
SCHOOL MANAGEMENT PROJECT

Prepared by → A Sairam Kumar Patro

About Me

Name: A. Sairam Kumar Patro

Current Role: Senior Executive @ Eduquity Career Technologies | MCA Pursuing student (AI/ML Specialization) @ Manipal University, Jaipur

Passion: I love learning about new technology and always try to improve. I use my curiosity and flexibility to solve systemic challenges.

Project Overview

[School Database Management System Link](#)

I am undertaking the **Brainwave Matrix Database Interns Project**, a complete **School Database Management System**. This project is motivated by the need to solve inefficiencies in student data management.

Through this project, I showcase my skills in *SQL, database design, and data analysis*. The system includes a detailed *ER diagram*, complete *table definitions*, and *practical queries* that illustrate a robust approach to managing university data. This report is submitted on **February 19th, 2025** as part of my internship program.

Contact Information

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- **Portfolio:**  www.isairamkumar.com
- **LinkedIn:**  [iSairamkumar](#)

About Project

Title

School Management System

Tools & Technologies

- **MySQL Workbench** (for Database management and design)
- **MySQL Reverse Engineer** (for ER Diagram creation)

Database

- **MySQL**

Goal

Centralize student, academics, financial, disciplinary data.

Key Modules:

- Student Management
- Academic Records
- Financial Tracking
- Library System
- Disciplinary Actions

Key features with benefits

The platform provides student and parent profiles, course and grade tracking, fee management, and library management, along with disciplinary data.

- Student/parent profiles
- Course and grade tracking
- Fee and library management
- Reduced manual work for staff
- Real-time access to student records
- Improved decision-making for faculty

School Management System

The entities (tables) along with their key attributes and the relationships between them.

1. Students

★ Attributes:

- **student_roll** (Primary Key, INT, AUTO_INCREMENT)
- **name** (VARCHAR(100), NOT NULL)
- **email** (VARCHAR(100), NOT NULL, UNIQUE)
- **password_hash** (VARCHAR(255), NOT NULL) – *stores a salted hash*
- **mobile** (VARCHAR(15))
- **semester** (INT)
- **section** (VARCHAR(10))
- **eng_section** (VARCHAR(10)) – *optional for engineering section*
- **sci_section** (VARCHAR(10)) – *optional for science section*
- **enrollment_date** (DATE, NOT NULL)
- **application_number** (VARCHAR(50))
- **current_status** (VARCHAR(20) with CHECK constraint to be 'Active', 'Graduated', or 'Suspended')

★ Relationships:

- **Parents:** Each student is linked to one or more parent records (via **student_roll** in **Parents**).
→ *On Delete / Update Cascade*
- **Grades:** A student can have multiple grade records in **Grades** (via **student_roll**).
- **Fees:** A student can have multiple fee records in **Fees** (via **student_roll**).
- **Disciplinary:** A student can have multiple disciplinary cases in **Disciplinary** (via **student_roll**).
- **Library:** A student may be a borrower in the **Library** table (the foreign key constraint is defined for student borrowers).

2. Parents

★ Attributes:

- **parent_id** (Primary Key, INT, AUTO_INCREMENT)
- **father_name** (VARCHAR(100))
- **mother_name** (VARCHAR(100))
- **email** (VARCHAR(100), UNIQUE)
- **contact_number** (VARCHAR(15), NOT NULL)
- **occupation** (VARCHAR(50))
- **address** (VARCHAR(255), NOT NULL)
- **city** (VARCHAR(100))
- **state** (VARCHAR(50))
- **country** (VARCHAR(50))
- **zip_code** (VARCHAR(10))
- **student_roll** (Foreign Key referencing **Students(student_roll)**)

★ Relationships:

- **Students:** Each parent record is associated with a student. If a student is deleted, the corresponding parent record is removed (ON DELETE CASCADE).

3. Departments

★ Attributes:

- **department_id** (Primary Key, INT, AUTO_INCREMENT)
- **department_code** (VARCHAR(10), NOT NULL, UNIQUE)
- **department_name** (VARCHAR(100), NOT NULL)
- **head_teacher_id** (Foreign Key referencing **Teachers(teacher_id)** – added later)

★ Relationships:

- **Teachers:** A department can have many teachers. Each teacher record in **Teachers** may refer to a department via **department_id**.
→ On deletion of the department, the teacher's **department_id** is set to NULL.
- **Courses:** A department offers multiple courses (each course has a **department_id** linking it here).
- **Head Teacher:** A department may designate one teacher as the head (via **head_teacher_id**).

4. Teachers

★ Attributes:

- **teacher_id** (Primary Key, INT, AUTO_INCREMENT)
- **name** (VARCHAR(100), NOT NULL)
- **email** (VARCHAR(100), NOT NULL, UNIQUE)
- **mobile** (VARCHAR(15))
- **department_id** (Foreign Key referencing **Departments(department_id)**)

★ Relationships:

- **Departments:** Each teacher is linked to a department. Also, a teacher can be designated as the head teacher for a department.
 - **Library (Intended):** Although the **Library** table is meant to handle both students and teachers as borrowers (indicated by **borrower_type**), the current foreign key only enforces the relationship for student borrowers.
-

5. Courses

★ Attributes:

- **course_id** (Primary Key, INT, AUTO_INCREMENT)
- **course_code** (VARCHAR(20), NOT NULL)
- **course_name** (VARCHAR(100), NOT NULL)
- **credits** (TINYINT, NOT NULL)
- **department_id** (Foreign Key referencing **Departments(department_id)**)
- **semester** (INT)

★ Relationships:

- **Departments:** Each course is offered by a department.
- **Grades:** Multiple grade records in **Grades** are linked to a course (via **course_id**).

6. Grades

★ Attributes:

- **grade_id** (Primary Key, INT, AUTO_INCREMENT)
- **student_roll** (Foreign Key referencing **Students(student_roll)**)
- **course_id** (Foreign Key referencing **Courses(course_id)**)
- **marks_obtained** (DECIMAL(5,2))
- **grade_letter** (CHAR(1)) – e.g., A, B, C, etc.
- **submission_date** (DATE)

★ Relationships:

- **Students:** Each grade record is linked to a student.
 - **Courses:** Each grade record is linked to a course.
-

7. Fees

★ Attributes:

- **fee_id** (Primary Key, INT, AUTO_INCREMENT)
- **student_roll** (Foreign Key referencing **Students(student_roll)**)
- **amount** (DECIMAL(10,2), NOT NULL)
- **due_date** (DATE, NOT NULL)
- **payment_status** (VARCHAR(20)) – e.g., 'pending' or 'paid'
- **transaction_id** (VARCHAR(50))
- **payment_date** (DATE)

★ Relationships:

- **Students:** Each fee record is linked to a student.

8. Library

★ Attributes:

- **book_id** (Primary Key, INT, AUTO_INCREMENT)
- **isbn** (VARCHAR(20))
- **title** (VARCHAR(255))
- **author** (VARCHAR(100))
- **borrower_id** (INT) – intended to reference either a student or teacher
- **borrower_type** (ENUM('Student', 'Teacher')) – indicates type of borrower
- **checkout_date** (DATE)
- **due_date** (DATE)
- **return_status** (VARCHAR(20)) – e.g., 'checked out', 'returned', 'overdue'

★ Relationships:

- **Students:** There is a foreign key constraint (**fk_student**) linking **borrower_id** to **Students(student_roll)**.
-

9. Disciplinary

★ Attributes:

- **case_id** (Primary Key, INT, AUTO_INCREMENT)
- **student_roll** (Foreign Key referencing **Students(student_roll)**)
- **incident_date** (DATE)
- **description** (TEXT)
- **reExplanation_status** (VARCHAR(50))
- **action_taken** (VARCHAR(100))

★ Relationships:

- **Students:** Each disciplinary case is associated with a student.

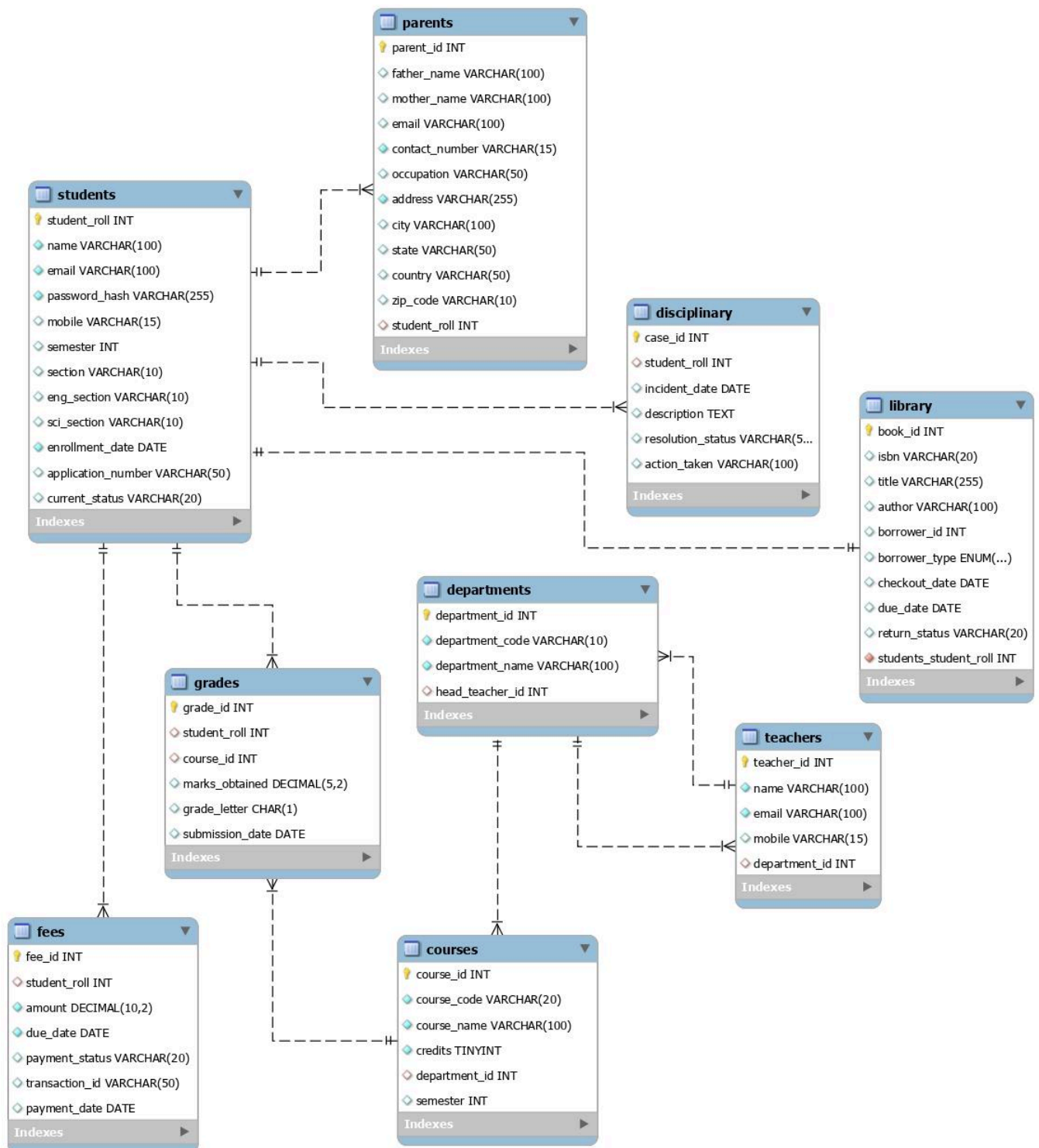
Overall Entity Relationships Short Summary is:

- **Students** is the central entity with related records in **Parents**, **Grades**, **Fees**, **Disciplinary**, and (intended) **Library**.
- **Departments** manage **Teachers** and **Courses**, and also designate a **Head Teacher**.
- **Courses** are linked to **Grades** which in turn link back to **Students**.
- **Teachers** belong to **Departments** and can (intended) borrow library items.
- **Library** is designed to track items borrowed by either Students or Teachers, though the current referential integrity enforces the relationship only for Students.

