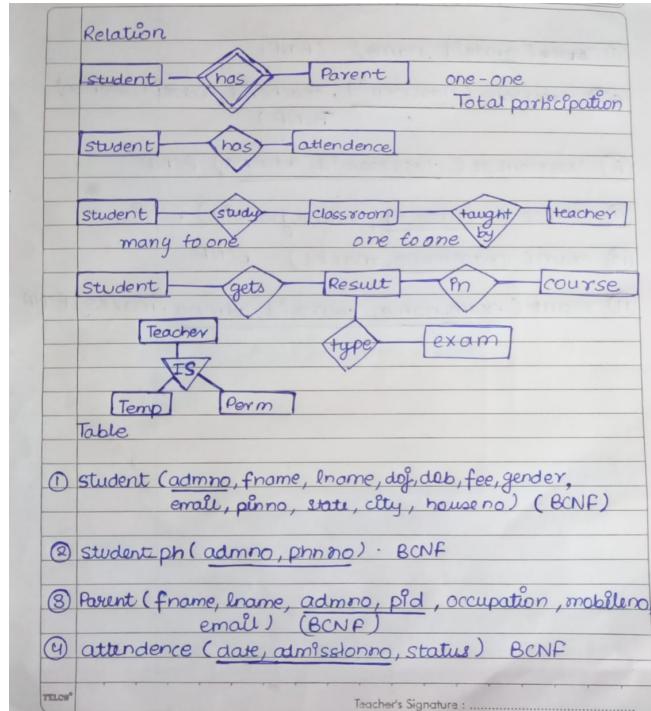
1. Problem Statement.
2. Er Diagram.
3. Er Diagram to relational model.
4. Functional dependencies and Normalisation.
5. SQL (Creating Databases and Tables with proper constraints, insert records ,update record, delete records , alter the schema, perform aggregate functions ,trigger on database.)

PROBLEM STATEMENT

In our project, we are working on a school management system containing the entities Student, Parent, Teacher, Student phone no., attendance, Result, Exam, Classroom, Course, Grade. In front end we are giving the user(student) access to his/her data. We are also providing access to teacher about her data, her class data and attendance data. We are also making a data administrator

ENTITY RELATIONSHIP MODEL





ER DIAGRAM TO RELATIONAL

These are the following entities of our school management system:

1. STUDENT

- Admission_no.
- Fname
- Lname
- gender
- Doj
- Dob
- Fee
- Email
- House no.
- City
- State
- PinCode

2. Student_Phone_no.

- Admission_no.
- Phone_no.

3. Parent

- Admission_no.
- Parent_id

- Occupation
- Mobile_no
- Email

4.Attendance

- Date(primary key)
- Admission_no.(primary key, foreign key)
- Status

5.Teacher

- Teacher_id
- fname
- lname
- status
- Gender
- Mobile_no
- Email

6.Grade

- Grade_id
- Name

7.Classroom

- Classroom_id
- teacher_id(Foreign key)

- Grade_id(foreign Key)
- Section

8.Classroom_st

- Classroom_id(primary key and foreign key)
- Admission_no.(primary key and foreign key)

9.Course

- Course_id
- course_name
- Grade_id(foreign key)

10.RESULT

- exam_name(primary key)
- course_id(primary key, foreign key)
- admission_no(primary key, foreign key)
- marks
- total_marks

FUNCTIONAL DEPENDENCIES AND NORMALISATION

BCNF Normal Form : A relation schema is said to be in BCNF if following two conditions holds:

1. R should be in 3NF
2. LHS of every Functional dependency must be a super key.

1. STUDENT

- Admission_no.
- Fname
- Lname
- gender
- Doj
- Dob
- Fee
- Email
- House no.
- City
- State
- Pin

This table is already in BCNF normal form. So no need to normalise.

2. Student_Phone_no.

- Admission_no.
- Phone_no.

This table is already in BCNF form. So need to normalize.

3.PARENT

- Admission_no.
- Parent_id
- Occupation
- Mobile_no
- Email

PARENT table is also in BCNF normal form. So no need to normalize.

4.Attendance

- Date(primary key)
- Admission_no.(primary key, foreign key)
- Status

This table is already in BCNF normal form.

5.Teacher

- Teacher_id
- fname
- lname
- status
- Gender
- Mobile_no

- Email

This table is already in BCNF normal form.

