Project Title: University Management System

Student Name	Student Id	Contribution
ASHRAFUL ISLAM	20-42010-1	Introduction, Project proposal, Class Diagram, Use Case Diagram, Activity Diagram, ER diagram, User Interface
KAZI MUNTASHIR FAHAD	20-43834-2	Normalization, Up to 3rd NF, Schema Diagram, Scenario Description,Table Creation, trigger.
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Course Name: ADVANCE DATABASE MANAGEMENT SYSTEM.

Section: B

Contents

Introduction:

University management system project is a web-based solution for colleges, universities, and schools. It was created for the university and its affiliated institutions to conduct, monitor, and analyze complicated activities such as student admission, examinations, and much more. It is a program that manages the complete student life cycle up to degree completion.

we have computers with large computing power and almost every business is going to take the advantages of using those technologies. But nowadays digital certifications itself become an essential component for every business infrastructure. Because it provides security and it can identify every unique individual. Besides, it also provides confidential communications to the users.

This university management system we developed it to solve the problems of the universities and make work smart instead of using papers now you can you use this system to do all the work, every university or educational institution has challenges to overcome and manage the information of students, faculties, registrations courses and staff at the management level, this system designed to assist strategic planning and will help to ensure that the university can meet the minimum standard of the university.

The main aim of this Project University Management System is to manage student registration as well as staff registration so that the teachers can submit student exam results online and take a class attendance online during class sessions.

Project Proposal:

We have developed a database system, which aims to replicate an online university portal / management system.

Here we have user types such as students, teachers, admin and officers. Students will be able to see their information, results and apply for registering courses. Teachers will be able to evaluate students, update their marks and grades. The admin will allocate courses for students who have applied for registration, store and update various attributes of the student account and provide salary to the teachers. The officer will maintain the payment system for the university and create records relating to order and discipline.

Class Diagram: This is the class diagram of our project.

Fig 1: Class Diagram.

Use case Diagram: This is the use case diagram for our project.

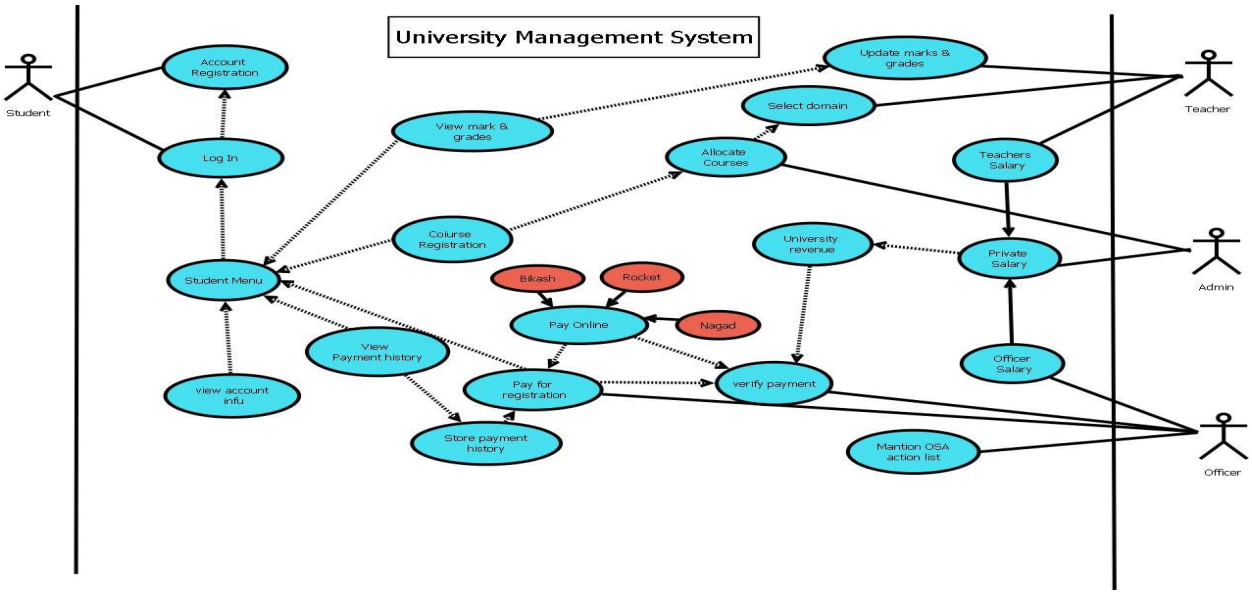


Fig 2: Use case diagram.

Activity Diagram: This is the activity diagram of our project

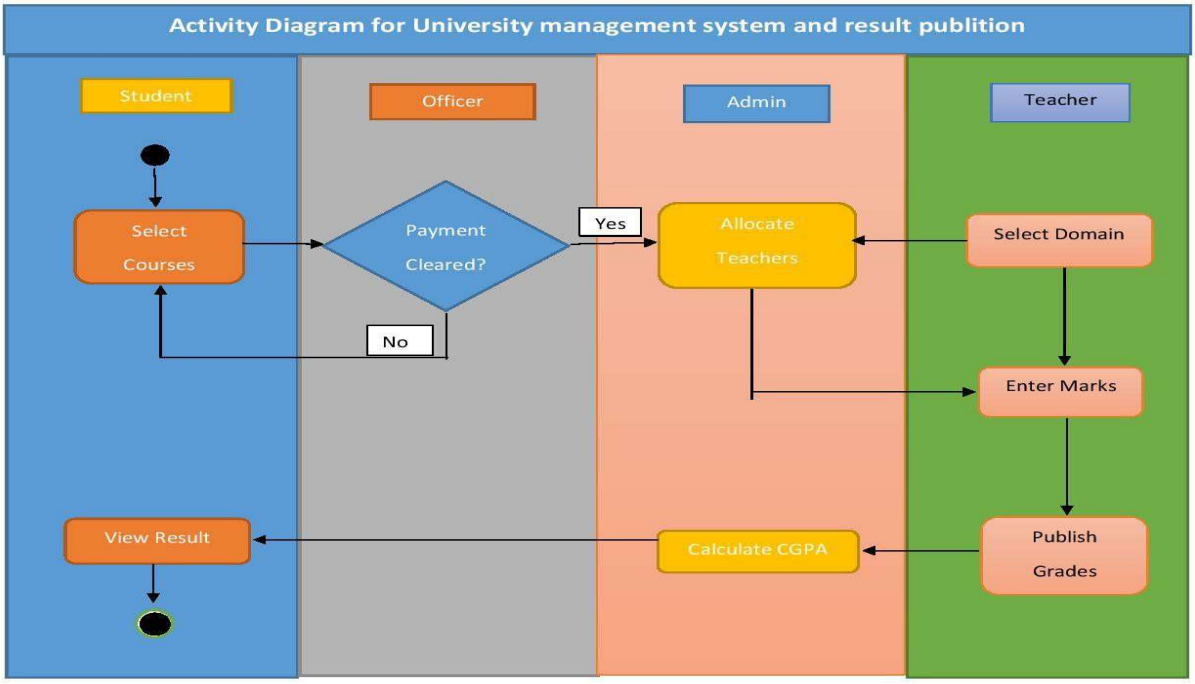
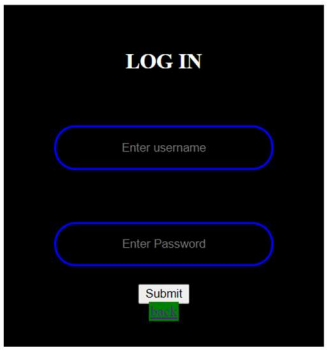


Fig 3: Activity Diagram

User Interface:



localhost/studentdetails.php

Student list

SL	Name	Id	View Profile	update
1	Maria Anders	19-41677-5	check profile	update
2	Francisco Chang	18-41567-3	check profile	update
3	janate	17-41677-3	check profile	update

localhost/td.php

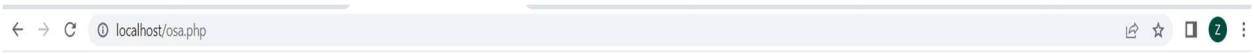
Teacher list

SL	Name	Id	domain	Hiedate	balance
1	nazmus sakib	2001-4441-3	esc	17-5-2015	30000
2	nazia alfaz	2001-57896-3	ese	17-5-2022	2000
1	habiaba khatun	2002-4441-2	EEE	17-5-2017	30000

localhost/course.php

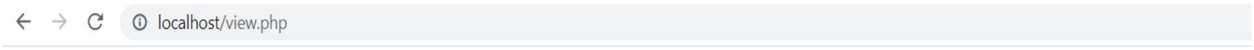
Course List

course code	course Name	course prerequisite	credit count
cs123	operating system	microprosessior	3
eee897	digital logic and circuits	electic device	3
m345	physics 2	physics 1	3



OSA

student name	stdent id	osa serial	action	case	action date
mirza asif	19-41677-3	suspended	ragging	10-11-2022	



View Profile

Name	Maria Anders
Email	maria @gmail.com
Address	Dhaka
Phone	01720586978
ADmission Date	20-11-2019
Graduation Date	20-22-2025
Father Name	josim
Mother Name	jesmin

Scenario Description:

We have developed a database system which aims to replicate an university management system. Here we have user types such as students, teachers, admin for Office of Student Affair (OSA) and payment record officers.

In this management system student have their own information. They have their own ID, name, CGPA, program and also how much credit he or she has completed. Students will be able to see their information, results and apply for registering courses.Teachers have their own information. They have their own ID, name, hiredate, domain of their study and also balance information. Teachers will be able to evaluate students, update their marks and grades.

Students and Teachers has been identify by their unique ID. The admin will allocate courses for students who have applied for registration, store and update various attributes of the student account and also provide salary to the teachers. Payment record will also capture by an officer. Who will have information about paid amount, payable amount.

Officer also the information of the student id, student name for identity a student. Serial is unique for the Payment Record officer.

ER Diagram: This is the ER diagram of our project

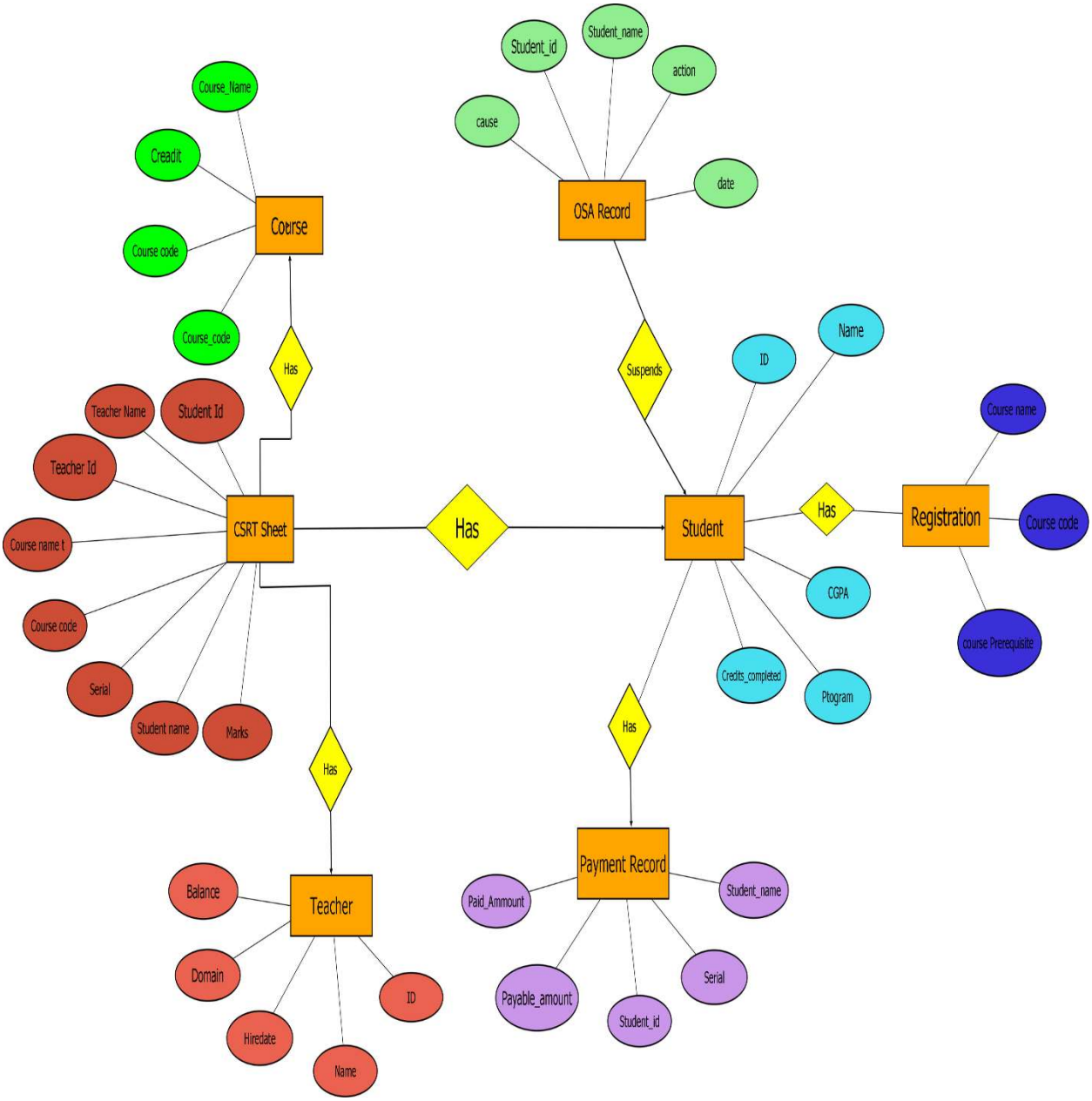


Fig 4: ER Diagram

Normalization: This is the basic normalization that required.