Below is the complete ER Diagram ↓

by a sairam ku patro

ER Diagram for School Management System



Query 1: List all Graduated students

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

```
mysql> SELECT * FROM students WHERE current status = 'Graduated';
```

[illegible]

Query 2: Retrieve the Parent Contact details

Get parents names with contact numbers for a specific student (e.g, 7)

Student Table

| student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Parents Table

| | parent_id | father_name | mother_name | email | contact_number | occupation | address | city | state | country | zip_code | student_roll |
|---|-----------|-------------------|------------------|------------------------------|----------------|------------|--------------------|-----------|-------------|---------|----------|--------------|
| ▶ | 1 | Rajesh Sharma | Sunita Sharma | parents.sharma@gmail.com | 9878686866 | Engineer | 123 Gandhi Nagar | Pilani | Rajasthan | India | 333031 | 1 |
| | 2 | Vijay Patel | Anita Patel | parents.patel@gmail.com | 9877654321 | Doctor | 456 Nehru Road | Jaipur | Rajasthan | India | 302001 | 2 |
| | 3 | Amar Kumar | Rekha Kumar | parents.kumar@gmail.com | 9876767686 | Teacher | 789 Tagore Street | Delhi | Delhi | India | 110001 | 3 |
| | 4 | Rakesh Gupta | Mala Gupta | parents.gupta@gmail.com | 7675645453 | Business | 321 Ashok Marg | Mumbai | Maharashtra | India | 400001 | 4 |
| | 5 | Sanjay Singh | Poonam Singh | parents.singh@gmail.com | 9225959152 | Lawyer | 654 Patel Chowk | Chennai | Tamil Nadu | India | 600001 | 5 |
| | 6 | Rahul Reddy | Sunita Reddy | parents.reddy@gmail.com | 9885264238 | Farmer | 987 Krishna Nagar | Hyderabad | Telangana | India | 500001 | 6 |
| | 7 | Arvind Mehta | Anjali Mehta | parents.mehta@gmail.com | 9118442750 | Engineer | 741 Gandhi Road | Bangalore | Karnataka | India | 560001 | 7 |
| | 8 | Naresh Iyer | Kavita Iyer | parents.iyer@gmail.com | 9112775200 | Doctor | 852 Nehru Street | Pune | Maharashtra | India | 411001 | 8 |
| | 9 | Vijay Joshi | Ritu Joshi | parents.joshi@gmail.com | 9112825185 | Teacher | 963 Tagore Marg | Kolkata | West Bengal | India | 700001 | 9 |
| | 10 | Raj Malhotra | Suman Malhotra | parents.malhotra@gmail.com | 9115929778 | Business | 147 Ashok Road | Ahmedabad | Gujarat | India | 380001 | 10 |
| | 11 | Ravi Khanna | Meena Khanna | parents.khanna@gmail.com | 9867745434 | Lawyer | 258 Patel Nagar | Lucknow | UP | India | 226001 | 11 |
| | 12 | Sunil Desai | Anita Desai | parents.desai@gmail.com | 9533434343 | Farmer | 369 Krishna Street | Nagpur | Maharashtra | India | 440001 | 12 |
| | 13 | Amit Verma | Rekha Verma | parents.verma@gmail.com | 7654545544 | Engineer | 159 Gandhi Marg | Surat | Gujarat | India | 395001 | 13 |
| | 14 | Prakash Sriniv... | Lata Srinivasan | parents.srinivasan@gmail.com | 9117216905 | Doctor | 753 Nehru Road | Bhopal | MP | India | 462001 | 14 |
| | 15 | Alok Choudhu... | Sunita Choudhury | parents.choudhury@gmail.com | 9884473806 | Teacher | 852 Tagore Chowk | Patna | Bihar | India | 800001 | 15 |
| | 16 | Ramesh Rao | Anjali Rao | parents.rao@gmail.com | 9990895558 | Business | 456 Ashok Street | Jaipur | Rajasthan | India | 302002 | 16 |
| | 17 | Manoj Bajpai Sr. | Kiran Bajpai | parents.bajpai@gmail.com | 9997232731 | Lawyer | 789 Patel Marg | Chennai | Tamil Nadu | India | 600002 | 17 |
| | 18 | Ravi Narayan | Meera Narayan | parents.narayan@gmail.com | 9997759904 | Farmer | 123 Krishna Road | Hyderabad | Telangana | India | 500002 | 18 |
| | 19 | Vijay Rana | Sunita Rana | parents.rana@gmail.com | 9887497436 | Engineer | 456 Gandhi Nagar | Bangalore | Karnataka | India | 560002 | 19 |
| | 20 | Raj Kapoor | Anita Kapoor | parents.kapoor@gmail.com | 7778985462 | Doctor | 789 Nehru Street | Pune | Maharashtra | India | 411002 | 20 |

Explanation

```
mysql> SELECT father_name, mother_name, contact_number FROM parents WHERE student_roll = 7;
```

| | father_name | mother_name | contact_number |
|---|--------------|--------------|----------------|
| ▶ | Arvind Mehta | Anjali Mehta | 9118442750 |

Query 3: Students in Semester 3, Section A

Find students' roll numbers, name, and their email address in semester 3, section A, 'cause teacher wants to share Study Materials.

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

mysql> **SELECT** student_roll, name, email **FROM** Students **WHERE** section = 'A' **AND** semester = 3;

| | student_roll | name | email |
|---|--------------|--------------|----------------------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com |

Query 4: Find Students Enrolled in 2023

The admission team wants to analyze the number of student enrollments in the year 2023.

| | student_rol | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|-------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> SELECT * FROM Students WHERE year(enrollment_date) = 2023;
```

| | student_rol | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|-------------|----------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |

Query 5: Count of Students in Each Semester

The CoE office wants to know the distribution of students in each semester.

| | student_rol | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|-------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> SELECT semester, COUNT(*) AS student_counts FROM Students GROUP BY semester;
```

| | semester | student_counts |
|---|----------|----------------|
| ▶ | 3 | 4 |
| | 2 | 3 |
| | 4 | 4 |
| | 5 | 3 |
| | 1 | 3 |
| | 6 | 3 |

Query 6: Fetch Teachers from a Specific Department

ACoE wants to send an email regarding their department's teachers. So, he wants to know the teachers' names, emails, and mobile numbers for a specific department (School of Computer Science).

Teacher Table

| | teacher_id | name | email | mobile | department_id |
|---|------------|-----------------------------|---------------------------------|------------|---------------|
| ► | 1 | Prof. Puspallata Pattojoshi | puspalata.pattojoshi@bits.ac.in | 9222222221 | 1 |
| | 2 | Prof. Jayashree Das | jayashree.das@bits.ac.in | 9222222222 | 1 |
| | 3 | Prof. R. N. Mukharjee | r.mukharjee@bits.ac.in | 9222222223 | 1 |
| | 4 | Prof. S. K. S. Parashar | s.parashar@bits.ac.in | 9222222224 | 1 |
| | 5 | Prof. B. B. Kar | b.kar@bits.ac.in | 9222222225 | 2 |
| | 6 | Prof. T. K. Bastia | t.bastia@bits.ac.in | 9222222226 | 2 |
| | 7 | Prof. Kajal Parashar | kajal.parashar@bits.ac.in | 9222222227 | 2 |
| | 8 | Prof. Rojalin Sahu | rojalin.sahu@bits.ac.in | 9222222228 | 2 |
| | 9 | Prof. Jyoti Prakash Maity | jyoti.maity@bits.ac.in | 9222222229 | 3 |
| | 10 | Prof. Anita Pati | anita.pati@bits.ac.in | 9222222230 | 3 |
| | 11 | Prof. Jasaswini Tripathy | jasaswini.tripathy@bits.ac.in | 9222222231 | 3 |
| | 12 | Prof. Sanjoy Ku. Maji | sanjoy.maji@bits.ac.in | 9222222232 | 3 |

Department Table

| | department_id | department_code | department_name | head_teacher_id |
|---|---------------|-----------------|----------------------------|-----------------|
| ► | 1 | SCE | School of Civil | 1 |
| | 2 | SME | School of Mechanical | 2 |
| | 3 | SEE | School of Electrical | 3 |
| | 4 | SETC | School of Electronics | 4 |
| | 5 | SCS | School of Computer Science | 5 |
| | 6 | SIT | School of IT | NULL |

Explanation

```
mysql> SELECT name, email, mobile FROM teachers WHERE department_id =  
(SELECT department_id FROM departments WHERE department_name = 'School of  
Computer Science');
```

| | name | email | mobile |
|---|------------------------|-----------------------------|------------|
| ► | Prof. Ch Vinod | ch.vinod@bits.ac.in | 9222222237 |
| | Prof. Sutanu Satpathy | sutanu.satpathy@bits.ac.in | 9222222238 |
| | Prof. Nikita Mahapatra | nikita.mahapatra@bits.ac.in | 9222222239 |
| | Prof. Sarbari Acharya | sarbari.acharya@bits.ac.in | 9222222240 |

Query 7: Total no of Students in School

Get the total number of students in school.

| | student_rol | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|-------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> SELECT COUNT(*) AS Total_Students FROM students;
```

| | Total_Students |
|---|----------------|
| ▶ | 20 |

Query 8: To fetch Students with their Parent Details

The school registrar, preparing for the convocation meeting, needs parent details to ensure smooth communication.

Student Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Parent Table

| | parent_id | father_name | mother_name | email | contact_number | occupation | address | city | state | country | zip_code | student_roll |
|---|-----------|-------------------|------------------|------------------------------|----------------|------------|--------------------|-----------|-------------|---------|----------|--------------|
| ▶ | 1 | Rajesh Sharma | Sunita Sharma | parents.sharma@gmail.com | 9878686866 | Engineer | 123 Gandhi Nagar | Pilani | Rajasthan | India | 333031 | 1 |
| | 2 | Vijay Patel | Anita Patel | parents.patel@gmail.com | 9877654321 | Doctor | 456 Nehru Road | Jaipur | Rajasthan | India | 302001 | 2 |
| | 3 | Amar Kumar | Rekha Kumar | parents.kumar@gmail.com | 9876767686 | Teacher | 789 Tagore Street | Delhi | Delhi | India | 110001 | 3 |
| | 4 | Rakesh Gupta | Mala Gupta | parents.gupta@gmail.com | 7675645453 | Business | 321 Ashok Marg | Mumbai | Maharashtra | India | 400001 | 4 |
| | 5 | Sanjay Singh | Poonam Singh | parents.singh@gmail.com | 9225959152 | Lawyer | 654 Feroz Road | Chennai | Tamil Nadu | India | 600001 | 5 |
| | 6 | Rahul Reddy | Sunita Reddy | parents.reddy@gmail.com | 9885264238 | Farmer | 987 Krishna Nagar | Hyderabad | Telangana | India | 500001 | 6 |
| | 7 | Arvind Mehta | Anjali Mehta | parents.mehta@gmail.com | 9118442750 | Engineer | 741 Gandhi Road | Bangalore | Karnataka | India | 560001 | 7 |
| | 8 | Naresh Iyer | Kavita Iyer | parents.iyer@gmail.com | 9112775200 | Doctor | 852 Nehru Street | Pune | Maharashtra | India | 411001 | 8 |
| | 9 | Vijay Joshi | Ritu Joshi | parents.joshi@gmail.com | 9112825185 | Teacher | 963 Tagore Marg | Kolkata | West Bengal | India | 700001 | 9 |
| | 10 | Raj Malhotra | Suman Malhotra | parents.malhotra@gmail.com | 9115929778 | Business | 147 Ashok Road | Ahmedabad | Gujarat | India | 380001 | 10 |
| | 11 | Ravi Khanna | Meena Khanna | parents.khanna@gmail.com | 9867745434 | Lawyer | 258 Patel Nagar | Lucknow | UP | India | 226001 | 11 |
| | 12 | Sunil Desai | Anita Desai | parents.desai@gmail.com | 9533434343 | Farmer | 369 Krishna Street | Nagpur | Maharashtra | India | 440001 | 12 |
| | 13 | Amit Verma | Rekha Verma | parents.verma@gmail.com | 7654545544 | Engineer | 159 Gandhi Marg | Surat | Gujarat | India | 395001 | 13 |
| | 14 | Prakash Sriniv... | Lata Srinivasan | parents.srinivasan@gmail.com | 9117216905 | Doctor | 753 Nehru Road | Bhopal | MP | India | 462001 | 14 |
| | 15 | Alok Choudhu... | Sunita Choudhury | parents.choudhury@gmail.com | 9884473806 | Teacher | 852 Tagore Chowk | Patna | Bihar | India | 800001 | 15 |
| | 16 | Ramesh Rao | Anjali Rao | parents.rao@gmail.com | 9990895558 | Business | 456 Ashok Street | Jaipur | Rajasthan | India | 302002 | 16 |
| | 17 | Manoj Bajpai Sr. | Kiran Bajpai | parents.bajpai@gmail.com | 9997232731 | Lawyer | 789 Patel Marg | Chennai | Tamil Nadu | India | 600002 | 17 |
| | 18 | Ravi Narayan | Meera Narayan | parents.narayan@gmail.com | 9997759904 | Farmer | 123 Krishna Road | Hyderabad | Telangana | India | 500002 | 18 |
| | 19 | Vijay Rana | Sunita Rana | parents.rana@gmail.com | 9887497436 | Engineer | 456 Gandhi Nagar | Bangalore | Karnataka | India | 560002 | 19 |
| | 20 | Raj Kapoor | Anita Kapoor | parents.kapoor@gmail.com | 7778985462 | Doctor | 789 Nehru Street | Pune | Maharashtra | India | 411002 | 20 |

Explanation