6.Grade

- Grade_id
- Name

This table is already in BCNF normal form.

7.Classroom

- Classroom_id
- teacher_id(Foreign key)
- Grade_id(foreign Key)
- Section

This table is already in BCNF normal form.

8.Classroom_st

- Classroom_id(primary key and foreign key)
- Admission_no.(primary key and foreign key)

This table is already in BCNF normal form.

9.Course

- Course_id
- course_name
- Grade_id(foreign key)

This table is already in BCNF normal form.

10.RESULT

- exam_name(primary key)
- course_id(primary key, foreign key)
- admission_no(primary key, foreign key)
- marks
- total_marks

In this table exam_name determines total_marks. since exam_name is not a primary key, we will create a new table EXAM with exam_name as primary key and total_marks as another attribute.

10.Exam

- exam_name(primary key)
- total_marks

This is in BCNF Normal form now.

11.RESULT

- exam_name(primary key)
- course_id(primary key, foreign key)

- admission_no(primary key, foreign key)
- marks

This is in BCNF Normal form

SQL

```
CREATE DATABASE school;
```

```
USE school;
```

```
CREATE TABLE student (
```

```
    admission_no INT PRIMARY KEY,
```

```
    fname VARCHAR(50),
```

```
    lname VARCHAR(50),
```

```
    doj DATE,
```

```
    dob DATE,
```

```
    fee_status ENUM('Paid', 'Unpaid'),
```

```
    email VARCHAR(100),
```

```
    house_no VARCHAR(20),
```

```
    city VARCHAR(50),
```

```
    state VARCHAR(50),
```

```
    pincode VARCHAR(10),
```

```
    gender ENUM('Male', 'Female', 'Other')
```

```
);
```

```
INSERT INTO student (admission_no, fname, lname, doj, dob, fee_status, email, house_no, city, state,  
pincode, gender)
```

VALUES

```
(1, 'John', 'Doe', '2023-01-15', '2000-05-10', 'Paid', 'john.doe@example.com', '123 Main St', 'New York', 'NY',  
'10001', 'Male'),  
  
(2, 'Jane', 'Smith', '2023-02-20', '2001-08-18', 'Paid', 'jane.smith@example.com', '456 Elm St', 'Los Angeles',  
'CA', '90001', 'Female'),  
  
(3, 'Bob', 'Johnson', '2023-03-10', '1999-11-25', 'Unpaid', 'bob.johnson@example.com', '789 Oak St',  
'Chicago', 'IL', '60601', 'Male'),  
  
(4, 'Alice', 'Brown', '2023-04-05', '2002-03-30', 'Paid', 'alice.brown@example.com', '101 Pine St', 'Houston',  
'TX', '77001', 'Female'),  
  
(5, 'David', 'Lee', '2023-05-12', '2001-07-15', 'Unpaid', 'david.lee@example.com', '202 Cedar St', 'Phoenix',  
'AZ', '85001', 'Male'),  
  
(6, 'Sarah', 'Wilson', '2023-06-25', '2003-01-12', 'Paid', 'sarah.wilson@example.com', '303 Maple St',  
'Philadelphia', 'PA', '19101', 'Female'),  
  
(7, 'Michael', 'Anderson', '2023-07-03', '2000-09-05', 'Paid', 'michael.anderson@example.com', '404 Birch  
St', 'San Antonio', 'TX', '78201', 'Male'),  
  
(8, 'Emily', 'Garcia', '2023-08-14', '2002-05-22', 'Unpaid', 'emily.garcia@example.com', '505 Redwood St',  
'San Diego', 'CA', '92101', 'Female'),  
  
(9, 'James', 'Martinez', '2023-09-17', '2001-04-14', 'Paid', 'james.martinez@example.com', '606 Walnut St',  
'Dallas', 'TX', '75201', 'Male'),  
  
(10, 'Olivia', 'Lopez', '2023-10-21', '2002-06-20', 'Unpaid', 'olivia.lopez@example.com', '707 Willow St', 'San  
Jose', 'CA', '95101', 'Female'),  
  
(11, 'Daniel', 'Hernandez', '2023-11-30', '1999-12-01', 'Paid', 'daniel.hernandez@example.com', '808  
Chestnut St', 'Austin', 'TX', '78701', 'Male'),  
  
(12, 'Sophia', 'Gonzalez', '2023-12-09', '2000-03-02', 'Unpaid', 'sophia.gonzalez@example.com', '909  
Oakwood St', 'San Francisco', 'CA', '94101', 'Female'),  
  
(13, 'William', 'Perez', '2024-01-11', '2002-07-27', 'Paid', 'william.perez@example.com', '1010 Pinecrest St',  
'Seattle', 'WA', '98101', 'Male'),  
  
(14, 'Ava', 'Rodriguez', '2024-02-14', '2001-10-10', 'Paid', 'ava.rodriguez@example.com', '1111 Elmwood St',  
'Denver', 'CO', '80201', 'Female'),  
  
(15, 'Joseph', 'Taylor', '2024-03-18', '2003-04-05', 'Unpaid', 'joseph.taylor@example.com', '1212  
Birchwood St', 'Miami', 'FL', '33101', 'Male');
```

```
CREATE TABLE student_ph (
    admission_no INT,
    phone_no VARCHAR(15),
    PRIMARY KEY (admission_no, phone_no),
    FOREIGN KEY (admission_no) REFERENCES student(admission_no)
);
```

```
INSERT INTO student_ph (admission_no, phone_no)
```

```
VALUES
```

```
(1, '123-456-7890'),
(1, '987-654-3210'),
(2, '234-567-8901'),
(3, '345-678-9012'),
(3, '999-999-9999'),
(4, '456-789-0123'),
(5, '567-890-1234'),
(6, '678-901-2345'),
(7, '789-012-3456'),
(7, '111-222-3333'),
(8, '890-123-4567'),
(9, '901-234-5678'),
(10, '012-345-6789');
```

```
CREATE TABLE parent (
    fname VARCHAR(50),
```

```
lname VARCHAR(50),  
admission_no INT,  
parent_id INT,  
occupation VARCHAR(100),  
mobile_no VARCHAR(15),  
email VARCHAR(100),  
PRIMARY KEY (admission_no, parent_id),  
FOREIGN KEY (admission_no) REFERENCES student(admission_no),  
CHECK (parent_id IN (0, 1, 2))  
);
```

