Case study

College management system

Introduction:

College management encompasses the diverse and complex operations necessary for the efficient functioning of higher education institutions. This case study delves into the multifaceted aspects of college management, examining how administrative processes, resource allocation, and stakeholder engagement contribute to achieving institutional goals.

This case study delves into the application in managing diverse data sets within a college environment. SQL, a powerful tool for database management, plays a crucial role in organizing, retrieving, and analyzing data essential for decision-making across various administrative functions. This study examines how SQL is utilized to streamline processes such as student enrollment, attendance tracking, academic performance monitoring, and resource allocation. By leveraging SQL queries and database management systems, college administrators can efficiently handle large volumes of data, maintain data integrity, and generate insightful reports to support strategic decision-making. Throughout this case study, we will explore real-world to extract actionable insights from student records, faculty schedules, financial transactions students marks student all details to handle many records in sql.
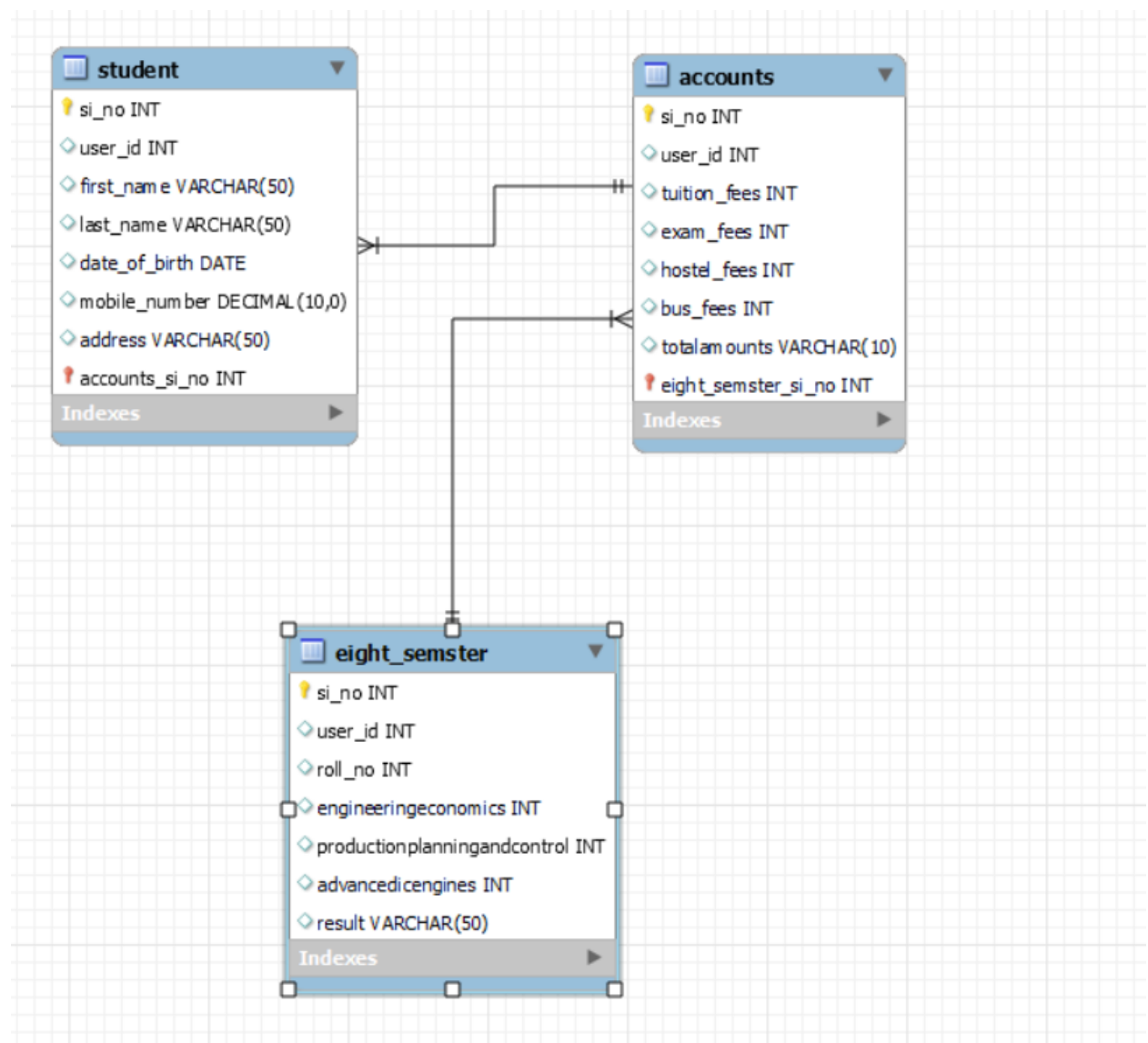
Dataset:

create database college;

use college;

select* from student;

select* from accountst;

select* from eight_semster;

student
- si_no INT
- user_id INT
- first_name VARCHAR(50)
- last_name VARCHAR(50)
- date_of_birth DATE
- mobile_number DECIMAL(10,0)
- address VARCHAR(50)
- accounts_si_no INT

Indexes

accounts
- si_no INT
- user_id INT
- tuition_fees INT
- exam_fees INT
- hostel_fees INT
- bus_fees INT
- totalamounts VARCHAR(10)
- eight_semster_si_no INT

Indexes

eight_semster
- si_no INT
- user_id INT
- roll_no INT
- engineeringeconomics INT
- productionplanningandcontrol INT
- advancedicengines INT
- result VARCHAR(50)

Indexes

Create table & insert data:

```sql
create table student
(si_no int auto_increment not null,
user_id int,
first_name varchar(50),
last_name varchar(50),
date_of_birth date,
mobile_number numeric(10),
address varchar(50),
primary key (si_no) );
select*from student;
insert into student values (1,201,"ram","kumar",'2000-12-10',9632154870,"race_course");
insert into student values (2,202,"surya","prasanh",'2001-09-13',6543210987,"vijaynager");
select*from student;
insert into student values (3,203,"jaya","ram",'1999-11-25',9632587402,"ncccolouny");
insert into student values (4,204,"tamil","selvan",'2002-12-10',6543219873,"hopecolouny");
insert into student values (5,205,"selva","kumar",'2003-10-25',9632587412,"ramanapuram");
insert into student values (6,206,"suresh","raja",'2001-09-26',9875236403,"ukkadam");
insert into student values (7,207,"ramesh","kumar",'2003-11-26',6789453021,"peelamedu");
insert into student values (8,208,"hari","haran",'2002-06-12',9563214721,"sulur");
```

Create table & insert data:

```sql
create table accounts (
si_no int auto_increment not null,
user_id int,
tuition_fees int,
exam_fees int,
hostel_fees int,
bus_fees int,
```

```sql
primary key (si_no));

select * from accounts;

insert into accounts (si_no,user_id,tuition_fees,exam_fees,hostel_fees)
values (1,201,40000,3500,6500);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,bus_fees)
values (2,202,45000,3500,6000);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,hostel_fees)
values (3,203,45500,3800,7000);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,bus_fees)
values (4,204,60000,4600,6500);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,bus_fees)
values (5,205,55000,4300,7500);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,hostel_fees)
values (6,206,65000,4500,9500);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,hostel_fees)
values (7,207,60000,4200,8500);

insert into accounts (si_no,user_id,tuition_fees,exam_fees,bus_fees)
values (8,208,65000,4000,8200);
```

Create table & insert data:

```sql
create table eight_semster(
si_no int auto_increment not null,
user_id int,
roll_no int,
engineeringeconomics int,
productionplanningandcontrol int,
advancedicengines int,
result varchar(50),
primary key (si_no));
```

```sql
select * from eight_semster;

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (201,20231,60,80,94,'pass');

select*from eight_semster;

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (202,20232,40,80,86,'fail');

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (203,20233,72,35,82,'fail');

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (204,20234,89,95,82,'pass');

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (205,20235,96,86,91,'pass');

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,result)

values (206,20236,89,95,82,'pass');
```

insert into eight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,re
sult)

values (207,20237,89,82,32,'fail');

insert intoeight_semster
(user_id,roll_no,engineeringeconomics,productionplanningandcontrol,advancedicengines,re
sult)

values (208,20238,89,95,86,'pass');

Case study questions & answers:

1.How to get student table in assending order ?
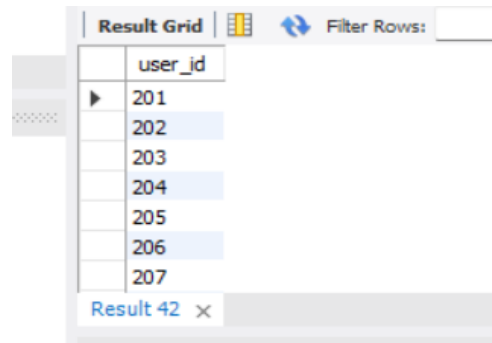
   select* from student order by first_name asc;

si_no	user_id	first_name	last_name	date_of_birth	mobile_number	address
8	208	hari	haran	2002-06-12	9563214721	sulur
3	203	jaya	ram	1999-11-25	9632587402	ncccolouny
1	201	ram	kumar	2000-12-10	9632154870	race_course
7	207	ramesh	kumar	2003-11-26	6789453021	peelamedu
5	205	selva	kumar	2003-10-25	9632587412	ramanapuram
6	206	suresh	raja	2001-09-26	9875236403	ukkadam
2	202	surya	prasanh	2001-09-13	6543210987	vijaynager

student 45 ✕

2.How can I retrieve all unique user_id from the student table ?

   select Distinct (user_id)   from student;
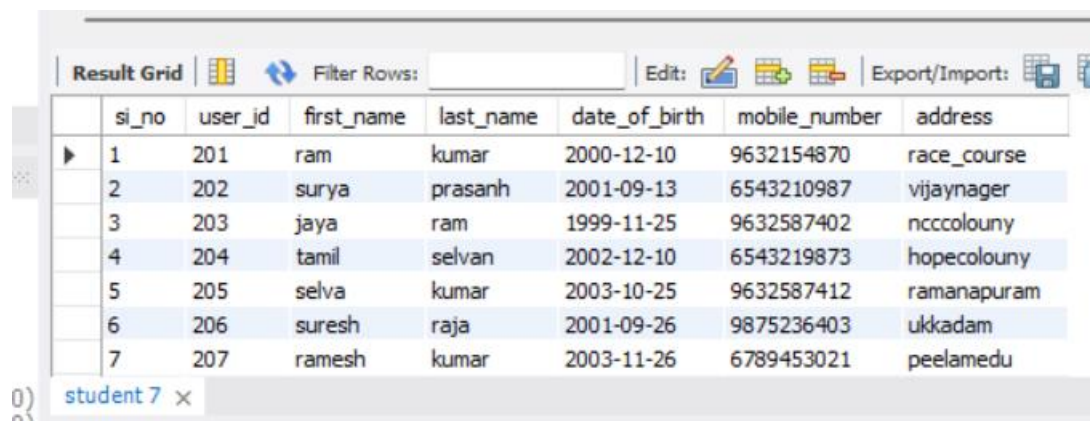
user_id
201
202
203
204
205
206
207

Result 42 ×

3.How to Retrieves all column name and rows from the student tables?

select * from student;

si_no	user_id	first_name	last_name	date_of_birth	mobile_number	address
1	201	ram	kumar	2000-12-10	9632154870	race_course
2	202	surya	prasanh	2001-09-13	6543210987	vijaynager
3	203	jaya	ram	1999-11-25	9632587402	ncccolouny
4	204	tamil	selvan	2002-12-10	6543219873	hopecolouny
5	205	selva	kumar	2003-10-25	9632587412	ramanapuram
6	206	suresh	raja	2001-09-26	9875236403	ukkadam
7	207	ramesh	kumar	2003-11-26	6789453021	peelamedu

student 7 ×

4.How to change the column name in student table using alias ?

select mobile_number as phone_no from student;

Result Grid	Filter Rows:
phone_no
9632154870
6543210987
9632587402
6543219873
9632587412
9875236403
6789453021

student 46 ×

5.How to add new column in account tables?

  alter table accounts add total amounts int;

si_no	user_id	tuition_fees	exam_fees	hostel_fees	bus_fees	totalamounts
1	201	40000	3500	6500	NULL	NULL
2	202	45000	3500	NULL	6000	NULL
3	203	45500	3800	7000	NULL	NULL
4	204	60000	4600	NULL	6500	NULL
5	205	55000	4300	NULL	7500	NULL
6	206	65000	4500	9500	NULL	NULL
7	207	60000	4200	8500	NULL	NULL

accounts 49 ×

6.How to find passed student in eight_semster tables ?