```
mysql> SELECT s.student_roll, s.name, p.father_name, p.mother_name, p.contact_number
FROM Students s JOIN Parents p ON s.student_roll = p.student_roll;
```

| | student_roll | name | father_name | mother_name | contact_number |
|---|--------------|--------------|---------------|---------------|----------------|
| ▶ | 1 | Rahul Sharma | Rajesh Sharma | Sunita Sharma | 9878686866 |
| | 2 | Priya Patel | Vijay Patel | Anita Patel | 9877654321 |
| | 3 | Amit Kumar | Amar Kumar | Rekha Kumar | 9876767686 |
| | 4 | Neha Gupta | Rakesh Gupta | Mala Gupta | 7675645453 |
| | 5 | Ravi Singh | Sanjay Singh | Poonam Singh | 9225959152 |

Query 9: Finding the Teacher against Departments

The COE wants a list of all teachers along with their department names. This query ensures that all teachers are included in the results—even if they are not assigned to any department, in which case the department name will be NULL.

Teacher Table

| | teacher_id | name | email | mobile | department_id |
|---|------------|-----------------------------|---------------------------------|------------|---------------|
| ▶ | 1 | Prof. Puspallata Pattojoshi | puspalata.pattojoshi@bits.ac.in | 9222222221 | 1 |
| | 2 | Prof. Jayashree Das | jayashree.das@bits.ac.in | 9222222222 | 1 |
| | 3 | Prof. R. N. Mukharjee | r.mukharjee@bits.ac.in | 9222222223 | 1 |
| | 4 | Prof. S. K. S. Parashar | s.parashar@bits.ac.in | 9222222224 | 1 |
| | 5 | Prof. B. B. Kar | b.kar@bits.ac.in | 9222222225 | 2 |
| | 6 | Prof. T. K. Bastia | t.bastia@bits.ac.in | 9222222226 | 2 |
| | 7 | Prof. Kajal Parashar | kajal.parashar@bits.ac.in | 9222222227 | 2 |
| | 8 | Prof. Rojalin Sahu | rojalin.sahu@bits.ac.in | 9222222228 | 2 |
| | 9 | Prof. Jyoti Prakash Maity | jyoti.maity@bits.ac.in | 9222222229 | 3 |
| | 10 | Prof. Anita Pati | anita.pati@bits.ac.in | 9222222230 | 3 |
| | 11 | Prof. Jasaswini Tripathy | jasaswini.tripathy@bits.ac.in | 9222222231 | 3 |
| | 12 | Prof. Sanjoy Ku. Maji | sanjoy.maji@bits.ac.in | 9222222232 | 3 |
| | 13 | Prof. Swati Samantaray | swati.samantaray@bits.ac.in | 9222222233 | 4 |
| | 14 | Prof. Seema K. Ladsaria | seema.ladsaria@bits.ac.in | 9222222234 | 4 |
| | 15 | Prof. Sahel Md. D. Hossain | sahel.hossain@bits.ac.in | 9222222235 | 4 |
| | 16 | Prof. Sharda Acharya | sharda.acharya@bits.ac.in | 9222222236 | 4 |
| | 17 | Prof. Ch Vinod | ch.vinod@bits.ac.in | 9222222237 | 5 |
| | 18 | Prof. Sutanu Satpathy | sutanu.satpathy@bits.ac.in | 9222222238 | 5 |
| | 19 | Prof. Nikita Mahapatra | nikita.mahapatra@bits.ac.in | 9222222239 | 5 |
| | 20 | Prof. Sarbari Acharya | sarbari.acharya@bits.ac.in | 9222222240 | 5 |

Department Table

| | department_id | department_code | department_name | head_teacher_id |
|---|---------------|-----------------|----------------------------|-----------------|
| ▶ | 1 | SCE | School of Civil | 1 |
| | 2 | SME | School of Mechanical | 2 |
| | 3 | SEE | School of Electrical | 3 |
| | 4 | SETC | School of Electronics | 4 |
| | 5 | SCS | School of Computer Science | 5 |
| | 6 | SIT | School of IT | NULL |

Explanation

```
mysql> SELECT t.teacher_id, t.name FROM Teachers t LEFT JOIN Departments d ON  
t.department_id = d.department_id;
```

| | teacher_id | name | department_name |
|---|------------|-----------------------------|----------------------------|
| ▶ | 1 | Prof. Puspallata Pattojoshi | School of Civil |
| | 2 | Prof. Jayashree Das | School of Civil |
| | 3 | Prof. R. N. Mukharjee | School of Civil |
| | 4 | Prof. S. K. S. Parashar | School of Civil |
| | 5 | Prof. B. B. Kar | School of Mechanical |
| | 6 | Prof. T. K. Bastia | School of Mechanical |
| | 7 | Prof. Kajal Parashar | School of Mechanical |
| | 8 | Prof. Rojalin Sahu | School of Mechanical |
| | 9 | Prof. Jyoti Prakash Maity | School of Electrical |
| | 10 | Prof. Anita Pati | School of Electrical |
| | 11 | Prof. Jasaswini Tripathy | School of Electrical |
| | 12 | Prof. Sanjoy Ku. Maji | School of Electrical |
| | 13 | Prof. Swati Samantaray | School of Electronics |
| | 14 | Prof. Seema K. Ladsaria | School of Electronics |
| | 15 | Prof. Sahel Md. D. Hossain | School of Electronics |
| | 16 | Prof. Sharda Acharya | School of Electronics |
| | 17 | Prof. Ch Vinod | School of Computer Science |
| | 18 | Prof. Sutanu Satpathy | School of Computer Science |
| | 19 | Prof. Nikita Mahapatra | School of Computer Science |
| | 20 | Prof. Sarbari Acharya | School of Computer Science |

Query 10: Student Grade Report Course wise

The end-term marks are published, and the ACoE wants to analyze each student's course-wise grade report to identify those eligible for the Improvement Exam.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Courses Table

| | course_id | course_code | course_name | credits | department_id | semester |
|---|-----------|-------------|--------------------------|---------|---------------|----------|
| ▶ | 1 | CS101 | Programming Fundamentals | 4 | 1 | 1 |
| | 2 | CS201 | Data Structures | 4 | 1 | 2 |
| | 3 | CS301 | Algorithms | 4 | 1 | 3 |
| | 4 | CS401 | Database Systems | 4 | 1 | 4 |
| | 5 | EE101 | Circuit Theory | 4 | 2 | 1 |
| | 6 | EE201 | Electronics | 4 | 2 | 2 |
| | 7 | EE301 | Power Systems | 4 | 2 | 3 |
| | 8 | EE401 | Control Systems | 4 | 2 | 4 |
| | 9 | ME101 | Thermodynamics | 4 | 3 | 1 |
| | 10 | ME201 | Fluid Mechanics | 4 | 3 | 2 |
| | 11 | ME301 | Machine Design | 4 | 3 | 3 |
| | 12 | ME401 | Heat Transfer | 4 | 3 | 4 |
| | 13 | PHY101 | Classical Mechanics | 4 | 4 | 1 |
| | 14 | PHY201 | Quantum Physics | 4 | 4 | 2 |
| | 15 | PHY301 | Electromagnetism | 4 | 4 | 3 |
| | 16 | PHY401 | Thermal Physics | 4 | 4 | 4 |
| | 17 | CHEM101 | Organic Chemistry | 4 | 5 | 1 |
| | 18 | CHEM201 | Inorganic Chemistry | 4 | 5 | 2 |
| | 19 | CHEM301 | Physical Chemistry | 4 | 5 | 3 |
| | 20 | CHEM401 | Analytical Chemistry | 4 | 5 | 4 |

Grades Table

| | grade_id | student_roll | course_id | marks_obtained | grade_letter | submission_date |
|---|----------|--------------|-----------|----------------|--------------|-----------------|
| ▶ | 1 | 1 | 1 | 85.50 | A | 2023-12-01 |
| | 2 | 2 | 5 | 78.00 | B | 2023-12-02 |
| | 3 | 3 | 9 | 92.30 | A | 2023-12-03 |
| | 4 | 4 | 13 | 67.80 | C | 2023-12-04 |
| | 5 | 5 | 17 | 74.50 | B | 2023-12-05 |
| | 6 | 6 | 2 | 81.20 | A | 2023-12-06 |
| | 7 | 7 | 6 | 88.90 | A | 2023-12-07 |
| | 8 | 8 | 10 | 63.40 | D | 2023-12-08 |
| | 9 | 9 | 14 | 79.10 | B | 2023-12-09 |
| | 10 | 10 | 18 | 91.00 | A | 2023-12-10 |
| | 11 | 11 | 3 | 72.50 | C | 2023-12-11 |
| | 12 | 12 | 7 | 84.70 | B | 2023-12-12 |
| | 13 | 13 | 11 | 59.80 | E | 2023-12-13 |
| | 14 | 14 | 15 | 96.20 | A | 2023-12-14 |
| | 15 | 15 | 19 | 68.90 | D | 2023-12-15 |
| | 16 | 16 | 4 | 77.30 | B | 2023-12-16 |
| | 17 | 17 | 8 | 82.60 | A | 2023-12-17 |
| | 18 | 18 | 12 | 73.10 | C | 2023-12-18 |
| | 19 | 19 | 16 | 89.40 | A | 2023-12-19 |
| | 20 | 20 | 20 | 65.00 | D | 2023-12-20 |

Explanation

mysql> **SELECT**

s.student_roll,

s.name **AS** student_name,

c.course_code,

c.course_name,

g.marks_obtained,

g.grade_letter

FROM bitspilani.grades g

JOIN bitspilani.students s **ON** g.student_roll = s.student_roll

JOIN bitspilani.courses c **ON** g.course_id = c.course_id

ORDER BY s.student_roll, c.course_code;

| | student_roll | student_name | course_code | course_name | marks_obtained | grade_letter |
|---|--------------|-------------------|-------------|--------------------------|----------------|--------------|
| ► | 1 | Rahul Sharma | CS101 | Programming Fundamentals | 85.50 | A |
| | 2 | Priya Patel | EE101 | Circuit Theory | 78.00 | B |
| | 3 | Amit Kumar | ME101 | Thermodynamics | 92.30 | A |
| | 4 | Neha Gupta | PHY101 | Classical Mechanics | 67.80 | C |
| | 5 | Ravi Singh | CHEM101 | Organic Chemistry | 74.50 | B |
| | 6 | Sneha Reddy | CS201 | Data Structures | 81.20 | A |
| | 7 | Arjun Mehta | EE201 | Electronics | 88.90 | A |
| | 8 | Ananya Iyer | ME201 | Fluid Mechanics | 63.40 | D |
| | 9 | Vikram Joshi | PHY201 | Quantum Physics | 79.10 | B |
| | 10 | Priyanka Malhotra | CHEM201 | Inorganic Chemistry | 91.00 | A |
| | 11 | Rajesh Khanna | CS301 | Algorithms | 72.50 | C |
| | 12 | Meera Desai | EE301 | Power Systems | 84.70 | B |
| | 13 | Sanjay Verma | ME301 | Machine Design | 59.80 | E |
| | 14 | Pooja Srinivasan | PHY301 | Electromagnetism | 96.20 | A |
| | 15 | Alok Choudhury | CHEM301 | Physical Chemistry | 68.90 | D |
| | 16 | Kavita Rao | CS401 | Database Systems | 77.30 | B |
| | 17 | Manoj Bajpai | EE401 | Control Systems | 82.60 | A |
| | 18 | Sunita Narayan | ME401 | Heat Transfer | 73.10 | C |
| | 19 | Vivek Rana | PHY401 | Thermal Physics | 89.40 | A |
| | 20 | Anjali Kapoor | CHEM401 | Analytical Chemistry | 65.00 | D |

Query 11: Student Disciplinary Records Check

The Registrar reviews disciplinary incidents for each student, including roll number, name, incident date, and details.

| | case_id | student_roll | incident_date | description | resolution_status | action_taken |
|---|---------|--------------|---------------|--|-------------------|---|
| ▶ | 1 | 1 | 2023-03-15 | Using ChatGPT during an online exam | Resolved | Zero marks awarded and warning issued |
| | 2 | 2 | 2023-04-02 | Caught sharing answers via messaging app duri... | Pending | Investigation ongoing |
| | 3 | 3 | 2022-11-10 | Leaked exam question paper to classmates | Resolved | Suspension for 2 weeks |
| | 4 | 4 | 2021-09-22 | Using smartwatch to access answers during exam | Resolved | Disqualified from the exam |
| | 5 | 5 | 2023-08-05 | Found using ChatGPT to write assignment | Pending | Assignment rejected, further action pending |
| | 6 | 6 | 2019-12-15 | Caught with handwritten notes during exam | Resolved | Zero marks awarded |
| | 7 | 7 | 2022-07-20 | Using ChatGPT to generate answers for take-h... | Resolved | Grade deduction and warning |
| | 8 | 8 | 2021-05-10 | Sharing exam questions with students from ano... | Resolved | Suspension for 1 month |
| | 9 | 9 | 2023-02-14 | Using ChatGPT to complete lab report | Resolved | Lab report rejected and resubmission required |
| | 10 | 10 | 2020-11-30 | Leaked midterm exam paper on social media | Resolved | Suspension for 2 weeks and fine imposed |
| | 11 | 11 | 2019-09-05 | Caught using ChatGPT during viva voce | Resolved | Viva marks set to zero |
| | 12 | 12 | 2023-06-18 | Using ChatGPT to write research paper | Pending | Investigation ongoing, paper under review |
| | 13 | 13 | 2022-03-12 | Found with pre-written answers during exam | Resolved | Disqualified from the exam |
| | 14 | 14 | 2021-08-25 | Using ChatGPT to solve programming assignment | Resolved | Assignment rejected and resubmission required |
| | 15 | 15 | 2023-09-01 | Leaked final exam paper to external group | Pending | Suspension recommended, awaiting approval |
| | 16 | 16 | 2020-04-15 | Using ChatGPT to generate project report | Resolved | Project rejected and re-evaluation required |
| | 17 | 17 | 2019-10-31 | Caught using ChatGPT during online quiz | Resolved | Quiz marks set to zero |
| | 18 | 18 | 2023-07-07 | Sharing exam questions with juniors | Pending | Investigation ongoing, possible suspension |
| | 19 | 19 | 2022-05-20 | Using ChatGPT to write thesis chapter | Resolved | Thesis chapter rejected and resubmission req... |
| | 20 | 20 | 2021-12-24 | Leaked semester exam paper to WhatsApp group | Resolved | Suspension for 1 month and fine imposed |

Explanation