INSERT INTO parent (fname, lname, admission_no, parent_id, occupation, mobile_no, email)
VALUES

```
('Alice', 'Smith', 1, 0, 'Homemaker', '123-456-7890', 'alice.smith@example.com'),  
(('John', 'Smith', 1, 1, 'Engineer', '987-654-3210', 'john.smith@example.com'),  
(('Emily', 'Johnson', 2, 0, 'Teacher', '234-567-8901', 'emily.johnson@example.com'),  
(('Michael', 'Johnson', 2, 1, 'Doctor', '111-222-3333', 'michael.johnson@example.com'),  
(('Grace', 'Davis', 3, 2, 'Lawyer', '345-678-9012', 'grace.davis@example.com'),  
(('Sophia', 'Brown', 4, 0, 'Nurse', '456-789-0123', 'sophia.brown@example.com'),  
(('William', 'Brown', 4, 1, 'Software Developer', '567-890-1234', 'william.brown@example.com'),  
(('Liam', 'Martinez', 5, 2, 'Business Owner', '678-901-2345', 'liam.martinez@example.com'),  
(('Olivia', 'Garcia', 6, 0, 'Accountant', '789-012-3456', 'olivia.garcia@example.com'),  
(('Elijah', 'Garcia', 6, 1, 'Teacher', '890-123-4567', 'elijah.garcia@example.com'),  
(('Evelyn', 'Taylor', 7, 2, 'Artist', '901-234-5678', 'evelyn.taylor@example.com'),  
(('Emma', 'Hernandez', 8, 0, 'Engineer', '012-345-6789', 'emma.hernandez@example.com'),  
(('Noah', 'Hernandez', 8, 1, 'Nurse', '112-233-4455', 'noah.hernandez@example.com'),  
(('Mia', 'Lopez', 9, 2, 'Lawyer', '223-344-5566', 'mia.lopez@example.com'),
```

```
('Lucas', 'Wilson', 10, 0, 'Doctor', '334-455-6677', 'lucas.wilson@example.com'),  
('Ava', 'Smith', 10, 1, 'Teacher', '445-556-7788', 'ava.smith@example.com');
```

CREATE TABLE attendance (

date DATE,

admission_no INT,

status ENUM('Present', 'Absent'),

PRIMARY KEY (`date`, `admission_no`),

FOREIGN KEY (admission_no) **REFERENCES** student(admission_no)

);

```
truncate table attendance;
```

INSERT INTO attendance (**date**, admission_no, **status**)

VALUES

('2023-11-01', 1, 'Present'),

('2023-11-01', 2, 'Present'),

('2023-11-01', 3, 'Absent'),

('2023-11-01', 4, 'Present'),

('2023-11-01', 5, 'Absent')).