select * from eight_semster where result = "pass";

si_no	user_id	roll_no	engineeringeconomics	productionplanningandcontrol	advancedicengines	result
1	201	20231	60	80	94	pass
4	204	20234	89	95	82	pass
5	205	20235	96	86	91	pass
6	206	20236	89	95	82	pass
NULL	NULL	NULL	NULL	NULL	NULL	NULL

eight_semster 13 ×

7. How many students failed in eight_semster tables using count ?

select count(result) as pass from eight_semster where result = 'fail';

pass
3

8.How to delete a one data one row two times to using student table ?

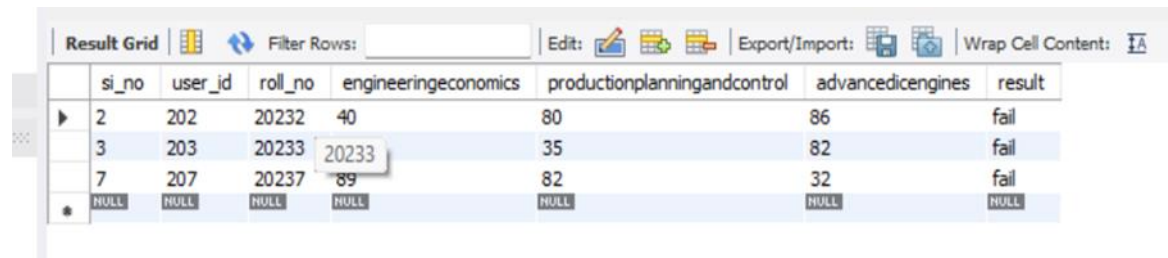delete from student where si_no=8;

before output : row 4 and 9 same

si_no	user_id	first_name	last_name	date_of_birth	mobile_number	address
1	201	ram	kumar	2000-12-10	9632154870	race_course
2	202	surya	prasanh	2001-09-13	6543210987	vijaynager
3	203	jaya	ram	1999-11-25	9632587402	ncccolouny
4	204	tamil	selvan	2002-12-10	6543219873	hopecolouny
5	205	selva	kumar	2003-10-25	9632587412	ramanapuram
6	206	suresh	raja	2001-09-26	9875236403	ukkadam
7	207	ramesh	kumar	2003-11-26	6789453021	peelamedu
8	208	hari	haran	2002-06-12	9563214721	sulur
9	209	tamil	haran	2002-06-21	9563214721	hopecollege

student 6

1

After output:

Result Grid | Filter Rows: | Edit: | Export/Import:

si_no	user_id	first_name	last_name	date_of_birth	mobile_number	address
1	201	ra ram	kumar	2000-12-10	9632154870	race_course
2	202	surya	prasanh	2001-09-13	6543210987	vijaynager
3	203	jaya	ram	1999-11-25	9632587402	ncccolouny
4	204	tamil	selvan	2002-12-10	6543219873	hopecolouny
5	205	selva	kumar	2003-10-25	9632587412	ramanapuram
6	206	suresh	raja	2001-09-26	9875236403	ukkadam
7	207	ramesh	kumar	2003-11-26	6789453021	peelamedu
8	208	hari	haran	2002-06-12	9563214721	sulur
NULL	NULL	NULL	NULL	NULL	NULL	NULL

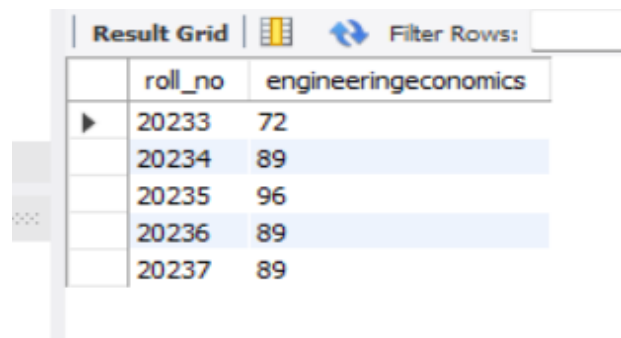9.How to find failed students in eight_semster tables ?