```
mysql> SELECT
    s.student_roll,
    s.name AS student_name,
    d.incident_date,
    d.description
    FROM Students s
    JOIN Disciplinary d ON s.student_roll = d.student_roll;
```

| | student_roll | student_name | incident_date | description |
|---|--------------|-------------------|---------------|--|
| ▶ | 1 | Rahul Sharma | 2023-03-15 | Using ChatGPT during an online exam |
| | 2 | Priya Patel | 2023-04-02 | Caught sharing answers via messaging app duri... |
| | 3 | Amit Kumar | 2022-11-10 | Leaked exam question paper to classmates |
| | 4 | Neha Gupta | 2021-09-22 | Using smartwatch to access answers during exam |
| | 5 | Ravi Singh | 2023-08-05 | Found using ChatGPT to write assignment |
| | 6 | Sneha Reddy | 2019-12-15 | Caught with handwritten notes during exam |
| | 7 | Arjun Mehta | 2022-07-20 | Using ChatGPT to generate answers for take-h... |
| | 8 | Ananya Iyer | 2021-05-10 | Sharing exam questions with students from ano... |
| | 9 | Vikram Joshi | 2023-02-14 | Using ChatGPT to complete lab report |
| | 10 | Priyanka Malhotra | 2020-11-30 | Leaked midterm exam paper on social media |
| | 11 | Rajesh Khanna | 2019-09-05 | Caught using ChatGPT during viva voce |
| | 12 | Meera Desai | 2023-06-18 | Using ChatGPT to write research paper |
| | 13 | Sanjay Verma | 2022-03-12 | Found with pre-written answers during exam |
| | 14 | Pooja Srinivasan | 2021-08-25 | Using ChatGPT to solve programming assignment |
| | 15 | Alok Choudhury | 2023-09-01 | Leaked final exam paper to external group |
| | 16 | Kavita Rao | 2020-04-15 | Using ChatGPT to generate project report |
| | 17 | Manoj Bajpai | 2019-10-31 | Caught using ChatGPT during online quiz |
| | 18 | Sunita Narayan | 2023-07-07 | Sharing exam questions with juniors |
| | 19 | Vivek Rana | 2022-05-20 | Using ChatGPT to write thesis chapter |
| | 20 | Anjali Kapoor | 2021-12-24 | Leaked semester exam paper to WhatsApp group |

Query 12: Sem 3 Active Students & Parent Details

Admission department wants to retrieve names, parent details, and contact numbers of active students in the 3rd semester.

Students Table

| student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Parents Table

| parent_id | father_name | mother_name | email | contact_number | occupation | address | city | state | country | zip_code | student_roll |
|-----------|-------------------|------------------|------------------------------|----------------|------------|--------------------|-----------|-------------|---------|----------|--------------|
| 1 | Rajesh Sharma | Sunita Sharma | parents.sharma@gmail.com | 9878686866 | Engineer | 123 Gandhi Nagar | Pilani | Rajasthan | India | 333031 | 1 |
| 2 | Vijay Patel | Anita Patel | parents.patel@gmail.com | 9877654321 | Doctor | 456 Nehru Road | Jaipur | Rajasthan | India | 302001 | 2 |
| 3 | Amar Kumar | Rekha Kumar | parents.kumar@gmail.com | 9876767686 | Teacher | 789 Tagore Street | Delhi | Delhi | India | 110001 | 3 |
| 4 | Rakesh Gupta | Mala Gupta | parents.gupta@gmail.com | 7675645453 | Business | 321 Ashok Road | Mumbai | Maharashtra | India | 400001 | 4 |
| 5 | Sanjay Singh | Poonam Singh | parents.singh@gmail.com | 9225959152 | Lawyer | 654 F. Road | Chennai | Tamil Nadu | India | 600001 | 5 |
| 6 | Rahul Reddy | Sunita Reddy | parents.reddy@gmail.com | 9885264238 | Farmer | 987 Krishna Nagar | Hyderabad | Telangana | India | 500001 | 6 |
| 7 | Arvind Mehta | Anjali Mehta | parents.mehta@gmail.com | 9118442750 | Engineer | 741 Gandhi Road | Bangalore | Karnataka | India | 560001 | 7 |
| 8 | Naresh Iyer | Kavita Iyer | parents.iyer@gmail.com | 9112775200 | Doctor | 852 Nehru Street | Pune | Maharashtra | India | 411001 | 8 |
| 9 | Vijay Joshi | Ritu Joshi | parents.joshi@gmail.com | 9112825185 | Teacher | 963 Tagore Marg | Kolkata | West Bengal | India | 700001 | 9 |
| 10 | Raj Malhotra | Suman Malhotra | parents.malhotra@gmail.com | 9115929778 | Business | 147 Ashok Road | Ahmedabad | Gujarat | India | 380001 | 10 |
| 11 | Ravi Khanna | Meena Khanna | parents.khanna@gmail.com | 9867745434 | Lawyer | 258 Patel Nagar | Lucknow | UP | India | 226001 | 11 |
| 12 | Sunil Desai | Anita Desai | parents.desai@gmail.com | 9533434343 | Farmer | 369 Krishna Street | Nagpur | Maharashtra | India | 440001 | 12 |
| 13 | Amit Verma | Rekha Verma | parents.verma@gmail.com | 7654545544 | Engineer | 159 Gandhi Marg | Surat | Gujarat | India | 395001 | 13 |
| 14 | Prakash Sriniv... | Lata Srinivasan | parents.srinivasan@gmail.com | 9117216905 | Doctor | 753 Nehru Road | Bhopal | MP | India | 462001 | 14 |
| 15 | Alok Choudhu... | Sunita Choudhury | parents.choudhury@gmail.com | 9884473806 | Teacher | 852 Tagore Chowk | Patna | Bihar | India | 800001 | 15 |
| 16 | Ramesh Rao | Anjali Rao | parents.rao@gmail.com | 9990895558 | Business | 456 Ashok Street | Jaipur | Rajasthan | India | 302002 | 16 |
| 17 | Manoj Bajpai Sr. | Kiran Bajpai | parents.bajpai@gmail.com | 9997232731 | Lawyer | 789 Patel Marg | Chennai | Tamil Nadu | India | 600002 | 17 |
| 18 | Ravi Narayan | Meera Narayan | parents.narayan@gmail.com | 9997759904 | Farmer | 123 Krishna Road | Hyderabad | Telangana | India | 500002 | 18 |
| 19 | Vijay Rana | Sunita Rana | parents.rana@gmail.com | 9887497436 | Engineer | 456 Gandhi Nagar | Bangalore | Karnataka | India | 560002 | 19 |
| 20 | Raj Kapoor | Anita Kapoor | parents.kapoor@gmail.com | 7778985462 | Doctor | 789 Nehru Street | Pune | Maharashtra | India | 411002 | 20 |

Explanation

```
mysql> SELECT s.name AS student_name, p.father_name, p.mother_name,
p.contact_number FROM Students s JOIN Parents p ON s.student_roll = p.student_roll
WHERE s.current_status = 'Active' AND s.semester = 3;
```

| | student_name | father_name | mother_name | contact_number |
|---|--------------|---------------|---------------|----------------|
| ► | Rahul Sharma | Rajesh Sharma | Sunita Sharma | 9878686866 |
| | Arjun Mehta | Arvind Mehta | Anjali Mehta | 9118442750 |
| | Sanjay Verma | Amit Verma | Rekha Verma | 7654545544 |
| | Vivek Rana | Vijay Rana | Sunita Rana | 9887497436 |

Query 13: Department wise Teachers count

The HR team plans for hiring where the department is null.

Teachers Table

| | teacher_id | name | email | mobile | department_id |
|---|------------|-----------------------------|---------------------------------|------------|---------------|
| ▶ | 1 | Prof. Puspallata Pattojoshi | puspalata.pattojoshi@bits.ac.in | 9222222221 | 1 |
| | 2 | Prof. Jayashree Das | jayashree.das@bits.ac.in | 9222222222 | 1 |
| | 3 | Prof. R. N. Mukharjee | r.mukharjee@bits.ac.in | 9222222223 | 1 |
| | 4 | Prof. S. K. S. Parashar | s.parashar@bits.ac.in | 9222222224 | 1 |
| | 5 | Prof. B. B. Kar | b.kar@bits.ac.in | 9222222225 | 2 |
| | 6 | Prof. T. K. Bastia | t.bastia@bits.ac.in | 9222222226 | 2 |
| | 7 | Prof. Kajal Parashar | kajal.parashar@bits.ac.in | 9222222227 | 2 |
| | 8 | Prof. Rojalin Sahu | rojalin.sahu@bits.ac.in | 9222222228 | 2 |
| | 9 | Prof. Jyoti Prakash Maity | jyoti.maity@bits.ac.in | 9222222229 | 3 |
| | 10 | Prof. Anita Pati | anita.pati@bits.ac.in | 9222222230 | 3 |
| | 11 | Prof. Jasaswini Tripathy | jasaswini.tripathy@bits.ac.in | 9222222231 | 3 |
| | 12 | Prof. Sanjoy Ku. Maji | sanjoy.maji@bits.ac.in | 9222222232 | 3 |
| | 13 | Prof. Swati Samantaray | swati.samantaray@bits.ac.in | 9222222233 | 4 |
| | 14 | Prof. Seema K. Ladsaria | seema.ladsaria@bits.ac.in | 9222222234 | 4 |
| | 15 | Prof. Sahel Md. D. Hossain | sahel.hossain@bits.ac.in | 9222222235 | 4 |
| | 16 | Prof. Sharda Acharya | sharda.acharya@bits.ac.in | 9222222236 | 4 |
| | 17 | Prof. Ch Vinod | ch.vinod@bits.ac.in | 9222222237 | 5 |
| | 18 | Prof. Sutanu Satpathy | sutanu.satpathy@bits.ac.in | 9222222238 | 5 |
| | 19 | Prof. Nikita Mahapatra | nikita.mahapatra@bits.ac.in | 9222222239 | 5 |
| | 20 | Prof. Sarbari Acharya | sarbari.acharya@bits.ac.in | 9222222240 | 5 |

Department Table

| | department_id | department_code | department_name | head_teacher_id |
|---|---------------|-----------------|----------------------------|-----------------|
| ▶ | 1 | SCE | School of Civil | 1 |
| | 2 | SME | School of Mechanical | 2 |
| | 3 | SEE | School of Electrical | 3 |
| | 4 | SETC | School of Electronics | 4 |
| | 5 | SCS | School of Computer Science | 5 |
| | 6 | SIT | School of IT | NULL |

Explanation