('2023-11-01', 6, 'Present').

('2023-11-01', 7, 'Absent')).

('2023-11-01', 8, 'Present').

('2023-11-01' 9 'Present')

('2023-11-01' 10 'Absent')

('2023-10-31', 1, 'Absent'),

('2023-10-31' 2 'Present')

('2023-10-31' 3 'Present')

```
('2023-10-31', 4, 'Absent'),  
('2023-10-31', 5, 'Present'),  
('2023-10-31', 6, 'Present'),  
('2023-10-31', 7, 'Absent'),  
('2023-10-31', 8, 'Present'),  
('2023-10-31', 9, 'Absent'),  
('2023-10-31', 10, 'Present');
```

```
CREATE TABLE teacher (
```

```
teacher_id INT PRIMARY KEY,  
fname VARCHAR(50),  
lname VARCHAR(50),  
status ENUM('Temporary', 'Permanent'),  
gender ENUM('Male', 'Female', 'Other'),  
mobile_no VARCHAR(15),  
email VARCHAR(100)
```

```
);
```

```
-- Sample data for the teacher table
```

```
INSERT INTO teacher (teacher_id, fname, lname, status, gender, mobile_no, email)  
VALUES  
(1, 'John', 'Smith', 'Permanent', 'Male', '123-456-7890', 'john.smith@example.com'),  
(2, 'Alice', 'Johnson', 'Permanent', 'Female', '234-567-8901', 'alice.johnson@example.com'),  
(3, 'Robert', 'Brown', 'Temporary', 'Male', '345-678-9012', 'robert.brown@example.com'),  
(4, 'Mary', 'Davis', 'Permanent', 'Female', '456-789-0123', 'mary.davis@example.com'),  
(5, 'David', 'Martinez', 'Temporary', 'Male', '567-890-1234', 'david.martinez@example.com'),  
(6, 'Sarah', 'Garcia', 'Permanent', 'Female', '678-901-2345', 'sarah.garcia@example.com'),
```

```
(7, 'Michael', 'Lopez', 'Permanent', 'Male', '789-012-3456', 'michael.lopez@example.com'),  
(8, 'Olivia', 'Wilson', 'Temporary', 'Female', '890-123-4567', 'olivia.wilson@example.com'),  
(9, 'James', 'Hernandez', 'Permanent', 'Male', '901-234-5678', 'james.hernandez@example.com'),  
(10, 'Emily', 'Taylor', 'Temporary', 'Female', '012-345-6789', 'emily.taylor@example.com'),  
(11, 'Daniel', 'Gonzalez', 'Permanent', 'Male', '112-233-4455', 'daniel.gonzalez@example.com'),  
(12, 'Sophia', 'Perez', 'Temporary', 'Female', '223-344-5566', 'sophia.perez@example.com'),  
(13, 'William', 'Rodriguez', 'Permanent', 'Male', '334-455-6677', 'william.rodriguez@example.com'),  
(14, 'Ava', 'Brown', 'Permanent', 'Female', '445-556-7788', 'ava.brown@example.com'),  
(15, 'Joseph', 'Garcia', 'Temporary', 'Male', '556-667-8899', 'joseph.garcia@example.com');
```

CREATE TABLE grade (

grade_id **INT PRIMARY KEY**,

name **VARCHAR(50)**

);

INSERT INTO grade (**grade_id**, **name**)

VALUES

(1, '1st Grade'),

(2, '2nd Grade'),

(3, '3rd Grade'),

(4, '4th Grade'),

(5, '5th Grade'),

(6, '6th Grade'),

(7, '7th Grade'),

(8, '8th Grade'),

(9, '9th Grade'),

(10, '10th Grade');

```
CREATE TABLE classroom (

    classroom_id INT PRIMARY KEY,
    teacher_id INT,
    grade_id INT,
    section VARCHAR(5),
    FOREIGN KEY (teacher_id) REFERENCES teacher(teacher_id),
    FOREIGN KEY (grade_id) REFERENCES grade(grade_id)
);
```

```
INSERT INTO classroom (classroom_id, teacher_id, grade_id, section)
```