select * from eight_semster where result="fail";

si_no	user_id	roll_no	engineeringeconomics	productionplanningandcontrol	advancedicengines	result
2	202	20232	40	80	86	fail
3	203	20233	35	82	fail
7	207	20237	89	82	32	fail
NULL	NULL	NULL	NULL	NULL	NULL	NULL

10. How to find > 60 marks in engineeringeconomic and < 50 marks in advancedicengines with student roll no?

1.select roll_no,engineeringeconomics from eight_semster where engineeringeconomics >60;

roll_no	engineeringeconomics
20233	72
20234	89
20235	96
20236	89
20237	89

2.select roll_no,advancedicengines from eight_semster where advancedicengines<50;

11.using join to find concat first_name and last_name,dob,bus_fees,exam_fees and result to take a output in all tables?

select concat(s.first_name," ",s.last_name),s.date_of_birth,a.bus_fees,

a.exam_fees,e.roll_no,e.advancedicengines,e.productionplanningandcontrol,e.engineeringe conomics,e.result

from student s

join accounts a

on s.user_id=a.user_id

join eight_semster e

on a.user_id=e.user_id;

concat(s.first_name," ",s.last_name)	date_of_birth	bus_fees	exam_fees	roll_no	advancedicengines	productionplanningandcontrc	engineeringeconomics	result
surya prasanh	2001-09-13	6000	3500	20232	86	80	40	fail
jaya ram	1999-11-25	NULL	3800	20233	82	35	72	fail
ramesh kumar	2003-11-26	NULL	4200	20237	32	82	89	fail
ram kumar	2000-12-10	NULL	3500	20231	94	80	60	pass
tamil selvan	2002-12-10	6500	4600	20234	82	95	89	pass
selva kumar	2003-10-25	7500	4300	20235	91	86	96	pass
suresh raja	2001-09-26	NULL	4500	20236	82	95	89	pass

Result 11 x

12. retrieve all the hostel_fees values from the values from the account table

Where the hostel_fees column is not null?

select hostel_fees from accounts where hostel_fees is not null;

hostel_fees
6500
7000
9500
8500

13. retrieve a list of student with the following first_names Ramesh and last_name kumar from tables ?

select * from student where first_name='ramesh'and last_name='kumar';

si_no	user_id	first_name	last_name	date_of_birth	mobile_number	address
7	207	ramesh	kumar	2003-11-26	6789453021	peelamedu
NULL	NULL	NULL	NULL	NULL	NULL	NULL

14. how to using tuition fees of accounts by hostel_fees?
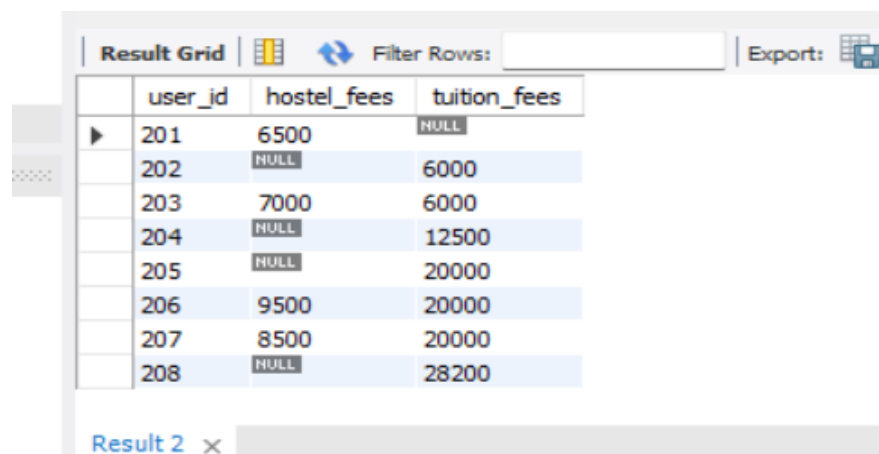
select

user_id,

hostel_fees,

sum(bus_fees) over (order by si_no) as tuition_fees

from accounts;

user_id	hostel_fees	tuition_fees
201	6500	NULL
202	NULL	6000
203	7000	6000
204	NULL	12500
205	NULL	20000
206	9500	20000
207	8500	20000
208	NULL	28200