```
mysql> SELECT d.department_name, COUNT(t.teacher_id) AS faculty_count FROM
Departments d LEFT JOIN Teachers t ON d.department_id = t.department_id GROUP BY
d.department_id HAVING faculty_count < 5;
```

| | department_name | faculty_count |
|---|----------------------------|---------------|
| ▶ | School of Civil | 4 |
| | School of Mechanical | 4 |
| | School of Electrical | 4 |
| | School of Electronics | 4 |
| | School of Computer Science | 4 |
| | School of IT | 0 |

Query 14: Books Borrowed by Students in Semester 5

The librarian finds the favorite books of senior students.

Student Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Library Table

| | book_id | isbn | title | author | borrower_id | borrower_type | checkout_date | due_date | return_status |
|---|---------|----------------|--------------------------------------|-------------------|-------------|---------------|---------------|------------|---------------|
| ▶ | 1 | 978-0134685991 | Clean Code | Robert C. Martin | 1 | Student | 2023-10-01 | 2023-11-01 | returned |
| | 2 | 978-0201633610 | Design Patterns | Erich Gamma | 2 | Student | 2023-10-02 | 2023-11-02 | checked out |
| | 3 | 978-0321125217 | Domain-Driven Design | Eric Evans | 3 | Student | 2023-10-03 | 2023-11-03 | overdue |
| | 4 | 978-0132350884 | Clean Architecture | Robert C. Martin | 4 | Student | 2023-10-04 | 2023-11-04 | returned |
| | 5 | 978-0596007126 | Head First Design Patterns | Eric Freeman | 5 | Student | 2023-10-05 | 2023-11-05 | checked out |
| | 6 | 978-0135957059 | The Pragmatic Programmer | David Thomas | 6 | Student | 2023-10-06 | 2023-11-06 | returned |
| | 7 | 978-1491950357 | Programming JavaScript Applications | Eric Elliott | 7 | Student | 2023-10-07 | 2023-11-07 | checked out |
| | 8 | 978-1617294136 | Spring in Action | Craig Walls | 8 | Student | 2023-10-08 | 2023-11-08 | overdue |
| | 9 | 978-1491904244 | Python Crash Course | Eric Matthes | 9 | Student | 2023-10-09 | 2023-11-09 | returned |
| | 10 | 978-1491957660 | Fluent Python | Luciano Ramalho | 10 | Student | 2023-10-10 | 2023-11-10 | checked out |
| | 11 | 978-0134494166 | Clean Agile | Robert C. Martin | 11 | Student | 2023-10-11 | 2023-11-11 | returned |
| | 12 | 978-0201485677 | Refactoring | Martin Fowler | 12 | Student | 2023-10-12 | 2023-11-12 | checked out |
| | 13 | 978-0137081073 | The Clean Coder | Robert C. Martin | 13 | Student | 2023-10-13 | 2023-11-13 | overdue |
| | 14 | 978-0139376818 | Code Complete | Steve McConnell | 14 | Student | 2023-10-14 | 2023-11-14 | returned |
| | 15 | 978-0735619678 | Software Estimation | Steve McConnell | 15 | Student | 2023-10-15 | 2023-11-15 | checked out |
| | 16 | 978-0131177055 | Working Effectively with Legacy Code | Michael Feathers | 16 | Student | 2023-10-16 | 2023-11-16 | returned |
| | 17 | 978-0321146533 | Test-Driven Development | Kent Beck | 17 | Student | 2023-10-17 | 2023-11-17 | checked out |
| | 18 | 978-0131429017 | The Art of UNIX Programming | Eric S. Raymond | 18 | Student | 2023-10-18 | 2023-11-18 | overdue |
| | 19 | 978-0596003302 | JavaScript: The Good Parts | Douglas Crockford | 19 | Student | 2023-10-19 | 2023-11-19 | returned |
| | 20 | 978-1449331818 | Learning Python | Mark Lutz | 20 | Student | 2023-10-20 | 2023-11-20 | checked out |

Explanation

```
mysql> SELECT s.name AS student_name, s.student_roll, l.title, l.author FROM Library l
JOIN Students s ON l.borrower_id = s.student_roll WHERE s.semester = 5;
```

| | student_name | student_roll | title | author |
|---|-------------------|--------------|--------------------------------------|------------------|
| ▶ | Neha Gupta | 4 | Clean Architecture | Robert C. Martin |
| | Priyanka Malhotra | 10 | Fluent Python | Luciano Ramalho |
| | Kavita Rao | 16 | Working Effectively with Legacy Code | Michael Feathers |

Query 15: AVG marks for each Course offered in Sem 2

Retrieve the average marks for each course in Semester 2 by joining the Courses and Grades tables.

Courses Table

| | course_id | course_code | course_name | credits | department_id | semester |
|---|-----------|-------------|--------------------------|---------|---------------|----------|
| ▶ | 1 | CS101 | Programming Fundamentals | 4 | 1 | 1 |
| | 2 | CS201 | Data Structures | 4 | 1 | 2 |
| | 3 | CS301 | Algorithms | 4 | 1 | 3 |
| | 4 | CS401 | Database Systems | 4 | 1 | 4 |
| | 5 | EE101 | Circuit Theory | 4 | 2 | 1 |
| | 6 | EE201 | Electronics | 4 | 2 | 2 |
| | 7 | EE301 | Power Systems | 4 | 2 | 3 |
| | 8 | EE401 | Control Systems | 4 | 2 | 4 |
| | 9 | ME101 | Thermodynamics | 4 | 3 | 1 |
| | 10 | ME201 | Fluid Mechanics | 4 | 3 | 2 |
| | 11 | ME301 | Machine Design | 4 | 3 | 3 |
| | 12 | ME401 | Heat Transfer | 4 | 3 | 4 |
| | 13 | PHY101 | Classical Mechanics | 4 | 4 | 1 |
| | 14 | PHY201 | Quantum Physics | 4 | 4 | 2 |
| | 15 | PHY301 | Electromagnetism | 4 | 4 | 3 |
| | 16 | PHY401 | Thermal Physics | 4 | 4 | 4 |
| | 17 | CHEM101 | Organic Chemistry | 4 | 5 | 1 |
| | 18 | CHEM201 | Inorganic Chemistry | 4 | 5 | 2 |
| | 19 | CHEM301 | Physical Chemistry | 4 | 5 | 3 |
| | 20 | CHEM401 | Analytical Chemistry | 4 | 5 | 4 |

Grades Table

| | grade_id | student_roll | course_id | marks_obtained | grade_letter | submission_date |
|---|----------|--------------|-----------|----------------|--------------|-----------------|
| ▶ | 1 | 1 | 1 | 85.50 | A | 2023-12-01 |
| | 2 | 2 | 5 | 78.00 | B | 2023-12-02 |
| | 3 | 3 | 9 | 92.30 | A | 2023-12-03 |
| | 4 | 4 | 13 | 67.80 | C | 2023-12-04 |
| | 5 | 5 | 17 | 74.50 | B | 2023-12-05 |
| | 6 | 6 | 2 | 81.20 | A | 2023-12-06 |
| | 7 | 7 | 6 | 88.90 | A | 2023-12-07 |
| | 8 | 8 | 10 | 63.40 | D | 2023-12-08 |
| | 9 | 9 | 14 | 79.10 | B | 2023-12-09 |
| | 10 | 10 | 18 | 91.00 | A | 2023-12-10 |
| | 11 | 11 | 3 | 72.50 | C | 2023-12-11 |
| | 12 | 12 | 7 | 84.70 | B | 2023-12-12 |
| | 13 | 13 | 11 | 59.80 | E | 2023-12-13 |
| | 14 | 14 | 15 | 96.20 | A | 2023-12-14 |
| | 15 | 15 | 19 | 68.90 | D | 2023-12-15 |
| | 16 | 16 | 4 | 77.30 | B | 2023-12-16 |
| | 17 | 17 | 8 | 82.60 | A | 2023-12-17 |
| | 18 | 18 | 12 | 73.10 | C | 2023-12-18 |
| | 19 | 19 | 16 | 89.40 | A | 2023-12-19 |
| | 20 | 20 | 20 | 65.00 | D | 2023-12-20 |

Explanation

```
mysql> SELECT c.course_code, c.course_name, AVG(g.marks_obtained) AS avg_marks
FROM Courses c JOIN Grades g ON c.course_id = g.course_id WHERE c.semester = 2
GROUP BY c.course_code, c.course_name;
```

| | course_code | course_name | avg_marks |
|---|-------------|---------------------|-----------|
| ▶ | CS201 | Data Structures | 81.200000 |
| | EE201 | Electronics | 88.900000 |
| | ME201 | Fluid Mechanics | 63.400000 |
| | PHY201 | Quantum Physics | 79.100000 |
| | CHEM201 | Inorganic Chemistry | 91.000000 |

Query 16: List Student Grades Overview

Retrieve students' roll numbers, names, enrolled course IDs, and corresponding grade letters by joining the *Students* and *Grades* tables.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Grades Table

| | grade_id | student_roll | course_id | marks_obtained | grade_letter | submission_date |
|---|----------|--------------|-----------|----------------|--------------|-----------------|
| ▶ | 1 | 1 | 1 | 85.50 | A | 2023-12-01 |
| | 2 | 2 | 5 | 78.00 | B | 2023-12-02 |
| | 3 | 3 | 9 | 92.30 | A | 2023-12-03 |
| | 4 | 4 | 13 | 67.80 | C | 2023-12-04 |
| | 5 | 5 | 17 | 74.50 | B | 2023-12-05 |
| | 6 | 6 | 2 | 81.20 | A | 2023-12-06 |
| | 7 | 7 | 6 | 88.90 | A | 2023-12-07 |
| | 8 | 8 | 10 | 63.40 | D | 2023-12-08 |
| | 9 | 9 | 14 | 79.10 | B | 2023-12-09 |
| | 10 | 10 | 18 | 91.00 | A | 2023-12-10 |
| | 11 | 11 | 3 | 72.50 | C | 2023-12-11 |
| | 12 | 12 | 7 | 84.70 | B | 2023-12-12 |
| | 13 | 13 | 11 | 59.80 | E | 2023-12-13 |
| | 14 | 14 | 15 | 96.20 | A | 2023-12-14 |
| | 15 | 15 | 19 | 68.90 | D | 2023-12-15 |
| | 16 | 16 | 4 | 77.30 | B | 2023-12-16 |
| | 17 | 17 | 8 | 82.60 | A | 2023-12-17 |
| | 18 | 18 | 12 | 73.10 | C | 2023-12-18 |
| | 19 | 19 | 16 | 89.40 | A | 2023-12-19 |
| | 20 | 20 | 20 | 65.00 | D | 2023-12-20 |

Explanation

```
mysql> SELECT s.student_roll, s.name AS student_name, g.course_id, g.grade_letter
FROM Students s JOIN Grades g ON s.student_roll = g.student_roll;
```

| | student_roll | student_name | course_id | grade_letter |
|---|--------------|-------------------|-----------|--------------|
| ▶ | 1 | Rahul Sharma | 1 | A |
| | 2 | Priya Patel | 5 | B |
| | 3 | Amit Kumar | 9 | A |
| | 4 | Neha Gupta | 13 | C |
| | 5 | Ravi Singh | 17 | B |
| | 6 | Sneha Reddy | 2 | A |
| | 7 | Arjun Mehta | 6 | A |
| | 8 | Ananya Iyer | 10 | D |
| | 9 | Vikram Joshi | 14 | B |
| | 10 | Priyanka Malhotra | 18 | A |

Query 17: Total sum of Per Students Fees Paid

Displays the total fees paid by each student by aggregating payment records.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sd_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Fees Table

| | fee_id | student_roll | amount | due_date | payment_status | transaction_id | payment_date |
|---|--------|--------------|-----------|------------|----------------|----------------|--------------|
| ▶ | 1 | 1 | 150000.00 | 2023-09-30 | paid | TX1001 | 2023-09-28 |
| | 2 | 2 | 150000.00 | 2023-09-30 | paid | TX1002 | 2023-09-29 |
| | 3 | 3 | 125000.00 | 2022-09-30 | paid | TX1003 | 2022-09-28 |
| | 4 | 4 | 175000.00 | 2020-09-30 | pending | NULL | NULL |
| | 5 | 5 | 150000.00 | 2023-09-30 | paid | TX1005 | 2023-09-30 |
| | 6 | 6 | 100000.00 | 2019-09-30 | paid | TX1006 | 2019-09-25 |
| | 7 | 7 | 150000.00 | 2022-09-30 | paid | TX1007 | 2022-09-28 |
| | 8 | 8 | 150000.00 | 2021-09-30 | paid | TX1008 | 2021-09-29 |
| | 9 | 9 | 150000.00 | 2023-09-30 | pending | NULL | NULL |
| | 10 | 10 | 175000.00 | 2020-09-30 | paid | TX1010 | 2020-09-30 |
| | 11 | 11 | 100000.00 | 2019-09-30 | paid | TX1011 | 2019-09-25 |
| | 12 | 12 | 150000.00 | 2023-09-30 | paid | TX1012 | 2023-09-28 |
| | 13 | 13 | 150000.00 | 2022-09-30 | paid | TX1013 | 2022-09-29 |
| | 14 | 14 | 150000.00 | 2021-09-30 | pending | NULL | NULL |
| | 15 | 15 | 150000.00 | 2023-09-30 | paid | TX1015 | 2023-09-30 |
| | 16 | 16 | 175000.00 | 2020-09-30 | paid | TX1016 | 2020-09-25 |
| | 17 | 17 | 100000.00 | 2019-09-30 | paid | TX1017 | 2019-09-28 |
| | 18 | 18 | 150000.00 | 2023-09-30 | paid | TX1018 | 2023-09-29 |
| | 19 | 19 | 150000.00 | 2022-09-30 | paid | TX1019 | 2022-09-28 |
| | 20 | 20 | 150000.00 | 2021-09-30 | pending | NULL | NULL |

Explanation