VALUES

```
(1, 1, 1, 'A'),
(2, 2, 2, 'B'),
(3, 3, 3, 'C'),
(4, 4, 4, 'D'),
(5, 5, 5, 'A'),
(6, 6, 6, 'B'),
(7, 7, 7, 'C'),
(8, 8, 8, 'D'),
(9, 9, 9, 'A'),
(10, 10, 10, 'B'),
(11, 11, 1, 'C'),
(12, 12, 2, 'D'),
(13, 13, 3, 'A'),
```

(14, 14, 4, 'B'),

(15, 15, 5, 'C');

CREATE TABLE classroom_st (

classroom_id **INT**,

admission_no **INT**,

PRIMARY KEY (classroom_id, admission_no),

FOREIGN KEY (classroom_id) **REFERENCES** classroom(classroom_id),

FOREIGN KEY (admission_no) **REFERENCES** student(admission_no)

);

INSERT INTO classroom_st (classroom_id, admission_no)

VALUES

(1, 1),

(1, 2),

(2, 3),

(2, 4),

(3, 5),

(3, 6),

(4, 7),

(4, 8),

(5, 9),

(5, 10),

(6, 11),

(6, 12),

(7, 13),

(7, 14),

(8, 15);

```
CREATE TABLE course (
    course_id INT PRIMARY KEY,
    course_name VARCHAR(100),
    grade_id INT,
    FOREIGN KEY (grade_id) REFERENCES grade(grade_id)
);
```

-- Sample data for the course table

```
INSERT INTO course (course_id, course_name, grade_id)
```

VALUES

(1, 'Mathematics', 1),

(2, 'Science', 1),

(3, 'English', 1),

(4, 'History', 1),

(5, 'Physical Education', 1),

(6, 'Mathematics', 2),

(7, 'Science', 2),

(8, 'English', 2),

(9, 'Art', 2),

(10, 'Music', 2),

(11, 'Mathematics', 3),

(12, 'Science', 3),

(13, 'English', 3),

(14, 'Computer Science', 3),

(15, 'Physical Education', 3),

(16, 'Mathematics', 4),

(17, 'Science', 4),

(18, 'English', 4),

(19, 'Social Studies', 4),

(20, 'French', 4),

(21, 'Mathematics', 5),

(22, 'Science', 5),

(23, 'English', 5),

(24, 'History', 5),

(25, 'Spanish', 5);

CREATE TABLE exam (

exam_name **VARCHAR(50) PRIMARY KEY**,

total_marks **INT**

);

-- Sample data for the exam table

INSERT INTO exam (exam_name, total_marks)

VALUES

('Term 1', 80),

('Term 2', 80),

('PT 1', 30),

('PT 2', 30);

CREATE TABLE result (

```
exam_name VARCHAR(50),  
course_id INT,  
admission_no INT,  
marks INT,  
PRIMARY KEY (exam_name, course_id, admission_no),  
FOREIGN KEY (exam_name) REFERENCES exam(exam_name),  
FOREIGN KEY (course_id) REFERENCES course(course_id),  
FOREIGN KEY (admission_no) REFERENCES student(admission_no)  
);
```

INSERT INTO result (exam_name, course_id, admission_no, marks)

VALUES

('Term 1', 1, 1, 75),

('Term 1', 2, 2, 78),

('Term 1', 1, 3, 62),

('Term 1', 3, 4, 78),

('Term 1', 2, 5, 75),

('Term 2', 1, 1, 62),

('Term 2', 2, 2, 65),

('Term 2', 1, 3, 64),

('Term 2', 3, 4, 50),

('Term 2', 2, 5, 80),

('PT 1', 1, 1, 25),

('PT 1', 2, 2, 10),

('PT 1', 1, 3, 28),

('PT 1', 3, 4, 12),

('PT 1', 2, 5, 30),

('PT 2', 1, 1, 15),
('PT 2', 2, 2, 28),
('PT 2', 1, 3, 20),
('PT 2', 3, 4, 26),
('PT 2', 2, 5, 22),
(Term 1', 4, 6, 70),
(Term 1', 5, 7, 65),
(Term 2', 4, 6, 75),
(Term 2', 5, 7, 80),
(PT 1', 4, 6, 30),
(PT 1', 5, 7, 25);