Has:

UNF:

Has (course_code, course_prerequisite_code, credit_count, course_name, ID, name, hiredate, domain, balance)

1NF: There is no multilevel attribute.

course_code, course_prerequisite_code, credit_count, course_name, ID, name, hiredate, domain, balance

2NF:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, hiredate, domain, balance

3NF: There is no transitive dependency.

course_code, course_prerequisite_code, credit_count, course_name

ID, name, hiredate, domain, balance

Table Creation:

course_code, course_prerequisite_code, credit_count, course_name
ID, name, hiredate, domain, balance, course_code

Suspends:

UNF:

Suspends (student_id, student_name, action, cause, date, ID, name, CGPA, program, credits_completed)

1NF: There is no multilevel attribute.

student_id, student_name, action, cause, date, ID, name, CGPA, program, credits_completed

2NF:

student_id, student_name, action, cause, date ID, name, CGPA, program, credits_completed

3NF: There is no transitive dependency.

student_id, student_name, action, cause, date
ID, name, CGPA, program, credits_completed

Table Creation:

student_id, student_name, action, cause, date
ID, name, CGPA, program, credits_completed, student_id

Has:

UNF:

Has (ID, name, CGPA, program, credits_completed, serial, paid_amount, payable_amount, student_id, student_name)

1NF: There is no multilevel attribute.

ID, name, CGPA, program, credits_completed, serial, paid_amount, payable_amount, student_id, student_name

2NF:

ID, name, CGPA, program, credits_completed
serial, paid_amount, payable_amount, student_id, student_name

3NF: There is no transitive dependency.

ID, name, CGPA, program, credits_completed
serial, paid_amount, payable_amount, student_id, student_name

Table Creation:

ID, name, CGPA, program, credits_completed
serial, paid_amount, payable_amount, student_id, student_name, ID

Has:

UNF:

Has (course_code, course_prerequisite_code, credit_count, course_name, ID, name, CGPA, program, credits_completed)

1NF: There is no multilevel attribute.

course_code, course_prerequisite_code, credit_count, course_name, ID, name, CGPA, program, credits_completed

2NF:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed

3NF: There is no transitive dependency.

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed

Table Creation:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed, course_code

Has:

UNF:

Has (course_code, course_prerequisite_code, credit_count, course_name, ID, name, CGPA, program, credits_completed)

1NF: There is no multilevel attribute.

course_code, course_prerequisite_code, credit_count, course_name, ID, name, CGPA, program, credits_completed

2NF:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed

3NF: There is no transitive dependency.

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed

Table Creation:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, CGPA, program, credits_completed, course_code

Has:

UNF:

Has (ID, name, CGPA, program, credits_completed,course_name, course_code, course prerequisite)

1NF: There is no multilevel attribute.

ID, name, CGPA, program, credits_completed,course_name, course_code, course prerequisite

2NF:

ID, name, CGPA, program, credits_completed

course_name, course_code, course prerequisite

3NF: There is no transitive dependency.

ID, name, CGPA, program, credits_completed

course_name, course_code, course prerequisite

Table Creation:

ID, name, CGPA, program, credits_completed

course_name, course_code, course prerequisite

Has:

UNF:

Has (student_name, student_id, teacher_name, teacher_id, course_name, course_code, serial, marks, course_name, course_code,credit)

1NF: There is no multilevel attribute.

student_name, student_id, teacher_name, teacher_id, course_name, course_code, serial, marks, course_name, course_code,credit

2NF:

student_name, student_id, teacher_name, teacher_id

course_name, course_code, serial, marks, course_name, course_code,credit

3NF: There is no transitive dependency.

student_name, student_id, teacher_name, teacher_id

course_name, course_code, serial, marks, course_name, course_code,credit

Table Creation:

student_name, student_id, teacher_name, teacher_id

course_name, course_code, serial, marks, course_name, credit

Temparary Table:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, hiredate, domain, balance, **course_code**

student_id, student_name, action, cause, date

~~ID, name, CGPA, program, credits_completed, **student_id**,~~

~~ID, name, CGPA, program, credits_completed~~

serial, paid_amount, payable_amount, student_id, student_name, **ID**

~~course_code, course_prerequisite_code, credit_count, course_name~~

ID, name, CGPA, program, credits_completed, **course_code**, **student_id**,

~~ID, name, CGPA, program, credits_completed~~

~~course_name, course_code, course prerequisite~~

student_name, student_id, teacher_name, teacher_id

course_name, course_code, serial, marks, course_name

Final Table:

course_code, course_prerequisite_code, credit_count, course_name

ID, name, hiredate, domain, balance, **course_code**

student_id, student_name, action, cause, date

serial, paid_amount, payable_amount, student_id, student_name, **ID**

ID, name, CGPA, program, credits_completed, **course_code**, **student_id**

course_name, course_code, **serial**, marks, course_name

course_name, course_code, serial, marks, course_name

Schema diagram: This is the schema diagram of our project

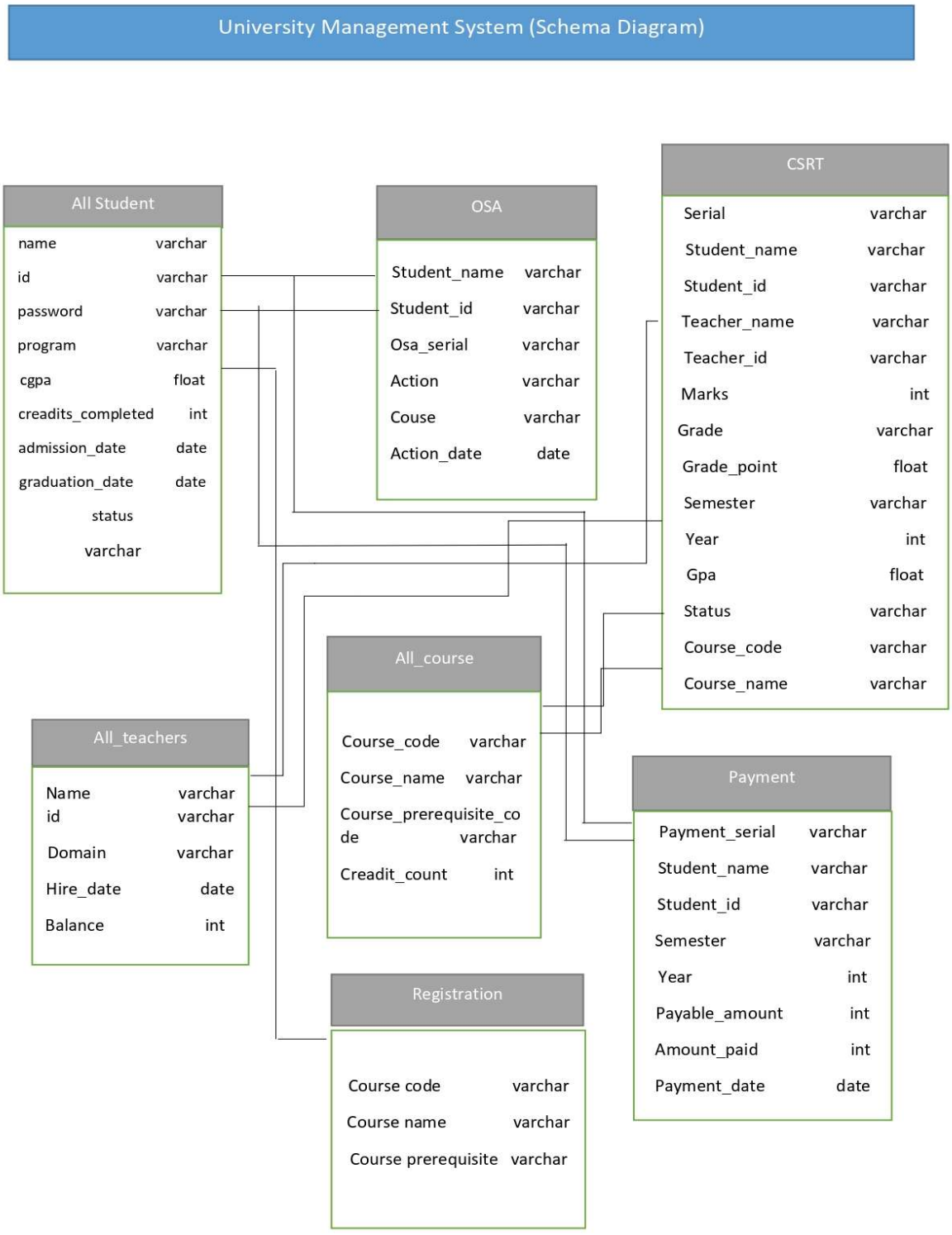


Fig 5: Schema diagram

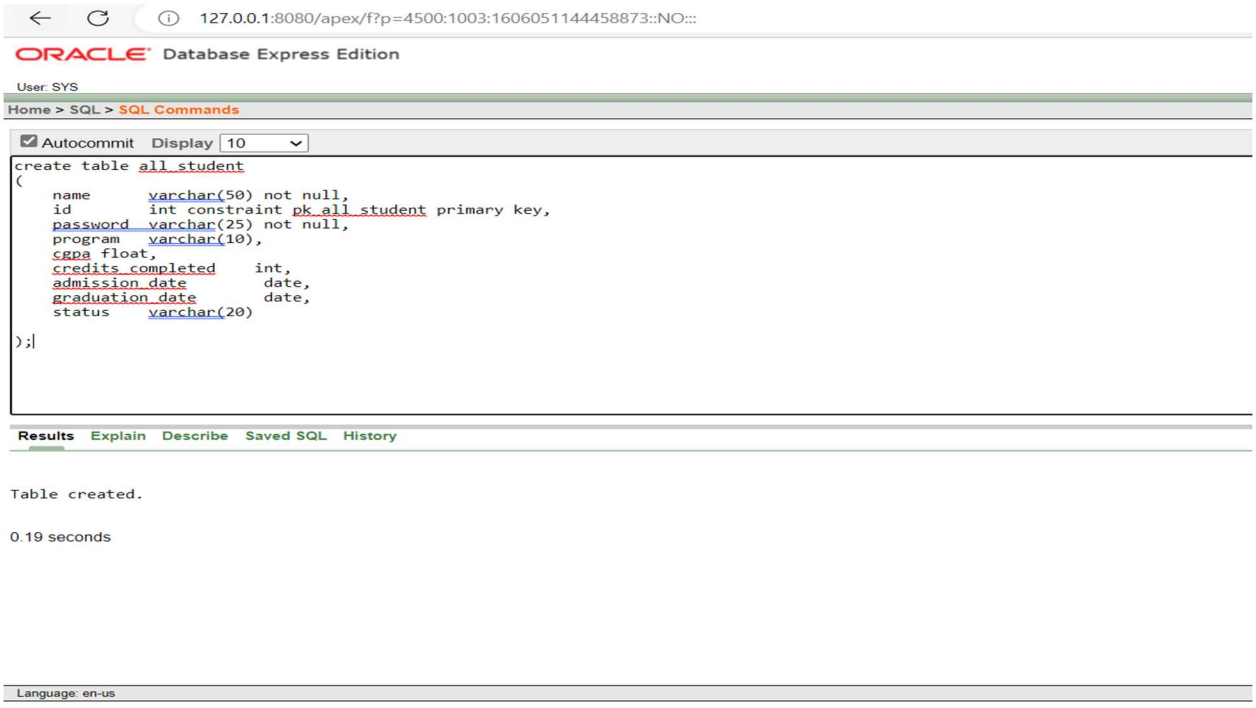
Table Creation & Data Insertion:

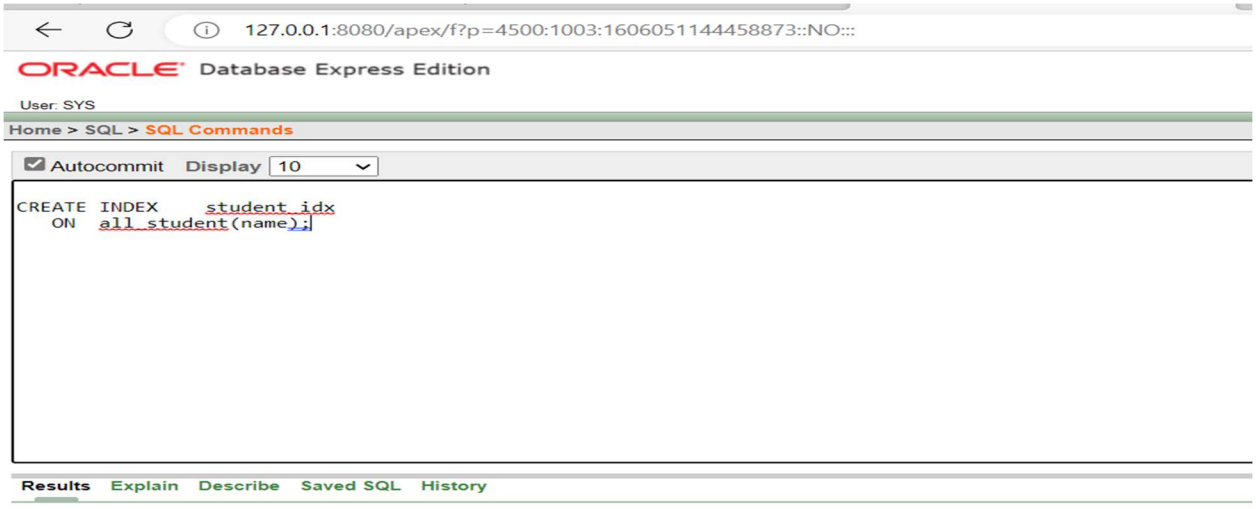
Student Table:

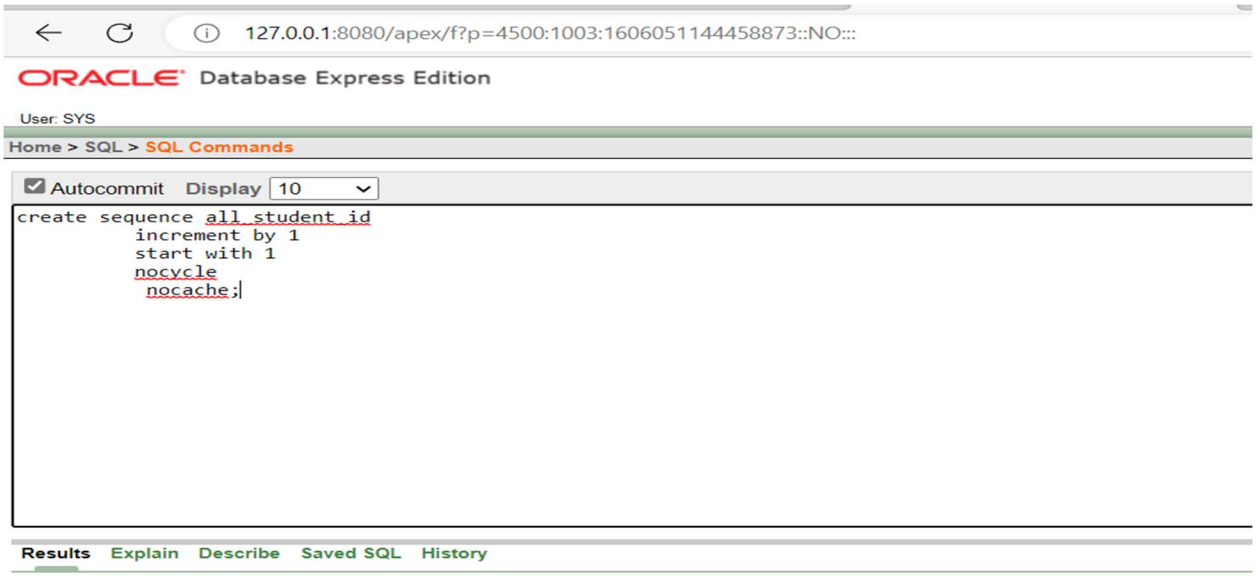
```
all_student
create table all_student (
        name            varchar(50) not null,
        id              int constraint pk_all_student primary key, password
        varchar(25) not null,
        program         varchar(10),   cgpa
        float, credits_completed        int,
        admission_date
                        date,
        graduation_date
                        date, status
                        varchar(20));


create sequence all_student_id
                increment by 1
                start with 1
                nocycle
                  nocache;

CREATE INDEX student_idx ON
     all_student(name);
```

Insertion:

```
insert into all_student values
('Waskiqure',all_student_id.nextval,'0161','EEE',3.50, 19,to_date('10-dec-22','dd-
mm-yyyy'), null,'Studying');

insert into all_student values
('Shahriar Zaman',all_student_id.nextval,'1234','CSE', 3.84, 16,to_date('19-dec-
21','dd-mm-yyyy'), null,'Studying');

insert into all_student values
('sumsur nahar',all_student_id.nextval,'0159','EEE', 3.25, 15,to_date('19-dec- 22','dd-mm-
yyyy'), null,'Studying');

insert into all_student values
('AMANULLAH',all_student_id.nextval,'0160','CSE',2.98, 15,to_date('19-dec-
21','dd-mm-yyyy'), null,'Studying');

insert into all_student values
('Zisnara',all_student_id.nextval,'0161','CSE', 3.98, 14,to_date('10-dec-22','dd-
mm-yyyy'), null,'Studying');
```


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create table all_student
(
name varchar(50) not null,
id int constraint pk_all_student primary key,
password varchar(25) not null,
program varchar(10),
cgpa float,
credits_completed int,
admission_date date,
graduation_date date,
status varchar(20)
);
Results Explain Describe Saved SQL History
Table created.
0.19 seconds
Language: en-us


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
CREATE INDEX student_idx
ON all_student(name);
Results Explain Describe Saved SQL History
Index created.
0.05 seconds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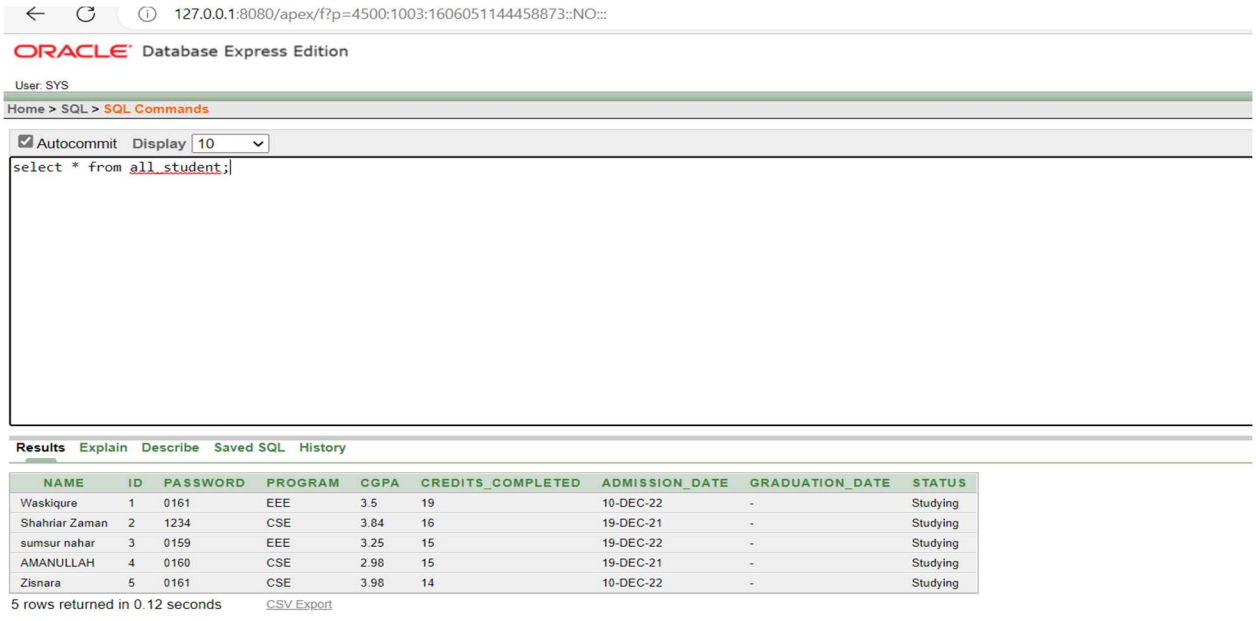
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create sequence all_student_id
increment by 1
start with 1
nocycle
nocache;
Results Explain Describe Saved SQL History
Sequence created.
0.03 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
select * from all_student;
Results Explain Describe Saved SQL History
NAME ID PASSWORD PROGRAM CGPA CREDITS_COMPLETED ADMISSION_DATE GRADUATION_DATE STATUS
Waskiqure 1 0161 EEE 3.5 19 10-DEC-22 - Studying
Shahriar Zaman 2 1234 CSE 3.84 16 19-DEC-21 - Studying
sumsur nahar 3 0159 EEE 3.25 15 19-DEC-22 - Studying
AMANULLAH 4 0160 CSE 2.98 15 19-DEC-21 - Studying
Zisnara 5 0161 CSE 3.98 14 10-DEC-22 - Studying
5 rows returned in 0.12 seconds
CSV Export

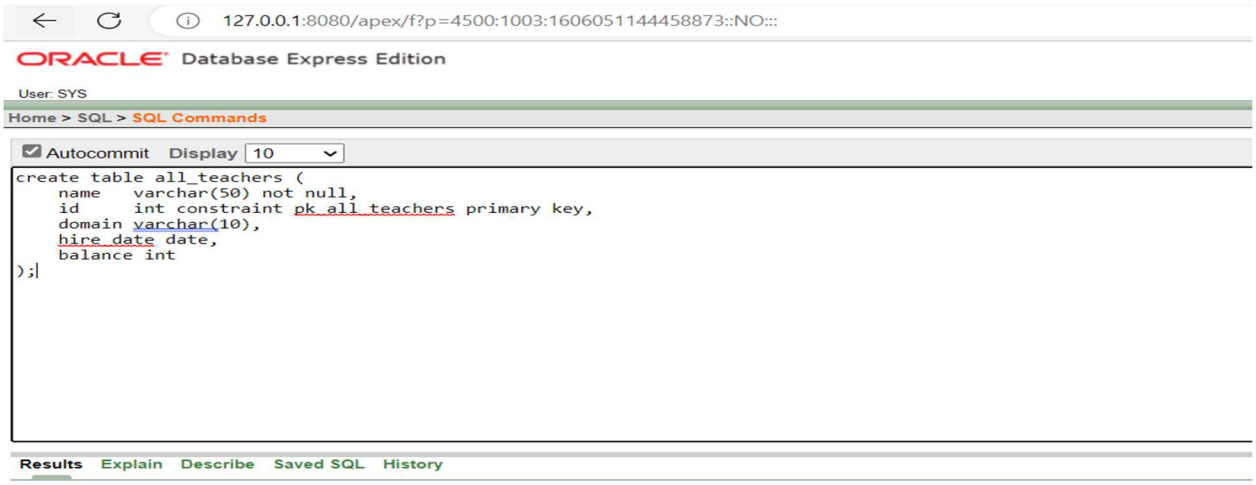
Teachers Table:

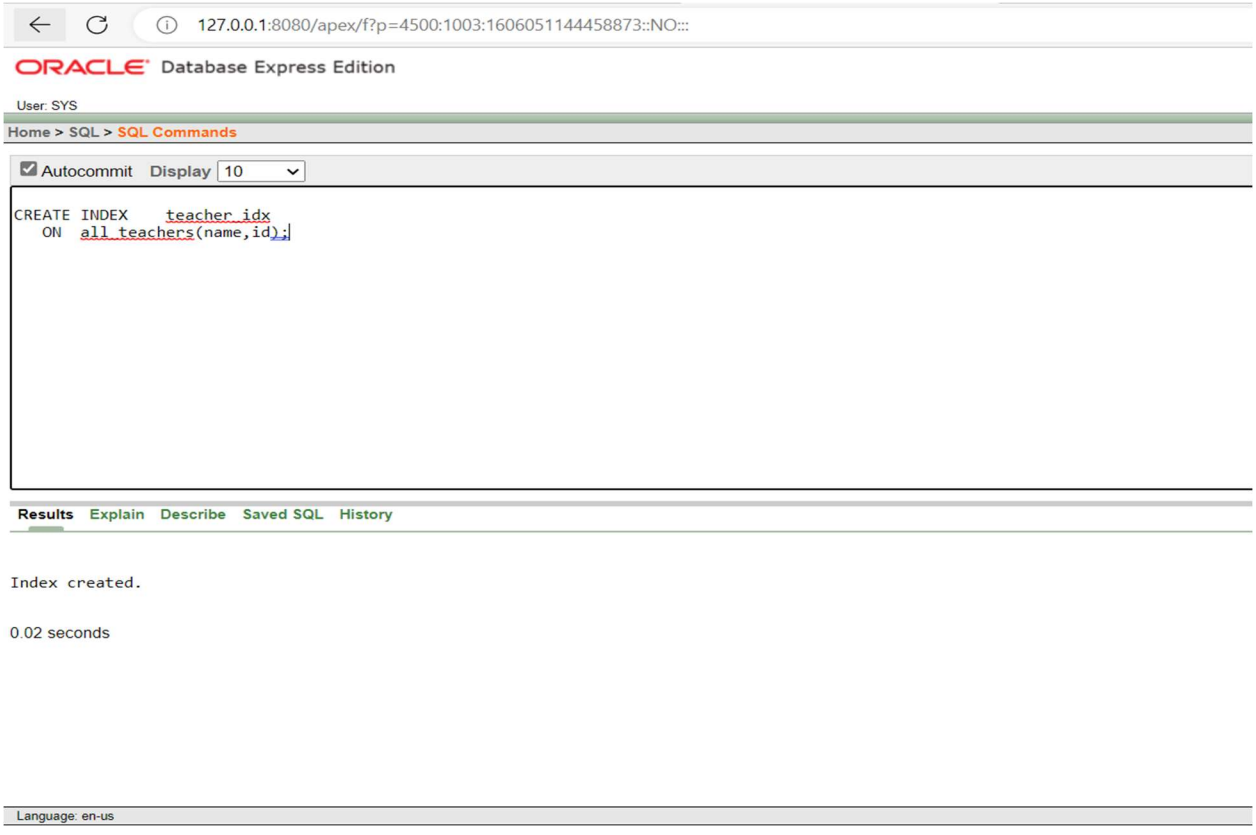
create teacher

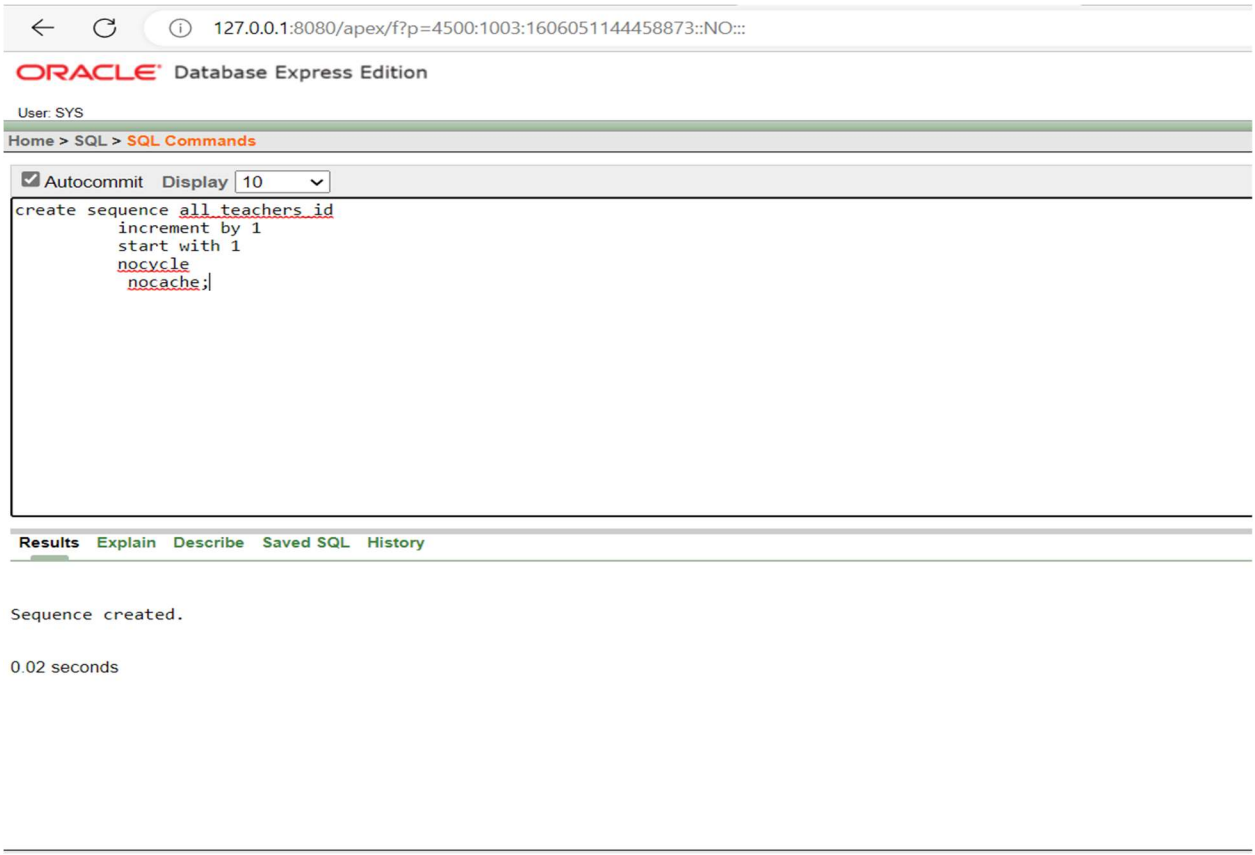
```
create table all_teachers ( name
                varchar(50) not null,
      id        int constraint pk_all_teachers primary key, domain
      varchar(10),
      hire_date date, balance
      int);

create sequence all_teachers_id
                increment by 1
                start with 1
                nocycle
                 nocache;

CREATE INDEX      teacher_idx
     ON all_teachers(name,id);
```

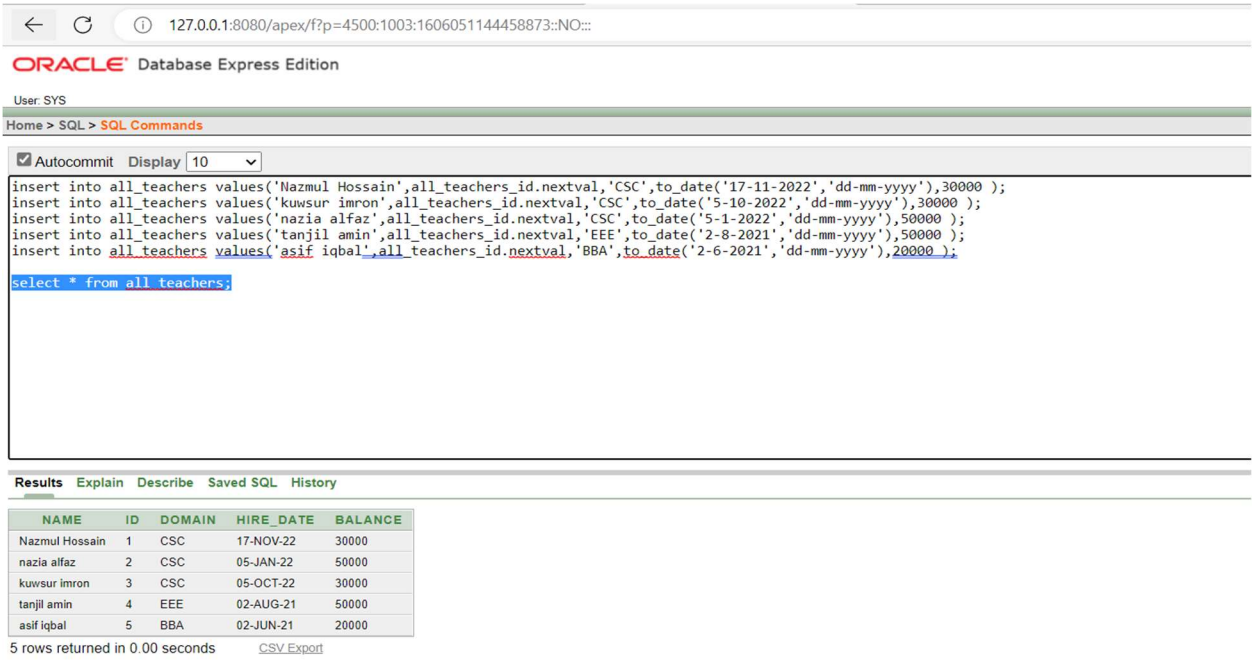
Insertion:

```
insert into all_teachers values
('Nazmul Hossain',all_teachers_id.nextval,'CSC',to_date('17-11-2022','dd-mm-
yyyy'),30000 );

insert into all_teachers values
('kuwsur imron',all_teachers_id.nextval,'CSC',to_date('5-10-2022','dd-mm-
yyyy'),30000 );

insert into all_teachers values
('nazia alfaz',all_teachers_id.nextval,'CSC',to_date('5-1-2022','dd-mm- yyyy'),50000
);

insert into all_teachers values
('tanjil amin',all_teachers_id.nextval,'EEE',to_date('2-8-2021','dd-mm-
yyyy'),50000 );

insert into all_teachers values
('asif iqbal',all_teachers_id.nextval,'BBA',to_date('2-6-2021','dd-mm- yyyy'),20000 );
```


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create table all_teachers (
name varchar(50) not null,
id int constraint pk_all_teachers primary key,
domain varchar(10),
hire_date date,
balance int
);
Results Explain Describe Saved SQL History
Table created.
0.04 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
CREATE INDEX teacher_idx
ON all_teachers(name,id);
Results Explain Describe Saved SQL History
Index created.
0.02 seconds
Language: en-us


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create sequence all_teachers_id
increment by 1
start with 1
nocycle
nocache;
Results Explain Describe Saved SQL History
Sequence created.
0.02 seconds

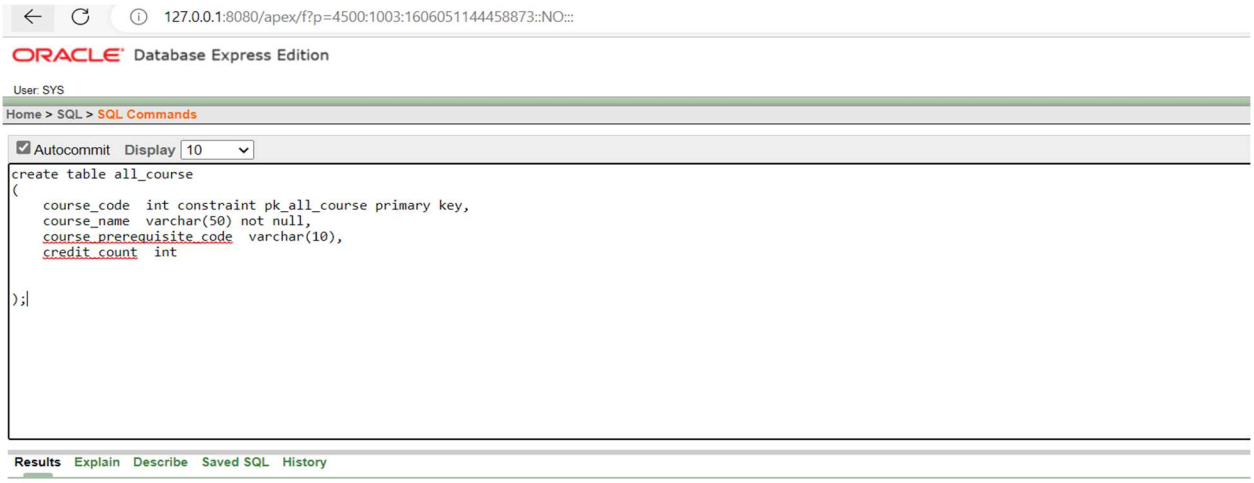

127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
insert into all_teachers values('Nazmul Hossain',all_teachers_id.nextval,'CSC',to_date('17-11-2022','dd-mm-yyyy'),30000);
insert into all_teachers values('kuwsur imron',all_teachers_id.nextval,'CSC',to_date('5-10-2022','dd-mm-yyyy'),30000);
insert into all_teachers values('nazia alfaz',all_teachers_id.nextval,'CSC',to_date('5-1-2022','dd-mm-yyyy'),50000);
insert into all_teachers values('tanjil amin',all_teachers_id.nextval,'EEE',to_date('2-8-2021','dd-mm-yyyy'),50000);
insert into all_teachers values('asif iqbal',all_teachers_id.nextval,'BBA',to_date('2-6-2021','dd-mm-yyyy'),20000);
select * from all_teachers;
Results Explain Describe Saved SQL History
NAME ID DOMAIN HIRE_DATE BALANCE
Nazmul Hossain 1 CSC 17-NOV-22 30000
nazia alfaz 2 CSC 05-JAN-22 50000
kuwsur imron 3 CSC 05-OCT-22 30000
tanjil amin 4 EEE 02-AUG-21 50000
asif iqbal 5 BBA 02-JUN-21 20000
5 rows returned in 0.00 seconds
CSV Export

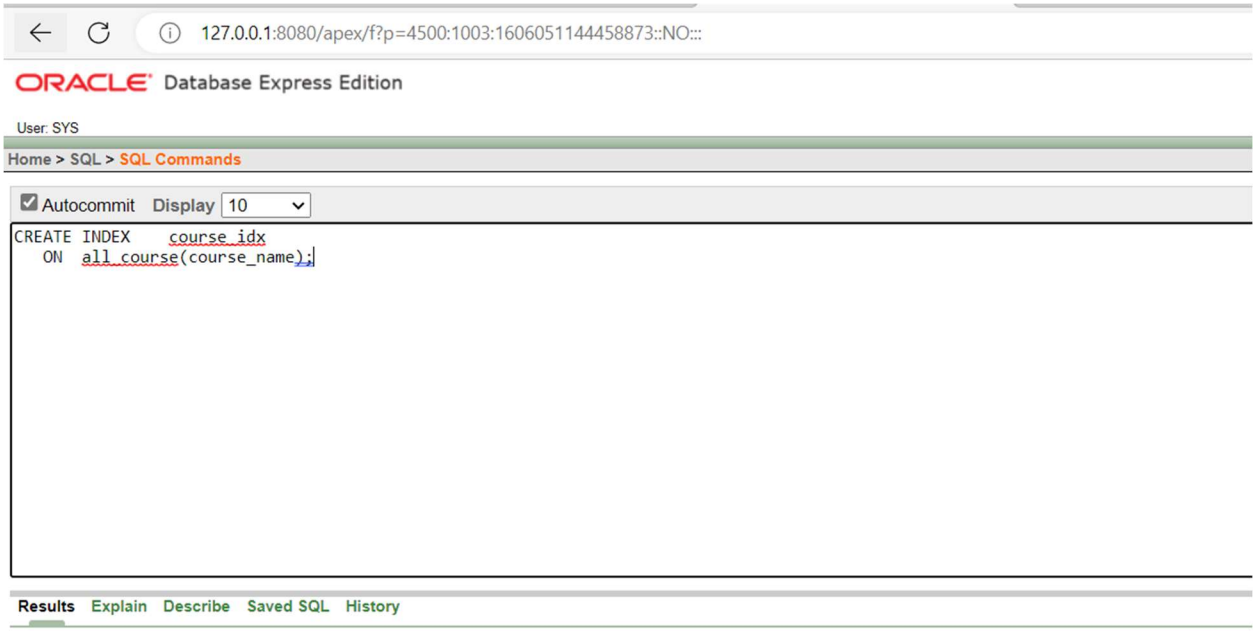
Course Table:

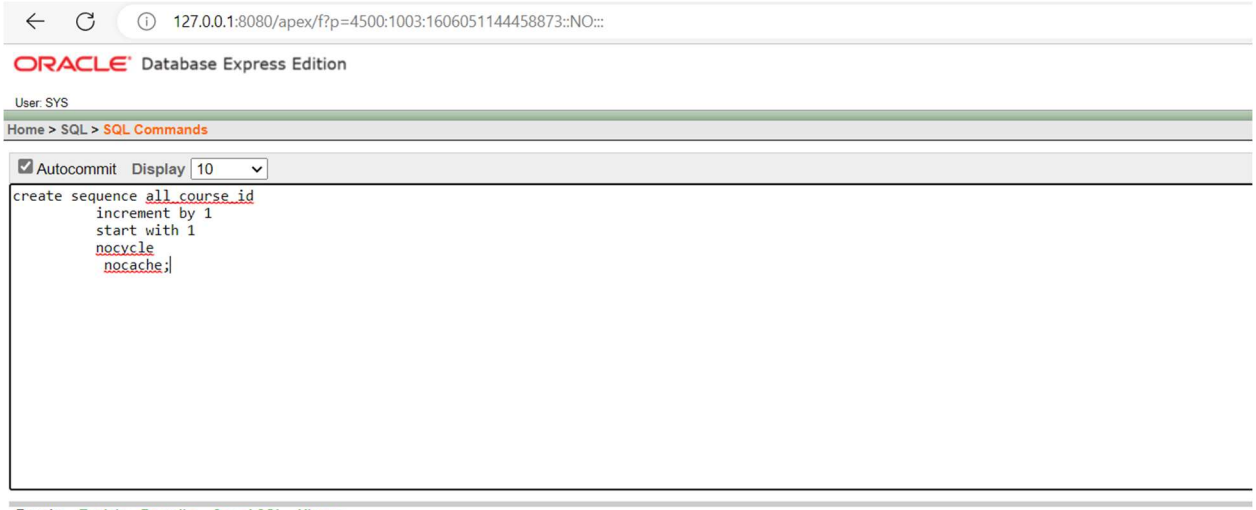
```
create table all_course (
        course_code  int constraint pk_all_course primary key, course_name
        varchar(50) not null, course_prerequisite_code  varchar(10),
        credit_count  int);

create sequence all_course_id
                    increment by 1
                    start with 1
                    nocycle
                      nocache;


CREATE INDEX       course_idx
      ON   all_course(course_name);
```

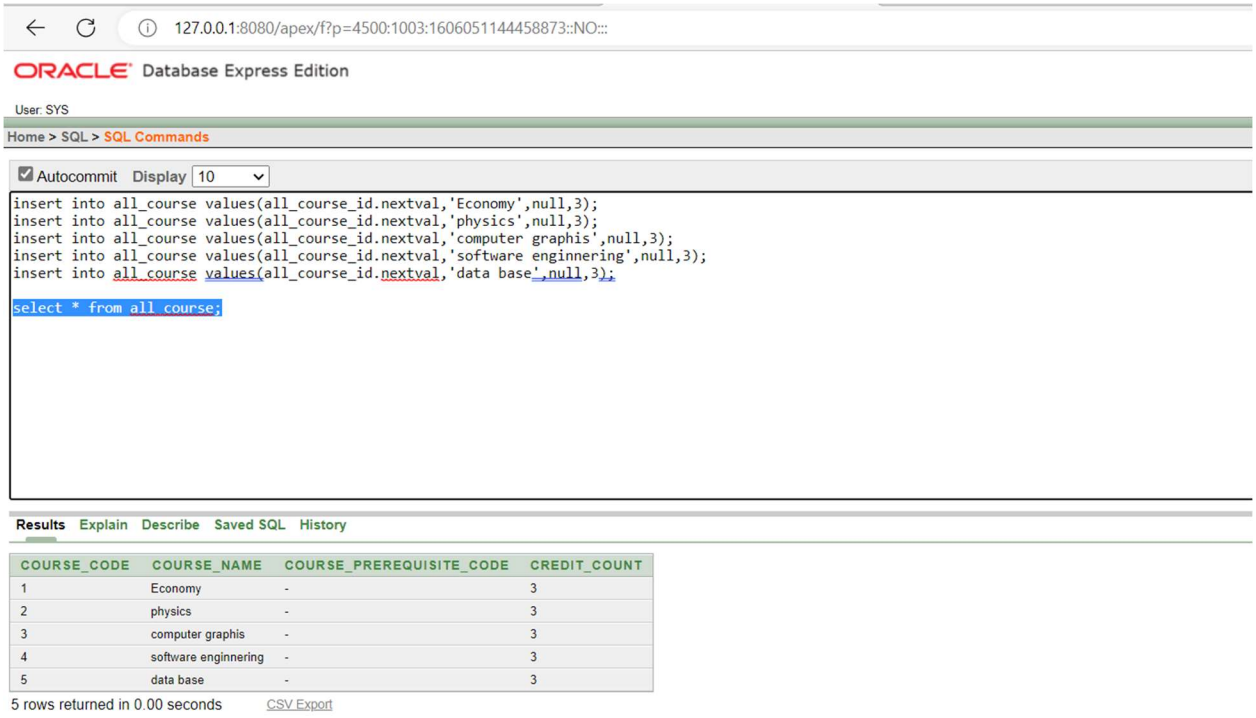
Insertion:

```
insert into all_course values
(all_course_id.nextval,'Economy',null,3);

insert into all_course values
(all_course_id.nextval,'physics',null,3);

insert into all_course values
(all_course_id.nextval,'computer graphis',null,3);

insert into all_course values
(all_course_id.nextval,'software enginnering',null,3);

insert into all_course values
(all_course_id.nextval,'data base',null,3);
```


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create table all_course
(
course_code int constraint pk_all_course primary key,
course_name varchar(50) not null,
course_prerequisite_code varchar(10),
credit_count int
);
Results Explain Describe Saved SQL History
Table created.
0.03 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
CREATE INDEX course_idx
ON all_course(course_name);
Results Explain Describe Saved SQL History
Index created.
0.01 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create sequence all_course_id
increment by 1
start with 1
nocycle
nocache;
Results Explain Describe Saved SQL History
Sequence created.
0.00 seconds

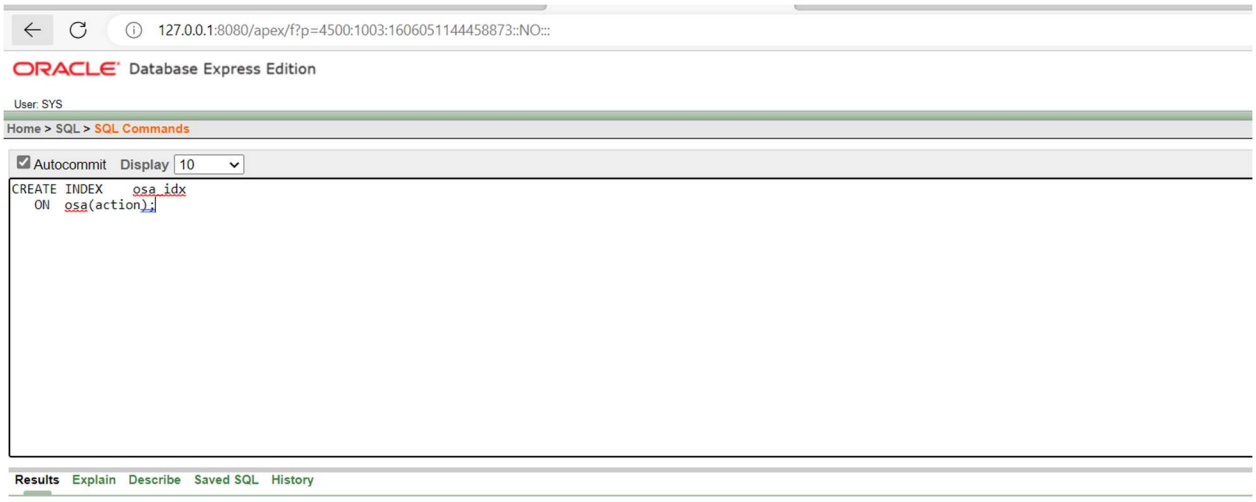

127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
insert into all_course values(all_course_id.nextval,'Economy',null,3);
insert into all_course values(all_course_id.nextval,'physics',null,3);
insert into all_course values(all_course_id.nextval,'computer graphis',null,3);
insert into all_course values(all_course_id.nextval,'software enginnering',null,3);
insert into all_course values(all_course_id.nextval,'data base',null,3);
select * from all_course;
Results Explain Describe Saved SQL History
COURSE_CODE COURSE_NAME COURSE_PREREQUISITE_CODE CREDIT_COUNT
1 Economy - 3
2 physics - 3
3 computer graphis - 3
4 software enginnering - 3
5 data base - 3
5 rows returned in 0.00 seconds
CSV Export

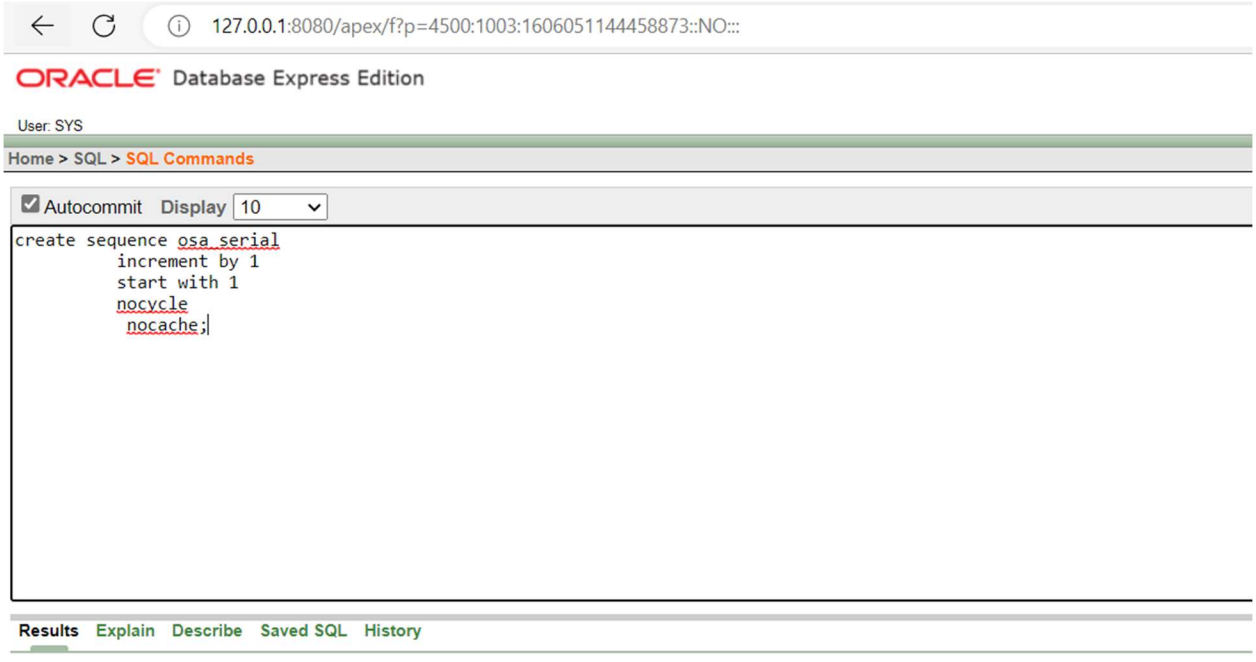
OSA Table:

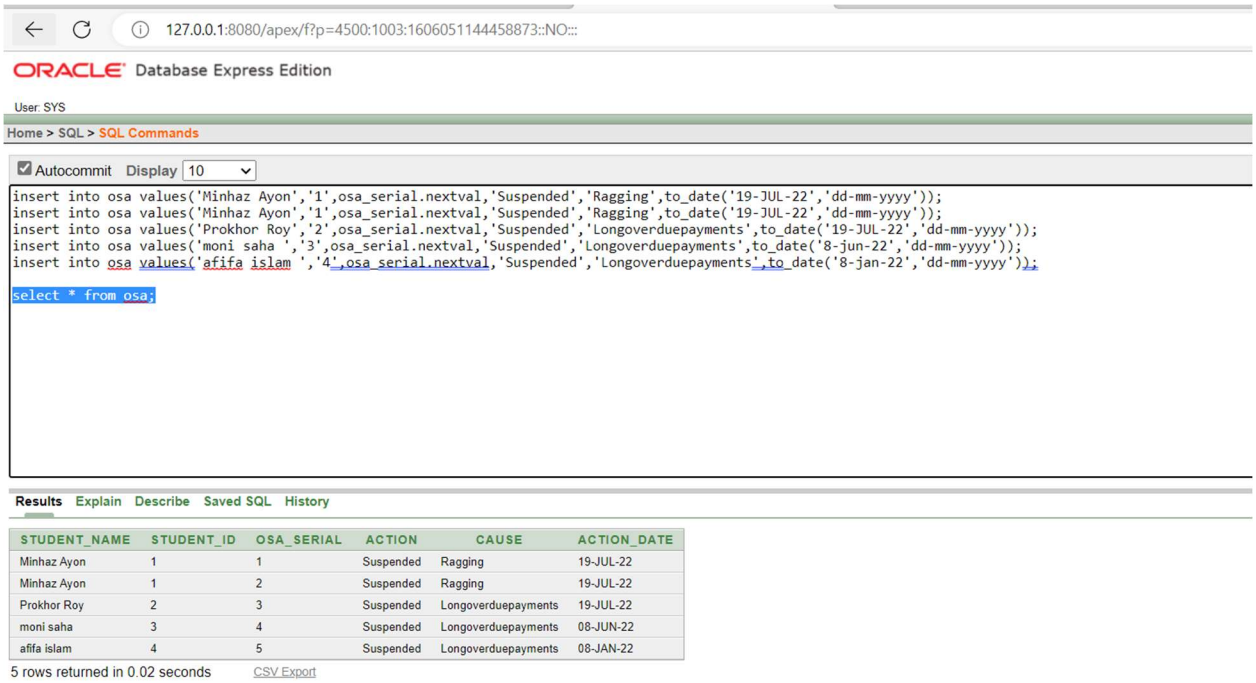
```
create table OSA
   ( student_name          varchar(50),
     student_id            int constraint fk_id references all_student, osa_serial   int
     constraint pk_OSA primary key,
     action                varchar(30),
     cause                 varchar(100),
     action_date           date);

create sequence osa_serial
                increment by 1
                start with 1
                nocycle
nocache;

CREATE INDEX
                          osa_id
x
    ON   osa(action);
```