```
mysql> SELECT s.student_roll, s.name, SUM(f.amount) AS total_fees FROM Students s
JOIN Fees f ON s.student_roll = f.student_roll GROUP BY s.student_roll, s.name;
```

| | student_roll | name | total_fees |
|---|--------------|-------------------|------------|
| ▶ | 1 | Rahul Sharma | 150000.00 |
| | 2 | Priya Patel | 150000.00 |
| | 3 | Amit Kumar | 125000.00 |
| | 4 | Neha Gupta | 175000.00 |
| | 5 | Ravi Singh | 150000.00 |
| | 6 | Sneha Reddy | 100000.00 |
| | 7 | Arjun Mehta | 150000.00 |
| | 8 | Ananya Iyer | 150000.00 |
| | 9 | Vikram Joshi | 150000.00 |
| | 10 | Priyanka Malhotra | 175000.00 |

Query 18: Student Names With Their Latest Fee Payment Date

Retrieve student names along with their most recent fee payment date using a subquery for efficient tracking.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Fees Table

| | fee_id | student_roll | amount | due_date | payment_status | transaction_id | payment_date |
|---|--------|--------------|-----------|------------|----------------|----------------|--------------|
| ▶ | 1 | 1 | 150000.00 | 2023-09-30 | paid | TX1001 | 2023-09-28 |
| | 2 | 2 | 150000.00 | 2023-09-30 | paid | TX1002 | 2023-09-29 |
| | 3 | 3 | 125000.00 | 2022-09-30 | paid | TX1003 | 2022-09-28 |
| | 4 | 4 | 175000.00 | 2020-09-30 | pending | NULL | NULL |
| | 5 | 5 | 150000.00 | 2023-09-30 | paid | TX1005 | 2023-09-30 |
| | 6 | 6 | 100000.00 | 2019-09-30 | paid | TX1006 | 2019-09-25 |
| | 7 | 7 | 150000.00 | 2022-09-30 | paid | TX1007 | 2022-09-28 |
| | 8 | 8 | 150000.00 | 2021-09-30 | paid | TX1008 | 2021-09-29 |
| | 9 | 9 | 150000.00 | 2023-09-30 | pending | NULL | NULL |
| | 10 | 10 | 175000.00 | 2020-09-30 | paid | TX1010 | 2020-09-30 |
| | 11 | 11 | 100000.00 | 2019-09-30 | paid | TX1011 | 2019-09-25 |
| | 12 | 12 | 150000.00 | 2023-09-30 | paid | TX1012 | 2023-09-28 |
| | 13 | 13 | 150000.00 | 2022-09-30 | paid | TX1013 | 2022-09-29 |
| | 14 | 14 | 150000.00 | 2021-09-30 | pending | NULL | NULL |
| | 15 | 15 | 150000.00 | 2023-09-30 | paid | TX1015 | 2023-09-30 |
| | 16 | 16 | 175000.00 | 2020-09-30 | paid | TX1016 | 2020-09-25 |
| | 17 | 17 | 100000.00 | 2019-09-30 | paid | TX1017 | 2019-09-28 |
| | 18 | 18 | 150000.00 | 2023-09-30 | paid | TX1018 | 2023-09-29 |
| | 19 | 19 | 150000.00 | 2022-09-30 | paid | TX1019 | 2022-09-28 |
| | 20 | 20 | 150000.00 | 2021-09-30 | pending | NULL | NULL |

Explanation

```
mysql> SELECT student_roll, name AS student_name, (SELECT MAX(payment_date)
FROM Fees f WHERE f.student_roll = s.student_roll) AS latest_payment_date FROM
Students s;
```

| | student_roll | student_name | latest_payment_date |
|---|--------------|--------------|---------------------|
| ▶ | 1 | Rahul Sharma | 2023-09-28 |
| | 2 | Priya Patel | 2023-09-29 |
| | 3 | Amit Kumar | 2022-09-28 |
| | 4 | Neha Gupta | NULL |
| | 5 | Ravi Singh | 2023-09-30 |

Query 19: Parents' Details & Occupation – Eng Section

Fetches parents' names, occupations, and contact details for students in engineering sections.

Parents Table

| parent_id | father_name | mother_name | email | contact_number | occupation | address | city | state | country | zip_code | student_rol |
|-----------|--------------------|------------------|------------------------------|----------------|------------|--------------------|-----------|-------------|---------|----------|-------------|
| 1 | Rajesh Sharma | Sunita Sharma | parents.sharma@gmail.com | 9878686866 | Engineer | 123 Gandhi Nagar | Pilani | Rajasthan | India | 333031 | 1 |
| 2 | Vijay Patel | Anita Patel | parents.patel@gmail.com | 9877654321 | Doctor | 456 Nehru Road | Jaipur | Rajasthan | India | 302001 | 2 |
| 3 | Amar Kumar | Rekha Kumar | parents.kumar@gmail.com | 9876767686 | Teacher | 789 Tagore Street | Delhi | Delhi | India | 110001 | 3 |
| 4 | Rakesh Gupta | Mala Gupta | parents.gupta@gmail.com | 7675645453 | Business | 321 Ashok Marg | Mumbai | Maharashtra | India | 400001 | 4 |
| 5 | Sanjay Singh | Poonam Singh | parents.singh@gmail.com | 9225959152 | Lawyer | 654 Patel Chowk | Chennai | Tamil Nadu | India | 600001 | 5 |
| 6 | Rahul Reddy | Sunita Reddy | parents.reddy@gmail.com | 9885264238 | Farmer | 987 Krishna Nagar | Hyderabad | Telangana | India | 500001 | 6 |
| 7 | Arvind Mehta | Anjali Mehta | parents.mehta@gmail.com | 9118442750 | Engineer | 741 Gandhi Road | Bangalore | Karnataka | India | 560001 | 7 |
| 8 | Naresh Iyer | Kavita Iyer | parents.iyer@gmail.com | 9112775200 | Doctor | 852 Nehru Street | Pune | Maharashtra | India | 411001 | 8 |
| 9 | Vijay Joshi | Ritu Joshi | parents.joshi@gmail.com | 9112825185 | Teacher | 963 Tagore Marg | Kolkata | West Bengal | India | 700001 | 9 |
| 10 | Raj Malhotra | Suman Malhotra | parents.malhotra@gmail.com | 9115929778 | Business | 147 Ashok Road | Ahmedabad | Gujarat | India | 380001 | 10 |
| 11 | Ravi Khanna | Meena Khanna | parents.khanna@gmail.com | 9867745434 | Lawyer | 258 Patel Nagar | Lucknow | UP | India | 226001 | 11 |
| 12 | Sunil Desai | Anita Desai | parents.desai@gmail.com | 9533434343 | Farmer | 369 Krishna Street | Nagpur | Maharashtra | India | 440001 | 12 |
| 13 | Amit Verma | Rekha Verma | parents.verma@gmail.com | 7654545544 | Engineer | 159 Gandhi Marg | Surat | Gujarat | India | 395001 | 13 |
| 14 | Prakash Srinivasan | Lata Srinivasan | parents.srinivasan@gmail.com | 9117216905 | Doctor | 753 Nehru Road | Bhopal | MP | India | 462001 | 14 |
| 15 | Alok Choudhury | Sunita Choudhury | parents.choudhury@gmail.com | 9884473806 | Teacher | 852 Tagore Chowk | Patna | Bihar | India | 800001 | 15 |
| 16 | Ramesh Rao | Anjali Rao | parents.rao@gmail.com | 9990895558 | Business | 456 Ashok Street | Jaipur | Rajasthan | India | 302002 | 16 |
| 17 | Manoj Bajpai Sr. | Kiran Bajpai | parents.bajpai@gmail.com | 9997232731 | Lawyer | 789 Patel Marg | Chennai | Tamil Nadu | India | 600002 | 17 |
| 18 | Ravi Narayan | Meera Narayan | parents.narayan@gmail.com | 9997759904 | Farmer | 123 Krishna Road | Hyderabad | Telangana | India | 500002 | 18 |

Students Table

| student_rol | name | email | password_hash | mobile | semester | section | eng_section | sd_section | enrollment_date | application_number | current_status |
|-------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|------------|-----------------|--------------------|----------------|
| 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> SELECT p.father_name, p.mother_name, p.occupation, p.contact_number FROM
Parents p WHERE p.student_rol IN (SELECT student_rol FROM Students WHERE
eng_section IS NOT NULL);
```

| | father_name | mother_name | occupation | contact_number |
|---|--------------------|------------------|------------|----------------|
| ► | Rajesh Sharma | Sunita Sharma | Engineer | 9878686866 |
| | Amar Kumar | Rekha Kumar | Teacher | 9876767686 |
| | Sanjay Singh | Poonam Singh | Lawyer | 9225959152 |
| | Arvind Mehta | Anjali Mehta | Engineer | 9118442750 |
| | Vijay Joshi | Ritu Joshi | Teacher | 9112825185 |
| | Ravi Khanna | Meena Khanna | Lawyer | 9867745434 |
| | Amit Verma | Rekha Verma | Engineer | 7654545544 |
| | Alok Choudhury Sr. | Sunita Choudhury | Teacher | 9884473806 |
| | Manoj Bajpai Sr. | Kiran Bajpai | Lawyer | 9997232731 |
| | Vijay Rana | Sunita Rana | Engineer | 9887497436 |

Query 20: Get the Student Complete details

ACOE needs to check the whole student details, including personal info, courses, grades, fees, disciplinary records, and parent details.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> SELECT
```

```
s.student_roll, s.name, s.email, s.mobile, s.semester, s.section,  
s.eng_section, s.sci_section, s.enrollment_date, s.application_number, s.current_status,
```

-- Parents details

```
p.father_name, p.mother_name, p.email AS parent_email, p.contact_number, p.occupation,  
p.address, p.city, p.state, p.country, p.zip_code,
```

-- Academic details

```
g.course_id, c.course_code, c.course_name, g.marks_obtained, g.grade_letter,
```

-- Fees Details

```
f.amount AS fee_amount, f.due_date, f.payment_status, f.payment_date,
```

-- Disciplinary Records

```
d.incident_date, d.description AS disciplinary_description, d.reExplanation_status,  
d.action_taken
```