DELIMITER //

CREATE TRIGGER DeleteStudentCascade

BEFORE DELETE ON student

FOR EACH ROW

BEGIN

-- Delete corresponding records in the parent table

DELETE FROM parent WHERE admission_no = OLD.admission_no;

-- Delete corresponding records in the student_ph table

DELETE FROM student_ph WHERE admission_no = OLD.admission_no;

-- Delete corresponding records in the attendance table

DELETE FROM attendance WHERE admission_no = OLD.admission_no;

-- Delete corresponding records in the classroom_st table

```
DELETE FROM classroom_st WHERE admission_no = OLD.admission_no;
```

-- Delete corresponding records in the result table

```
DELETE FROM result WHERE admission_no = OLD.admission_no;
```

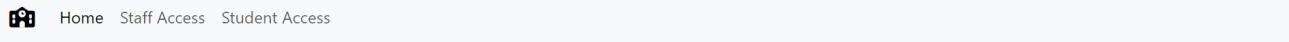
END^{*},

//

```
DELIMITER ;
```

Project Screenshot

Home Page



Home

About

Welcome to XYZ School, where knowledge meets innovation, and dreams are nurtured into reality. Our commitment to providing a holistic and world-class education is at the heart of everything we do.

What Sets us Apart!

1. Exceptional Faculty: Our dedicated and experienced faculty members are passionate about education and go the extra mile to support students in their educational journey.
2. Innovative Curriculum: We offer a diverse and dynamic curriculum that prepares students for the challenges of the modern world.
3. State-of-the-Art Facilities: XYZ School boasts modern facilities, equipped with advanced technology, to provide the best learning environment.
4. Focus on Character Development: Our commitment to character education ensures that students grow not only

Staff Access



Home Staff Access Student Access

john.smith@example.com

1

Log In



Home Staff Access Student Access

Name : John Smith

Gender : Male

Mobile_no : 123-456-7890

Email : john.smith@example.com

Id : 1

Status : Permanent

Grade taught : 1 A

Attendance



Home Staff Access Student Access

Today's Date : Nov 06 2023

1 Present Absent

2 Present Absent

submit

Student Access

 Home Staff Access Student Access

Log In

 Home Staff Access Student Access

Press **F11** to exit full screen

Admission_no : 1

Name : John Doe

Email : john.doe@example.com

Grade : 1 A

Date Of Birth : May 10 2000

Gender : Male

Fee Status : Paid

Address Details :

123 Main St New York NY 10001

Contact Details

123-456-7890

987-654-3210

Show parent's Detail

See attendance

Check results



Home Staff Access Student Access

Student's Admission Number : 1

Mother's Name : Alice Smith

Occupation : Homemaker

Mobile No. : 123-456-7890

Email : alice.smith@example.com

Father's Name : John Smith

Occupation : Engineer

Mobile No. : 987-654-3210

Email : john.smith@example.com



Home Staff Access Student Access

Student's name : John Doe

Date	Status
Oct 31 2023	Absent
Nov 01 2023	Present
Nov 06 2023	Present



Home Staff Access Student Access

Select exam_type

PT 1 ▾

course_id	course_name	marks	total marks
1	Mathematics	25	30

Admin

All Students data							
Admission_no	Name	Grade	Address	Gender	dob	email	
1	John Doe	1 A	123 Main St New York NY 10001	Male	May 10 2000	john.doe@example.com	<button>Delete</button>
2	Jane Smith	1 A	456 Elm St Los Angeles CA 90001	Female	Aug 18 2001	jane.smith@example.com	<button>Delete</button>
3	Bob Johnson	2 B	789 Oak St Chicago IL 60601	Male	Nov 25 1999	bob.johnson@example.com	<button>Delete</button>
4	Alice Brown	2 B	101 Pine St Houston TX 77001	Female	Mar 30 2002	alice.brown@example.com	<button>Delete</button>
5	David Lee	3 C	202 Cedar St Phoenix AZ 85001	Male	Jul 15 2001	david.lee@example.com	<button>Delete</button>
6	Sarah Wilson	3 C	303 Maple St Philadelphia PA 19101	Female	Jan 12 2003	sarah.wilson@example.com	<button>Delete</button>

All Students data							
Admission_no	Name	Grade	Address	Gender	dob	email	
1	John Doe	1 A	123 Main St New York NY 10001	Male	May 10 2000	john.doe@example.com	<button>Delete</button>