Insertion:

```
insert into osa values
('Minhaz Ayon','1',osa_serial.nextval,'Suspended','Ragging',to_date('19-JUL- 22','dd-mm-
yyyy'));
insert into osa values
('Minhaz          Ayon','1',osa_serial.nextval,'Suspended','Ragging',to_date('19-JUL- 22','dd-mm-
yyyy'));

insert into osa values
('Prokhor Roy','2',osa_serial.nextval,'Suspended','Longoverduepayments',to_date( '19-JUL-
22','dd-mm-yyyy'));

insert into osa values
('moni saha ','3',osa_serial.nextval,'Suspended','Longoverduepayments',to_date('8- jun-22','dd-
mm-yyyy'));

insert into osa values
('afifa islam ','4',osa_serial.nextval,'Suspended','Longoverduepayments',to_date('8- jan-22','dd-
mm-yyyy'));
```


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
CREATE INDEX osa_idx
ON osa(action);
Results Explain Describe Saved SQL History
Index created.
0.01 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
create sequence osa_serial
increment by 1
start with 1
nocycle
nocache;
Results Explain Describe Saved SQL History
Sequence created.
0.01 seconds


127.0.0.1:8080/apex/f?p=4500:1003:1606051144458873::NO:::
ORACLE Database Express Edition
User: SYS
Home > SQL > SQL Commands
Autocommit Display 10
insert into osa values('Minhaz Ayon','1',osa_serial.nextval,'Suspended','Ragging',to_date('19-JUL-22','dd-mm-yyyy'));
insert into osa values('Minhaz Ayon','1',osa_serial.nextval,'Suspended','Ragging',to_date('19-JUL-22','dd-mm-yyyy'));
insert into osa values('Prokhor Roy','2',osa_serial.nextval,'Suspended','Longoverduepayments',to_date('19-JUL-22','dd-mm-yyyy'));
insert into osa values('moni saha ','3',osa_serial.nextval,'Suspended','Longoverduepayments',to_date('8-jun-22','dd-mm-yyyy'));
insert into osa values('afifa islam ','4',osa_serial.nextval,'Suspended','Longoverduepayments',to_date('8-jan-22','dd-mm-yyyy'));
select * from osa;
Results Explain Describe Saved SQL History
STUDENT_NAME STUDENT_ID OSA_SERIAL ACTION CAUSE ACTION_DATE
Minhaz Ayon 1 1 Suspended Ragging 19-JUL-22
Minhaz Ayon 1 2 Suspended Ragging 19-JUL-22
Prokhor Roy 2 3 Suspended Longoverduepayments 19-JUL-22
moni saha 3 4 Suspended Longoverduepayments 08-JUN-22
afifa islam 4 5 Suspended Longoverduepayments 08-JAN-22
5 rows returned in 0.02 seconds
CSV Export

Payment Table:

```
create table Payment(
        student_name   varchar(50) not null,
        s_id  varchar2(8) constraint fk_cid references all_student(id), payment_serial  int
          constraint pk_Payment primary key,
        semester          varchar(20),
        year int, payable_amount
        int, amount_paid  int,
        payment_date  date
);


create sequence pay
                    increment by 1
                    start with 1
                    nocycle
                      nocache;

CREATE INDEX       pay_idx
      ON payment(semester);
```

Insertion:

```
insert into payment values
( 'Shahriar Zaman', '2',pay.nextval,'Spring',2022,86400,86400,to_date('19-NOV-21','dd-mm-
yyyy'));

insert into payment values
( 'Waskiqure', '1',pay.nextval,'Spring',2022,86400,86400,to_date('19-NOV-21','dd-mm-
yyyy'));

insert into payment values
( 'samsur nahar','3',pay.nextval,'Spring',2022,86400,86400,to_date('22-NOV-21','dd-mm-
yyyy'));

insert into payment values
( 'Amanullah',' 4',pay.nextval,'Spring',2022,86400,86400,to_date('25-NOV-21','dd-mm- yyyy'));


insert into payment values
( 'Zisnara', '5',pay.nextval,'Spring',2022,86400,86400,to_date('19-NOV-21','dd-mm- yyyy'));
```

```
create table Payment(
    student_name  varchar(50) not null,
    s_id  int references all_student(id),
     payment_serial  int  constraint pk_Payment primary key,
    semester   varchar(20),
    year int,
    payable_amount int,
    amount_paid  int,
    payment_date  date
);
```

Results Explain Describe Saved SQL History

Table created.

0.01 seconds

Results Explain Describe Saved SQL History

STUDENT_NAME	S_ID	PAYMENT_SERIAL	SEMESTER	YEAR	PAYABLE_AMOUNT	AMOUNT_PAID	PAYMENT_DATE
Shahriar Zaman	1	1	Spring	2022	86400	86400	19-NOV-21
Waskiqure	1	2	Spring	2022	86400	86400	19-NOV-21
samsur nahar	3	3	Spring	2022	86400	86400	22-NOV-21
Amanullah	4	4	Spring	2022	86400	86400	25-NOV-21
Zisnara	5	5	Spring	2022	86400	86400	19-NOV-21

5 rows returned in 0.01 seconds CSV Export

Registration Table:

```
create table registration
(
course_code varchar(10) not null primary key,
course_name varchar(50) not null,
course_prerequisite_code varchar(10),
);
```

Insertion:

```
insert into registration values('PHY1102', 'Physics-1 Lab',  null);
insert into registration values('ENG1101', 'English-1',          null);
insert into registration values('CSC1101', 'ICS', null);
insert into registration values('CSC1102', 'C++', null);
insert into registration values('CSC1103', 'C++ Lab', null);
insert into registration values('CSC1204', 'Discrete Math', 'CSC1102');
insert into registration values('MAT1205', 'Math-2', 'MAT1102');
insert into registration values('CSC1205', 'Java', 'CSC1102');
insert into registration values('MAT1102', 'Math-1', null);
insert into registration values('PHY1101', 'Physics-1',          null);
```

```
create table registration
(
course_code varchar(10) not null primary key,
course_name varchar(50) not null,
course_prerequisite_code varchar(10)
);
```

Results Explain Describe Saved SQL History

Table created.

0.22 seconds

```
insert into registration values('PHY1102', 'Physics-1 Lab',  null);
insert into registration values('ENG1101', 'English-1', null);
insert into registration values('CSC1101', 'ICS', null);
insert into registration values('CSC1102', 'C++', null);
insert into registration values('CSC1103', 'C++ Lab', null);
insert into registration values('CSC1204', 'Discrete Math', 'CSC1102');
insert into registration values('MAT1205', 'Math-2', 'MAT1102');
insert into registration values('CSC1205', 'Java', 'CSC1102');
insert into registration values('MAT1102', 'Math-1', null);
insert into registration values('PHY1101', 'Physics-1', null);
select*
from registration
```

Results Explain Describe Saved SQL History

COURSE_CODE	COURSE_NAME	COURSE_PREREQUISITE_CODE
PHY1102	Physics-1 Lab	-
ENG1101	English-1	-
CSC1101	ICS	-
CSC1102	C++	-
CSC1103	C++ Lab	-
CSC1204	Discrete Math	CSC1102
MAT1205	Math-2	MAT1102
CSC1205	Java	CSC1102
MAT1102	Math-1	-
PHY1101	Physics-1	-

10 rows returned in 0.06 seconds CSV Export

CSRT Table:

```
create table CSRT (
serial   int       constraint pk_CSRT primary key,
course_code   int references all_course(course_code), course_name          varchar(50),
teacher_id      int references all_teachers(ID), teacher_name varchar(50),
student_id      int not null references all_student(id), student_name varchar(50),
marks  int
);
create sequence cst
        increment by 1
        start with 1
        nocycle
         nocache;
```

Insertion:

```
insert into CSRT values
(1, 1, 'economy', 1, 'Nazmul Hossain', 1, 'waskiqure', 90);
insert into CSRT values
(2, 2, 'physics', 2, 'Najia Alfaz', 2, 'shahriar zaman', 80);
insert into CSRT values
(3, 3, 'computer graphics', 3, 'kuwsur imran', 3, 'sumsun nahar', 85);
insert into CSRT values
(4, 4, 'software engineering', 4, 'tanjil amin', 4, 'amanullah', 72);
insert into CSRT values
(5, 5, 'data base', 5,'asif iqbal', 5, 'zisnara', 96);
```

```
create table CSRT (
serial  int     constraint pk_CSRT primary key,
course_code     int references all_course(course_code), course_name     varchar(50),
teacher_id      int references all_teachers(ID), teacher_name varchar(50),
student_id      int not null references all_student(id), student_name varchar(50),
marks   int
);
```

Results Explain Describe Saved SQL History

Table created.

0.09 seconds

```
insert into CSRT values
(1, 1, 'economy', 1, 'Nazmul Hossain', 1, 'waskiqure', 90);
insert into CSRT values
(2, 2, 'physics', 2, 'Najia Alfaz', 2, 'shahriar zaman', 80);
insert into CSRT values
(3, 3, 'computer graphics', 3, 'kuwsur imran', 3, 'sumsun nahar', 85);
insert into CSRT values
(4, 4, 'software engineering', 4, 'tanjil amin', 4, 'amanullah', 72);
insert into CSRT values
(5, 5, 'data base', 5,'asif iqbal', 5, 'zisnara', 96);
```

Results Explain Describe Saved SQL History

SERIAL	COURSE_CODE	COURSE_NAME	TEACHER_ID	TEACHER_NAME	STUDENT_ID	STUDENT_NAME	MARKS
1	1	economy	1	Nazmul Hossain	1	waskiqure	90
2	2	physics	2	Najia Alfaz	2	shahriar zaman	80
3	3	computer graphics	3	kuwsur imran	3	sumsun nahar	85
4	4	software engineering	4	tanjil amin	4	amanullah	72
5	5	data base	5	asif iqbal	5	zisnara	96

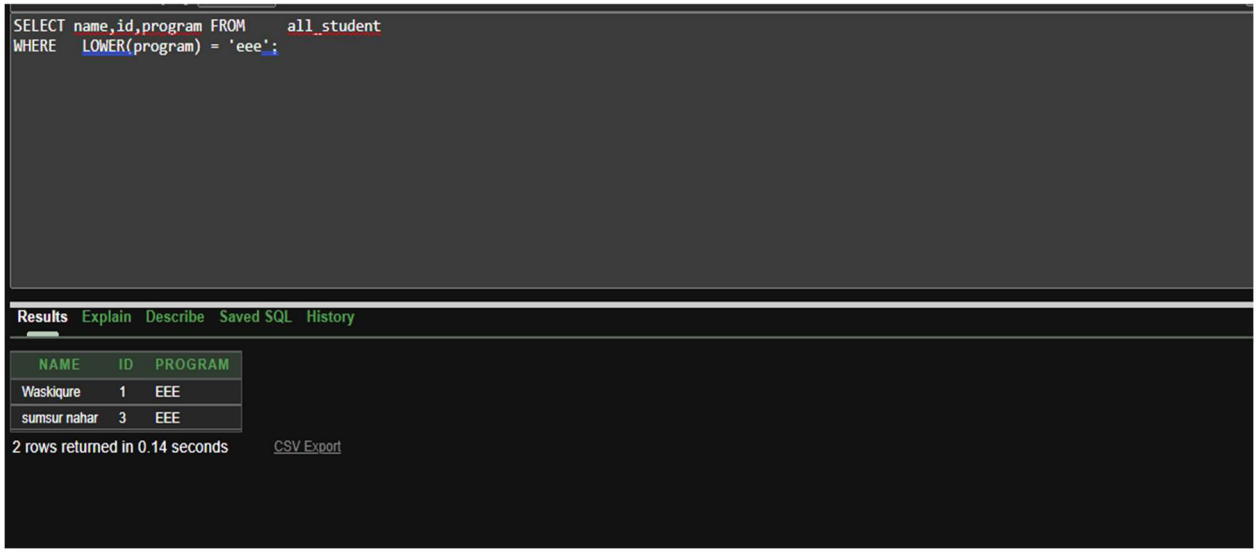
5 rows returned in 0.00 seconds CSV Export