```
FROM Students s
```

```
LEFT JOIN Parents p ON s.student_roll = p.student_roll
```

```
LEFT JOIN Grades g ON s.student_roll = g.student_roll
```

```
LEFT JOIN Courses c ON g.course_id = c.course_id
```

LEFT JOIN Fees f ON s.student_roll = f.student_roll

LEFT JOIN Disciplinary d ON s.student_roll = d.student_roll

ORDER BY s.student_roll;

| student_roll | name | email | mobile | semester | section | eng_section | so_section | enrollment_date | application_number | current_status | father_name | mother_name | parent_email | contact_number | occupation | address | city |
|--------------|-------------------|----------------------------|------------|----------|---------|-------------|------------|-----------------|--------------------|----------------|-------------------|------------------|------------------------------|----------------|------------|--------------------|-------|
| 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | 9876543210 | 3 | A | E1 | NA | 2022-07-01 | APP0001 | Active | Rajesh Sharma | Sunita Sharma | parents.sharma@gmail.com | 987668666 | Engineer | 123 Gandhi Nagar | Plani |
| 2 | Priya Patel | priya.patel@the4b.edu.com | 9876543211 | 2 | B | NA | S2 | 2022-07-01 | APP0002 | Active | Vijay Patel | Anita Patel | parents.patel@gmail.com | 9877654321 | Doctor | 456 Nehru Road | Jaipu |
| 3 | Amit Kumar | amit.kumar@the4b.edu.com | 9876543212 | 4 | C | E3 | NA | 2021-07-01 | APP0003 | Graduated | Amar Kumar | Rekha Kumar | parents.kumar@gmail.com | 9876767686 | Teacher | 789 Tagore Street | Delhi |
| 4 | Neha Gupta | neha.gupta@the4b.edu.com | 9876543213 | 5 | A | NA | S1 | 2020-07-01 | APP0004 | Suspended | Rakesh Gupta | Mala Gupta | parents.gupta@gmail.com | 7675645453 | Business | 321 Ashok Marg | Mum |
| 5 | Ravi Singh | ravi.singh@the4b.edu.com | 9876543214 | 1 | B | E2 | NA | 2023-07-01 | APP0005 | Active | Sanjay Singh | Poonam Singh | parents.singh@gmail.com | 9225959152 | Lawyer | 654 Patel Chowk | Cher |
| 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | 9876543215 | 6 | C | NA | S3 | 2019-07-01 | APP0006 | Graduated | Rahul Reddy | Sunita Reddy | parents.reddy@gmail.com | 9885264238 | Farmer | 987 Krishna Nagar | Hyde |
| 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | 9876543216 | 3 | A | E1 | NA | 2022-07-01 | APP0007 | Active | Arvind Mehta | Anjali Mehta | parents.mehta@gmail.com | 9118442750 | Engineer | 741 Gandhi Road | Bang |
| 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | 9876543217 | 4 | B | NA | S2 | 2021-07-01 | APP0008 | Active | Naresh Iyer | Kavita Iyer | parents.iyer@gmail.com | 9112775200 | Doctor | 852 Nehru Street | Pune |
| 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | 9876543218 | 2 | C | E3 | NA | 2023-07-01 | APP0009 | Active | Vijay Joshi | Ritu Joshi | parents.joshi@gmail.com | 9112825185 | Teacher | 963 Tagore Marg | Kolka |
| 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | 9876543219 | 5 | A | NA | S1 | 2020-07-01 | APP0010 | Active | Raj Malhotra | Suman Malhotra | parents.malhotra@gmail.com | 9115929778 | Business | 147 Ashok Road | Ahmi |
| 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | 9876543220 | 6 | B | E2 | NA | 2019-07-01 | APP0011 | Graduated | Ravi Khanna | Meena Khanna | parents.khanna@gmail.com | 9867745434 | Lawyer | 258 Patel Nagar | Luckn |
| 12 | Meera Desai | meera.desai@the4b.edu.com | 9876543221 | 1 | C | NA | S3 | 2023-07-01 | APP0012 | Active | Sunil Desai | Anita Desai | parents.desai@gmail.com | 9533434343 | Farmer | 369 Krishna Street | Nagp |
| 13 | Sanjay Verma | sanjay.v@the4b.edu.com | 9876543222 | 3 | A | E1 | NA | 2022-07-01 | APP0013 | Active | Amit Verma | Rekha Verma | parents.verma@gmail.com | 7654545544 | Engineer | 159 Gandhi Marg | Sura |
| 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | 9876543223 | 4 | B | NA | S2 | 2021-07-01 | APP0014 | Active | Prakash Sriniv... | Lata Srinivasan | parents.srinivasan@gmail.com | 9117216905 | Doctor | 753 Nehru Road | Bhop |
| 15 | Alok Choudhury | alok.c@the4b.edu.com | 9876543224 | 2 | C | E3 | NA | 2023-07-01 | APP0015 | Active | Alok Choudhu... | Sunita Choudhury | parents.choudhury@gmail.com | 9884473806 | Teacher | 852 Tagore Chowk | Patn |
| 16 | Kavita Rao | kavita.rao@the4b.edu.com | 9876543225 | 5 | A | NA | S1 | 2020-07-01 | APP0016 | Active | Ramesh Rao | Anjali Rao | parents.rao@gmail.com | 9990895558 | Business | 456 Ashok Street | Jaipu |
| 17 | Manoj Bajpai | manoj.b@the4b.edu.com | 9876543226 | 6 | B | E2 | NA | 2019-07-01 | APP0017 | Graduated | Manoj Bajpai Sr. | Kiran Bajpai | parents.bajpai@gmail.com | 9997232731 | Lawyer | 789 Patel Marg | Cher |
| 18 | Sunita Narayan | sunita.n@the4b.edu.com | 9876543227 | 1 | C | NA | S3 | 2023-07-01 | APP0018 | Active | Ravi Narayan | Meera Narayan | parents.narayan@gmail.com | 9997759004 | Farmer | 173 Krishna Road | Hurle |

by a sairam ku patro

Query 21: Student-Parent Info (View)

The admin section asks, How can administrators access student and parent contacts with a single keyword.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation

```
mysql> CREATE VIEW StudentParentView AS
SELECT s.student_roll, s.name AS student_name, s.email AS student_email,
p.father_name, p.mother_name, p.contact_number AS parent_contact
FROM Students s
LEFT JOIN Parents p ON s.student_roll = p.student_roll;
```

After creating view for StudentParentView, we need to query:

```
SELECT * FROM StudentParentView;
```

| | student_roll | student_name | student_email | father_name | mother_name | parent_contact |
|---|--------------|-------------------|----------------------------|-------------------|------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | Rajesh Sharma | Sunita Sharma | 9878686866 |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | Vijay Patel | Anita Patel | 9877654321 |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | Amar Kumar | Rekha Kumar | 9876767686 |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | Rakesh Gupta | Mala Gupta | 7675645453 |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | Sanjay Singh | Poonam Singh | 9225959152 |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | Rahul Reddy | Sunita Reddy | 9885264238 |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | Arvind Mehta | Anjali Mehta | 9118442750 |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | Naresh Iyer | Kavita Iyer | 9112775200 |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | Vijay Joshi | Ritu Joshi | 9112825185 |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | Raj Malhotra | Suman Malhotra | 9115929778 |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | Ravi Khanna | Meena Khanna | 9867745434 |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | Sunil Desai | Anita Desai | 9533434343 |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | Amit Verma | Rekha Verma | 7654545544 |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | Prakash Sriniv... | Lata Srinivasan | 9117216905 |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | Alok Choudhu... | Sunita Choudhury | 9884473806 |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | Ramesh Rao | Anjali Rao | 9990895558 |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | Manoj Bajpai Sr. | Kiran Bajpai | 9997232731 |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | Ravi Narayan | Meera Narayan | 9997759904 |

Query 22: Active Students with Fees Pending (View)

Get the complete list of active students with pending fees in a single click.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sd_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Fees Tables

| | fee_id | student_roll | amount | due_date | payment_status | transaction_id | payment_date |
|---|--------|--------------|-----------|------------|----------------|----------------|--------------|
| ▶ | 1 | 1 | 150000.00 | 2023-09-30 | paid | TX1001 | 2023-09-28 |
| | 2 | 2 | 150000.00 | 2023-09-30 | paid | TX1002 | 2023-09-29 |
| | 3 | 3 | 125000.00 | 2022-09-30 | paid | TX1003 | 2022-09-28 |
| | 4 | 4 | 175000.00 | 2020-09-30 | pending | NULL | NULL |
| | 5 | 5 | 150000.00 | 2023-09-30 | paid | TX1005 | 2023-09-30 |
| | 6 | 6 | 100000.00 | 2019-09-30 | paid | TX1006 | 2019-09-25 |
| | 7 | 7 | 150000.00 | 2022-09-30 | paid | TX1007 | 2022-09-28 |
| | 8 | 8 | 150000.00 | 2021-09-30 | paid | TX1008 | 2021-09-29 |
| | 9 | 9 | 150000.00 | 2023-09-30 | pending | NULL | NULL |
| | 10 | 10 | 175000.00 | 2020-09-30 | paid | TX1010 | 2020-09-30 |
| | 11 | 11 | 100000.00 | 2019-09-30 | paid | TX1011 | 2019-09-25 |
| | 12 | 12 | 150000.00 | 2023-09-30 | paid | TX1012 | 2023-09-28 |
| | 13 | 13 | 150000.00 | 2022-09-30 | paid | TX1013 | 2022-09-29 |
| | 14 | 14 | 150000.00 | 2021-09-30 | pending | NULL | NULL |
| | 15 | 15 | 150000.00 | 2023-09-30 | paid | TX1015 | 2023-09-30 |
| | 16 | 16 | 175000.00 | 2020-09-30 | paid | TX1016 | 2020-09-25 |
| | 17 | 17 | 100000.00 | 2019-09-30 | paid | TX1017 | 2019-09-28 |
| | 18 | 18 | 150000.00 | 2023-09-30 | paid | TX1018 | 2023-09-29 |
| | 19 | 19 | 150000.00 | 2022-09-30 | paid | TX1019 | 2022-09-28 |
| | 20 | 20 | 150000.00 | 2021-09-30 | pending | NULL | NULL |

Explanation Create View

```
mysql> CREATE VIEW ActiveStudentsWithPendingFees AS
```

```
SELECT s.student_roll, s.name, f.amount, f.due_date
```

```
FROM Students s
```

```
JOIN Fees f ON s.student_roll = f.student_roll
```

```
WHERE s.current_status = 'Active' AND f.payment_status = 'pending';
```

| | student_roll | name | amount | due_date |
|---|--------------|------------------|-----------|------------|
| ▶ | 9 | Vikram Joshi | 150000.00 | 2023-09-30 |
| | 14 | Pooja Srinivasan | 150000.00 | 2021-09-30 |

Explanation Alter View

```
mysql> ALTER VIEW ActiveStudentsWithPendingFees AS  
SELECT s.student_roll, s.name AS student_name, f.amount, f.due_date  
FROM Students s  
JOIN Fees f ON s.student_roll = f.student_roll  
WHERE s.current_status = 'Active' AND f.payment_status = 'pending';
```

After altering the view for ActiveStudentsWithPendingFees:

```
mysql> SELECT * FROM ActiveStudentsWithPendingFees;
```

| | student_roll | student_name | amount | due_date |
|---|--------------|------------------|-----------|------------|
| ► | 9 | Vikram Joshi | 150000.00 | 2023-09-30 |
| | 14 | Pooja Srinivasan | 150000.00 | 2021-09-30 |

by a sairam ku patro

Query 23: Disciplinary Cases with Student Info (View)

The VC is going to take charge in the school, so he wants to fetch the data on students with disciplinary issues.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Disciplinary Table

| | case_id | student_roll | incident_date | description | resolution_status | action_taken |
|---|---------|--------------|---------------|--|-------------------|---|
| ▶ | 1 | 1 | 2023-03-15 | Using ChatGPT during an online exam | Resolved | Zero marks awarded and warning issued |
| | 2 | 2 | 2023-04-02 | Caught sharing answers via messaging app duri... | Pending | Investigation ongoing |
| | 3 | 3 | 2022-11-10 | Leaked exam question paper to classmates | Resolved | Suspension for 2 weeks |
| | 4 | 4 | 2021-09-22 | Using smartwatch to access answers during exam | Resolved | Disqualified from the exam |
| | 5 | 5 | 2023-08-05 | Found using ChatGPT to write assignment | Pending | Assignment rejected, further action pending |
| | 6 | 6 | 2019-12-15 | Caught with handwritten notes during exam | Resolved | Zero marks awarded |
| | 7 | 7 | 2022-07-20 | Using ChatGPT to generate answers for take-h... | Resolved | Grade deduction and warning |
| | 8 | 8 | 2021-05-10 | Sharing exam questions with students from ano... | Resolved | Suspension for 1 month |
| | 9 | 9 | 2023-02-14 | Using ChatGPT to complete lab report | Resolved | Lab report rejected and resubmission required |
| | 10 | 10 | 2020-11-30 | Leaked midterm exam paper on social media | Resolved | Suspension for 2 weeks and fine imposed |
| | 11 | 11 | 2019-09-05 | Caught using ChatGPT during viva voce | Resolved | Viva marks set to zero |
| | 12 | 12 | 2023-06-18 | Using ChatGPT to write research paper | Pending | Investigation ongoing, paper under review |
| | 13 | 13 | 2022-03-12 | Found with pre-written answers during exam | Resolved | Disqualified from the exam |
| | 14 | 14 | 2021-08-25 | Using ChatGPT to solve programming assignment | Resolved | Assignment rejected and resubmission required |
| | 15 | 15 | 2023-09-01 | Leaked final exam paper to external group | Pending | Suspension recommended, awaiting approval |
| | 16 | 16 | 2020-04-15 | Using ChatGPT to generate project report | Resolved | Project rejected and re-evaluation required |
| | 17 | 17 | 2019-10-31 | Caught using ChatGPT during online quiz | Resolved | Quiz marks set to zero |
| | 18 | 18 | 2023-07-07 | Sharing exam questions with juniors | Pending | Investigation ongoing, possible suspension |

Explanation Create View

```
mysql> CREATE VIEW DisciplinaryCasesView AS
SELECT s.student_roll, s.name AS student_name, d.incident_date, d.description AS
issue, d.resolution_status AS status, d.action_taken
FROM Students s
JOIN Disciplinary d ON d.student_roll = s.student_roll;
```

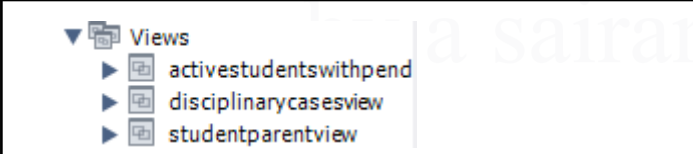
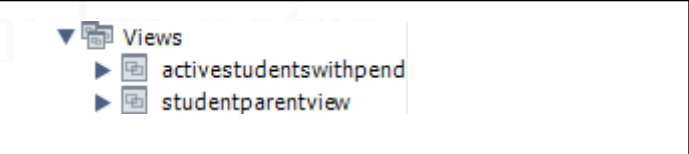
After creating the view for DisciplinaryCasesView:

```
mysql> SELECT * FROM DisciplinaryCasesView;
```

| | student_roll | student_name | incident_date | issue | status | action_taken |
|---|--------------|-------------------|---------------|--|----------|---|
| ▶ | 1 | Rahul Sharma | 2023-03-15 | Using ChatGPT during an online exam | Resolved | Zero marks awarded and warning issued |
| | 2 | Priya Patel | 2023-04-02 | Caught sharing answers via messaging app duri... | Pending | Investigation ongoing |
| | 3 | Amit Kumar | 2022-11-10 | Leaked exam question paper to classmates | Resolved | Suspension for 2 weeks |
| | 4 | Neha Gupta | 2021-09-22 | Using smartwatch to access answers during exam | Resolved | Disqualified from the exam |
| | 5 | Ravi Singh | 2023-08-05 | Found using ChatGPT to write assignment | Pending | Assignment rejected, further action pending |
| | 6 | Sneha Reddy | 2019-12-15 | Caught with handwritten notes during exam | Resolved | Zero marks awarded |
| | 7 | Arjun Mehta | 2022-07-20 | Using ChatGPT to generate answers for take-h... | Resolved | Grade deduction and warning |
| | 8 | Ananya Iyer | 2021-05-10 | Sharing exam questions with students from ano... | Resolved | Suspension for 1 month |
| | 9 | Vikram Joshi | 2023-02-14 | Using ChatGPT to complete lab report | Resolved | Lab report rejected and resubmission required |
| | 10 | Priyanka Malhotra | 2020-11-30 | Leaked midterm exam paper on social media | Resolved | Suspension for 2 weeks and fine imposed |
| | 11 | Rajesh Khanna | 2019-09-05 | Caught using ChatGPT during viva voce | Resolved | Viva marks set to zero |
| | 12 | Meera Desai | 2023-06-18 | Using ChatGPT to write research paper | Pending | Investigation ongoing, paper under review |
| | 13 | Sanjay Verma | 2022-03-12 | Found with pre-written answers during exam | Resolved | Disqualified from the exam |
| | 14 | Pooja Srinivasan | 2021-08-25 | Using ChatGPT to solve programming assignment | Resolved | Assignment rejected and resubmission required |
| | 15 | Alok Choudhury | 2023-09-01 | Leaked final exam paper to external group | Pending | Suspension recommended, awaiting approval |
| | 16 | Kavita Rao | 2020-04-15 | Using ChatGPT to generate project report | Resolved | Project rejected and re-evaluation required |
| | 17 | Manoj Bajpai | 2019-10-31 | Caught using ChatGPT during online quiz | Resolved | Quiz marks set to zero |
| | 18 | Sunita Narayan | 2023-07-07 | Sharing exam questions with juniors | Pending | Investigation ongoing, possible suspension |

Explanation Drop View

```
mysql> DROP VIEW IF EXISTS DisciplinaryCasesView;
```

| Before Views | After Drop DisciplinaryCasesView |
|--|--|
|  |  |

Query 24: Retrieve student details by passing the roll number using a stored procedure

The ACoE can quickly find student details using a roll number instead of searching manually.

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Explanation Stored Procedure

```
mysql> DELIMITER //
CREATE PROCEDURE GetStudentByRoll(IN p_student_roll INT)
BEGIN
    SELECT * FROM Students WHERE student_roll = p_student_roll;
END;
//
DELIMITER;
```

After call the specific students

```
mysql> CALL GetStudentByRoll(7);
```

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------|---------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |

Query 25: Retrieve all Students Fees Detail Include 'Paid', 'Pending'

Get all student fee details—Student Roll number, name, amount, due date, status & transaction ID—with a single procedure!

Students Table

| | student_roll | name | email | password_hash | mobile | semester | section | eng_section | sci_section | enrollment_date | application_number | current_status |
|---|--------------|-------------------|----------------------------|---------------|------------|----------|---------|-------------|-------------|-----------------|--------------------|----------------|
| ▶ | 1 | Rahul Sharma | rahul.sharma@the4b.edu.com | hash1 | 9876543210 | 3 | A | E1 | NULL | 2022-07-01 | APP0001 | Active |
| | 2 | Priya Patel | priya.patel@the4b.edu.com | hash2 | 9876543211 | 2 | B | NULL | S2 | 2022-07-01 | APP0002 | Active |
| | 3 | Amit Kumar | amit.kumar@the4b.edu.com | hash3 | 9876543212 | 4 | C | E3 | NULL | 2021-07-01 | APP0003 | Graduated |
| | 4 | Neha Gupta | neha.gupta@the4b.edu.com | hash4 | 9876543213 | 5 | A | NULL | S1 | 2020-07-01 | APP0004 | Suspended |
| | 5 | Ravi Singh | ravi.singh@the4b.edu.com | hash5 | 9876543214 | 1 | B | E2 | NULL | 2023-07-01 | APP0005 | Active |
| | 6 | Sneha Reddy | sneha.reddy@the4b.edu.com | hash6 | 9876543215 | 6 | C | NULL | S3 | 2019-07-01 | APP0006 | Graduated |
| | 7 | Arjun Mehta | arjun.mehta@the4b.edu.com | hash7 | 9876543216 | 3 | A | E1 | NULL | 2022-07-01 | APP0007 | Active |
| | 8 | Ananya Iyer | ananya.iyer@the4b.edu.com | hash8 | 9876543217 | 4 | B | NULL | S2 | 2021-07-01 | APP0008 | Active |
| | 9 | Vikram Joshi | vikram.joshi@the4b.edu.com | hash9 | 9876543218 | 2 | C | E3 | NULL | 2023-07-01 | APP0009 | Active |
| | 10 | Priyanka Malhotra | priyanka.m@the4b.edu.com | hash10 | 9876543219 | 5 | A | NULL | S1 | 2020-07-01 | APP0010 | Active |
| | 11 | Rajesh Khanna | rajesh.k@the4b.edu.com | hash11 | 9876543220 | 6 | B | E2 | NULL | 2019-07-01 | APP0011 | Graduated |
| | 12 | Meera Desai | meera.desai@the4b.edu.com | hash12 | 9876543221 | 1 | C | NULL | S3 | 2023-07-01 | APP0012 | Active |
| | 13 | Sanjay Verma | sanjay.v@the4b.edu.com | hash13 | 9876543222 | 3 | A | E1 | NULL | 2022-07-01 | APP0013 | Active |
| | 14 | Pooja Srinivasan | pooja.s@the4b.edu.com | hash14 | 9876543223 | 4 | B | NULL | S2 | 2021-07-01 | APP0014 | Active |
| | 15 | Alok Choudhury | alok.c@the4b.edu.com | hash15 | 9876543224 | 2 | C | E3 | NULL | 2023-07-01 | APP0015 | Active |
| | 16 | Kavita Rao | kavita.rao@the4b.edu.com | hash16 | 9876543225 | 5 | A | NULL | S1 | 2020-07-01 | APP0016 | Active |
| | 17 | Manoj Bajpai | manoj.b@the4b.edu.com | hash17 | 9876543226 | 6 | B | E2 | NULL | 2019-07-01 | APP0017 | Graduated |
| | 18 | Sunita Narayan | sunita.n@the4b.edu.com | hash18 | 9876543227 | 1 | C | NULL | S3 | 2023-07-01 | APP0018 | Active |
| | 19 | Vivek Rana | vivek.r@the4b.edu.com | hash19 | 9876543228 | 3 | A | E1 | NULL | 2022-07-01 | APP0019 | Active |
| | 20 | Anjali Kapoor | anjali.k@the4b.edu.com | hash20 | 9876543229 | 4 | B | NULL | S2 | 2021-07-01 | APP0020 | Suspended |

Fees Table

| | fee_id | student_roll | amount | due_date | payment_status | transaction_id | payment_date |
|---|--------|--------------|-----------|------------|----------------|----------------|--------------|
| ▶ | 1 | 1 | 150000.00 | 2023-09-30 | paid | TX1001 | 2023-09-28 |
| | 2 | 2 | 150000.00 | 2023-09-30 | paid | TX1002 | 2023-09-29 |
| | 3 | 3 | 125000.00 | 2022-09-30 | paid | TX1003 | 2022-09-28 |
| | 4 | 4 | 175000.00 | 2020-09-30 | pending | NULL | NULL |
| | 5 | 5 | 150000.00 | 2023-09-30 | paid | TX1005 | 2023-09-30 |
| | 6 | 6 | 100000.00 | 2019-09-30 | paid | TX1006 | 2019-09-25 |
| | 7 | 7 | 150000.00 | 2022-09-30 | paid | TX1007 | 2022-09-28 |
| | 8 | 8 | 150000.00 | 2021-09-30 | paid | TX1008 | 2021-09-29 |
| | 9 | 9 | 150000.00 | 2023-09-30 | pending | NULL | NULL |
| | 10 | 10 | 175000.00 | 2020-09-30 | paid | TX1010 | 2020-09-30 |
| | 11 | 11 | 100000.00 | 2019-09-30 | paid | TX1011 | 2019-09-25 |
| | 12 | 12 | 150000.00 | 2023-09-30 | paid | TX1012 | 2023-09-28 |
| | 13 | 13 | 150000.00 | 2022-09-30 | paid | TX1013 | 2022-09-29 |
| | 14 | 14 | 150000.00 | 2021-09-30 | pending | NULL | NULL |
| | 15 | 15 | 150000.00 | 2023-09-30 | paid | TX1015 | 2023-09-30 |
| | 16 | 16 | 175000.00 | 2020-09-30 | paid | TX1016 | 2020-09-25 |
| | 17 | 17 | 100000.00 | 2019-09-30 | paid | TX1017 | 2019-09-28 |
| | 18 | 18 | 150000.00 | 2023-09-30 | paid | TX1018 | 2023-09-29 |
| | 19 | 19 | 150000.00 | 2022-09-30 | paid | TX1019 | 2022-09-28 |
| | 20 | 20 | 150000.00 | 2021-09-30 | pending | NULL | NULL |

Explanation Stored Procedure - All Fees

```
mysql> DELIMITER //
```

```
CREATE PROCEDURE GetAllFees()
```

```
BEGIN
```

```
    SELECT f.fee_id, s.name, f.amount, f.due_date, f.payment_status, f.transaction_id
```

```
    FROM Fees f
```

```
    JOIN Students s ON f.student_roll = s.student_roll;
```

END;

//

DELIMITER ;

After Creating GetAllFees() Call the stored procedure

mysql> **Call GetAllFees();**

| | fee_id | name | amount | due_date | payment_status | transaction_id |
|---|--------|-------------------|-----------|------------|----------------|----------------|
| ▶ | 1 | Rahul Sharma | 150000.00 | 2023-09-30 | paid | TX1001 |
| | 2 | Priya Patel | 150000.00 | 2023-09-30 | paid | TX1002 |
| | 3 | Amit Kumar | 125000.00 | 2022-09-30 | paid | TX1003 |
| | 4 | Neha Gupta | 175000.00 | 2020-09-30 | pending | NULL |
| | 5 | Ravi Singh | 150000.00 | 2023-09-30 | paid | TX1005 |
| | 6 | Sneha Reddy | 100000.00 | 2019-09-30 | paid | TX1006 |
| | 7 | Arjun Mehta | 150000.00 | 2022-09-30 | paid | TX1007 |
| | 8 | Ananya Iyer | 150000.00 | 2021-09-30 | paid | TX1008 |
| | 9 | Vikram Joshi | 150000.00 | 2023-09-30 | pending | NULL |
| | 10 | Priyanka Malhotra | 175000.00 | 2020-09-30 | paid | TX1010 |
| | 11 | Rajesh Khanna | 100000.00 | 2019-09-30 | paid | TX1011 |
| | 12 | Meera Desai | 150000.00 | 2023-09-30 | paid | TX1012 |
| | 13 | Sanjay Verma | 150000.00 | 2022-09-30 | paid | TX1013 |
| | 14 | Pooja Srinivasan | 150000.00 | 2021-09-30 | pending | NULL |
| | 15 | Alok Choudhury | 150000.00 | 2023-09-30 | paid | TX1015 |
| | 16 | Kavita Rao | 175000.00 | 2020-09-30 | paid | TX1016 |
| | 17 | Manoj Bajpai | 100000.00 | 2019-09-30 | paid | TX1017 |
| | 18 | Sunita Narayan | 150000.00 | 2023-09-30 | paid | TX1018 |
| | 19 | Vivek Rana | 150000.00 | 2022-09-30 | paid | TX1019 |
| | 20 | Anjali Kapoor | 150000.00 | 2021-09-30 | pending | NULL |

Explanation Stored Procedure - Pending

mysql> **DELIMITER //**

CREATE PROCEDURE GetStudentsWithPendingFees()

BEGIN

SELECT s.student_roll, s.name **AS** student_name, f.amount, f.due_date

FROM Students s

JOIN Fees f **ON** s.student_roll = f.student_roll

WHERE f.payment_status = 'pending';

END;

//

DELIMITER ;

After Creating GetStudentsWithPendingFees() Call the stored procedure

mysql> **Call GetStudentsWithPendingFees();**

| | student_roll | student_name | amount | due_date |
|---|--------------|------------------|-----------|------------|
| ▶ | 4 | Neha Gupta | 175000.00 | 2020-09-30 |
| | 9 | Vikram Joshi | 150000.00 | 2023-09-30 |
| | 14 | Pooja Srinivasan | 150000.00 | 2021-09-30 |
| | 20 | Anjali Kapoor | 150000.00 | 2021-09-30 |

{— Thank You —}