Query Writing (Write down the question and also the answer)

Single-row function

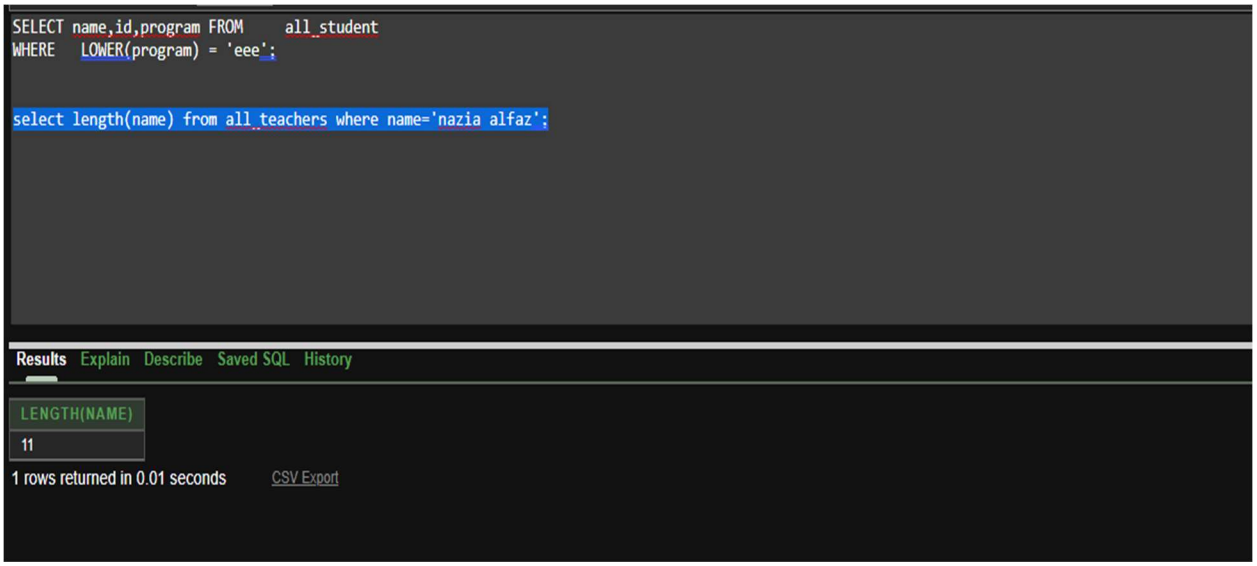
1. **Display student name,id and program for program eee.**

```
SELECT name,id,program
    FROM     all_student
    WHERE   LOWER(program) = 'eee';
```



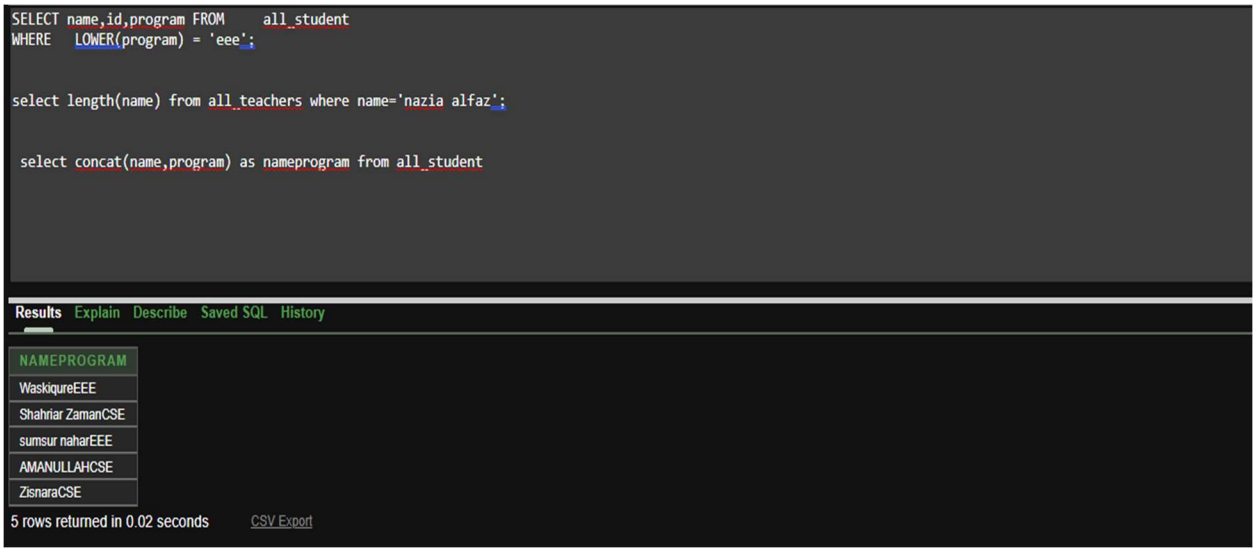
2. Find the length for name nazia alfaz from teacher table

```
select length(name) from all_teachers where name='nazia alfaz';
```



3. concat name,program as nameprogram from all_student

select concat(name,program) as nameprogram from all_student



Group-row function

1. Find maximum salary for teacher which domain is csc

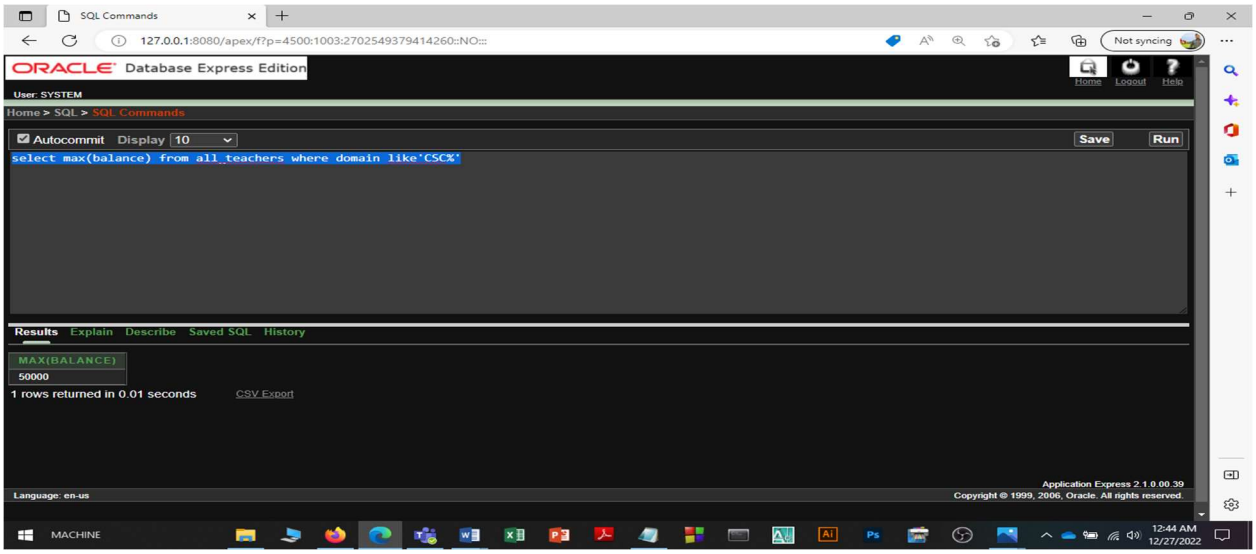
select max(balance) from all_teachers where domain like'CSC%'

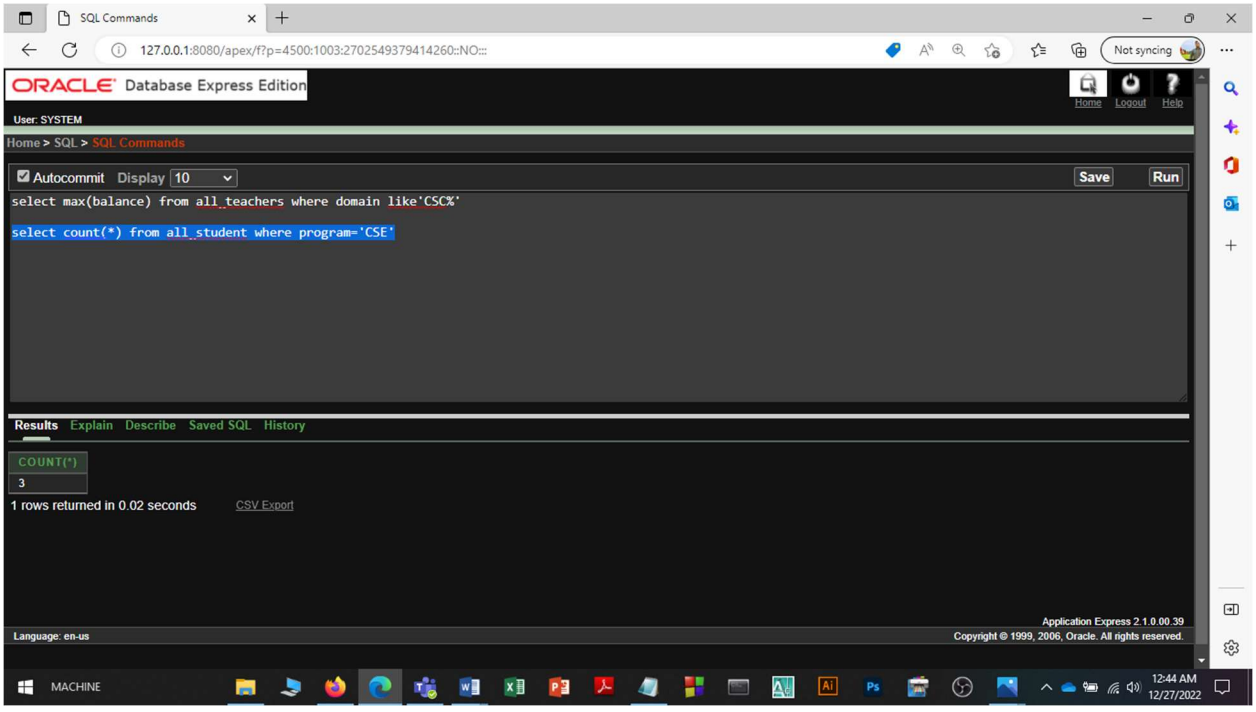
2. How many row for cse program in all_student table

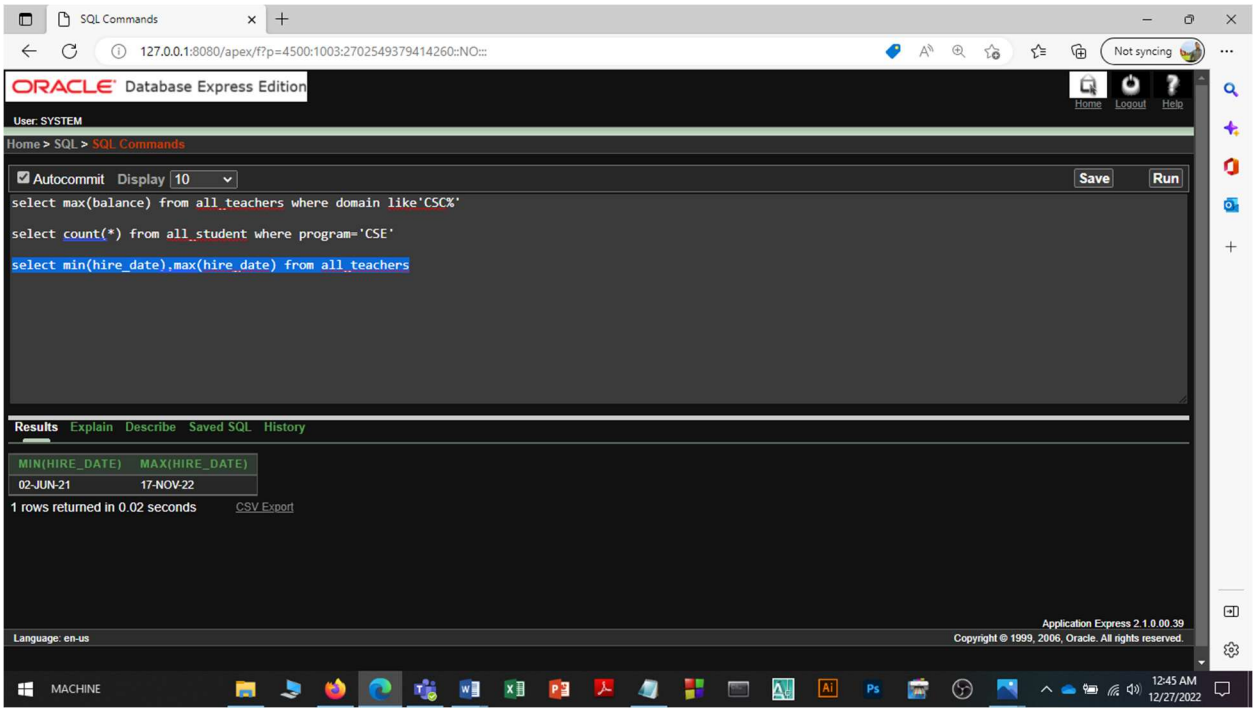
select count(*) from all_student where program='CSE'

3. Find the minimum and maximum hire_date from all_teachers table

select min(hire_date),max(hire_date) from all_teachers


SQL Commands
127.0.0.1:8080/apex/f?p=4500:1003:2702549379414260::NO:::
Not syncing
ORACLE Database Express Edition
Home Logout Help
User: SYSTEM
Home > SQL > SQL Commands
Autocommit Display 10
Save Run
select max(balance) from all_teachers where domain like'CSC%'
Results Explain Describe Saved SQL History
MAX(BALANCE)
50000
1 rows returned in 0.01 seconds
CSV Export
Application Express 2.1.0.00.39
Language: en-us
Copyright © 1999, 2006, Oracle. All rights reserved.
MACHINE
12:44 AM
12/27/2022

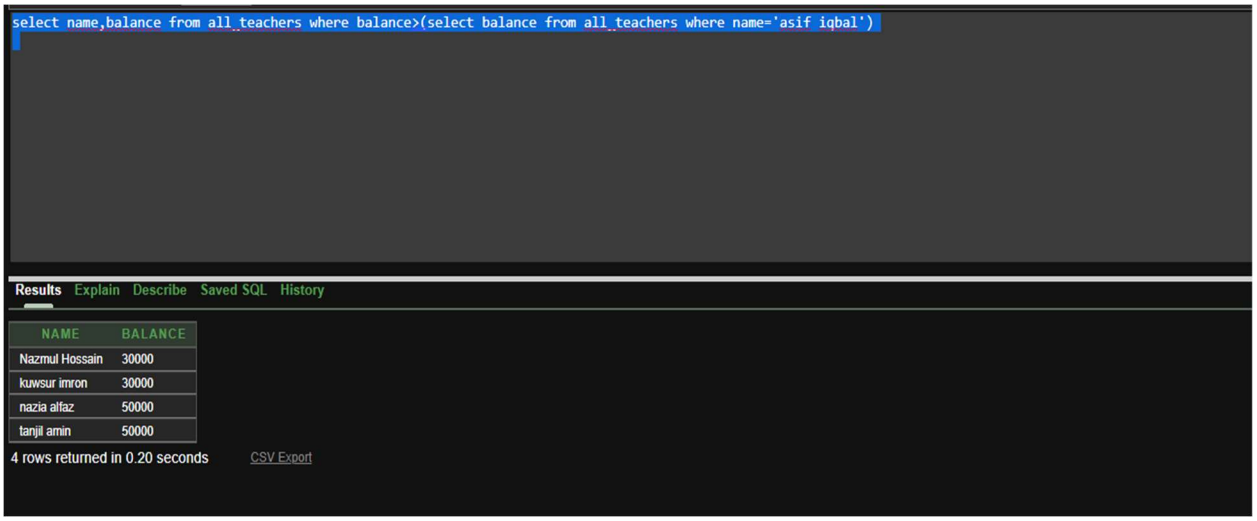

SQL Commands
127.0.0.1:8080/apex/f?p=4500:1003:2702549379414260::NO:::
Not syncing
ORACLE Database Express Edition
Home Logout Help
User: SYSTEM
Home > SQL > SQL Commands
Autocommit Display 10
Save Run
select max(balance) from all_teachers where domain like'CSC%'
select count(*) from all_student where program='CSE'
Results Explain Describe Saved SQL History
COUNT(*)
3
1 rows returned in 0.02 seconds
CSV Export
Application Express 2.1.0.00.39
Language: en-us
Copyright © 1999, 2006, Oracle. All rights reserved.
MACHINE
12:44 AM
12/27/2022


SQL Commands
127.0.0.1:8080/apex/f?p=4500:1003:2702549379414260::NO:::
Not syncing
ORACLE Database Express Edition
Home
Logout
Help
User: SYSTEM
Home > SQL > SQL Commands
Autocommit
Display 10
Save
Run
select max(balance) from all_teachers where domain like'CSC%'
select count(*) from all_student where program='CSE'
select min(hire_date),max(hire_date) from all_teachers
Results
Explain
Describe
Saved SQL
History
MIN(HIRE_DATE)
MAX(HIRE_DATE)
02-JUN-21
17-NOV-22
1 rows returned in 0.02 seconds
CSV Export
Application Express 2.1.0.00.39
Language: en-us
Copyright © 1999, 2006, Oracle. All rights reserved.
MACHINE
12:45 AM
12/27/2022

Subquery

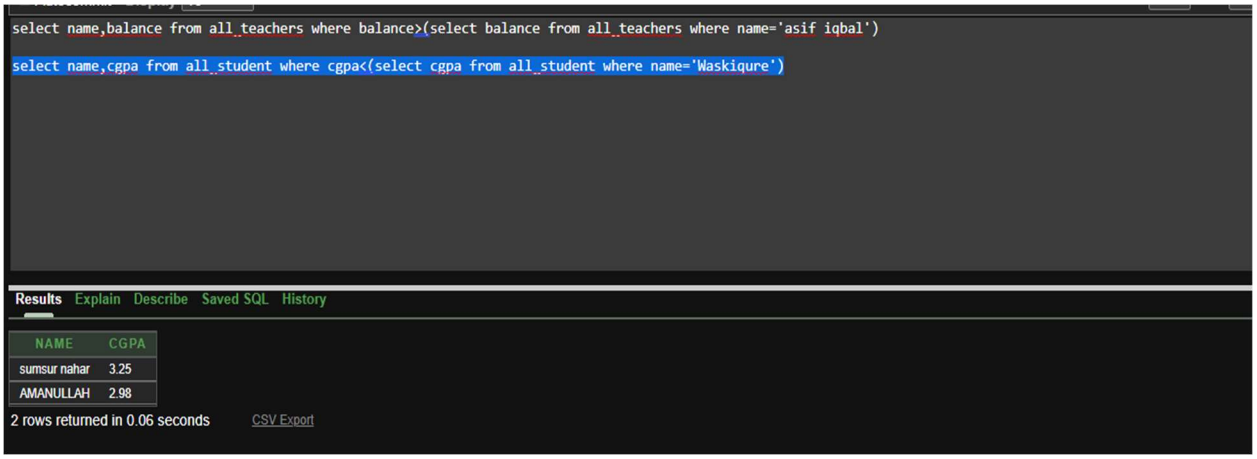
1. **Which teachers have a salary greater than 'asif iqbalâ€™ salary?**

select name,balance from all_teachers where balance>(select balance from all_teachers where name='asif iqbal')



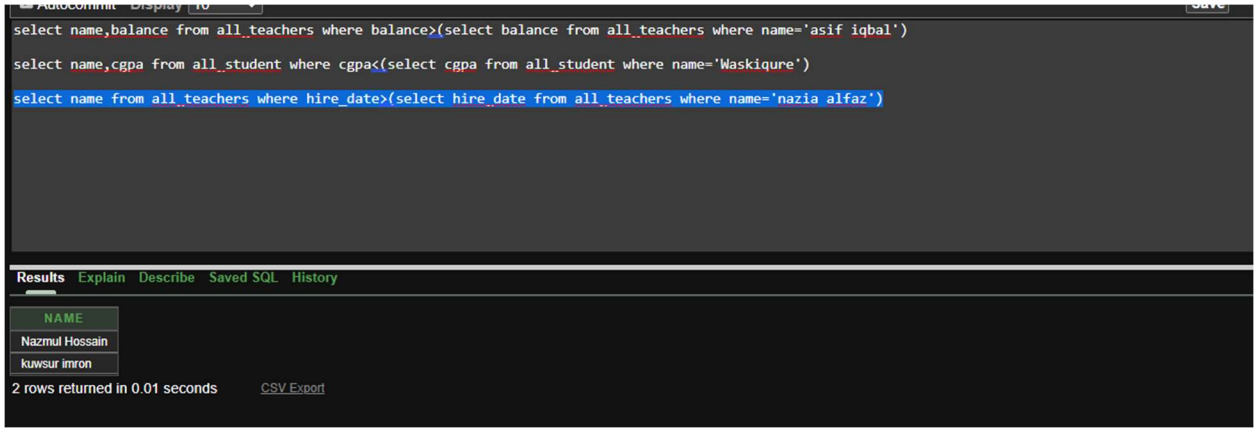
2. **which student have a cgpa less than 'waskiqure' cgpa?**

select name,cgpa from all_student where cgpa<(select cgpa from all_student where name='Waskiqure')



3. display name who join after nazia alfaz

select name from all_teachers where hire_date>(select hire_date from all_teachers where name='nazia alfaz')



Joining

1. dispaly name,id,payable_amount of each student

select s.name,s.id,p.payable_amount from all_student s ,payment p where s.id=p.s_id

2. Write a query to display the name, payment_serial, semester and payment_date for all student.

select s.name,p.payment_serial,p.semester,p.payment_date from all_student s ,payment p where s.id=p.s_id

Synonym

1. Create a shortened name for the all_student view

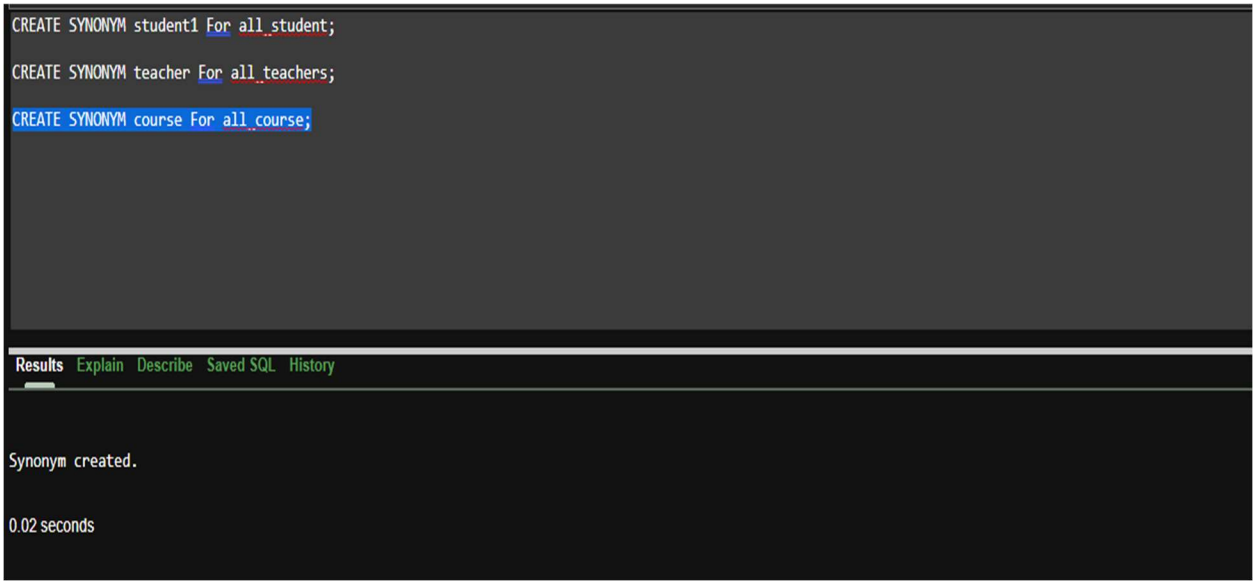
```
CREATE SYNONYM   student1
        For all_student;
```

2. Create a shortened name for the all_teachers view

```
CREATE SYNONYM
        teacher For all_teachers;
```

3. Create a shortened name for the all_course view

```
CREATE SYNONYM  course
    For all_course;
```

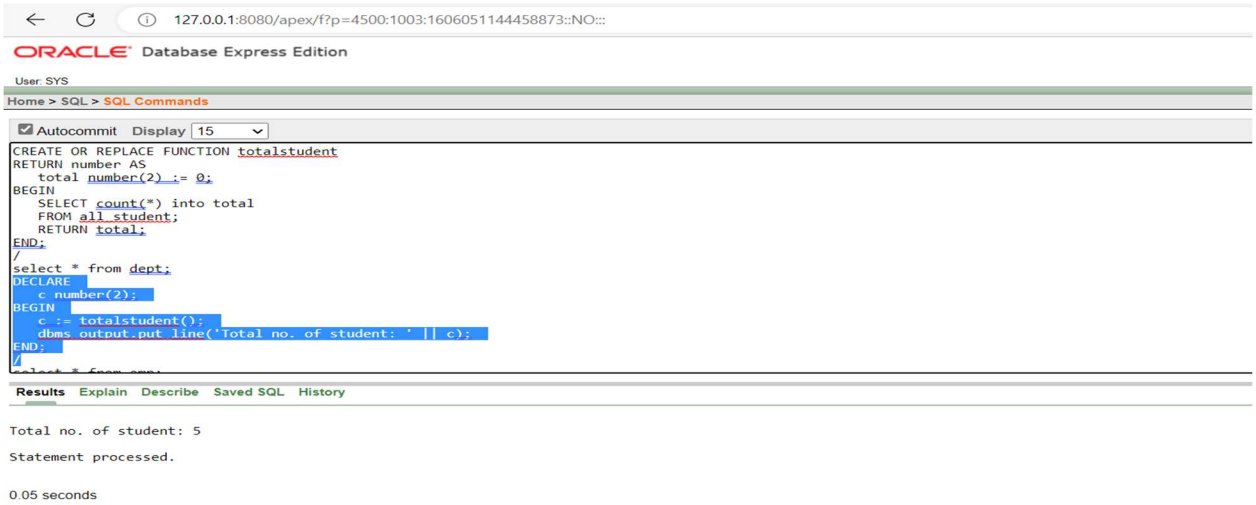


PL/SQL

Function

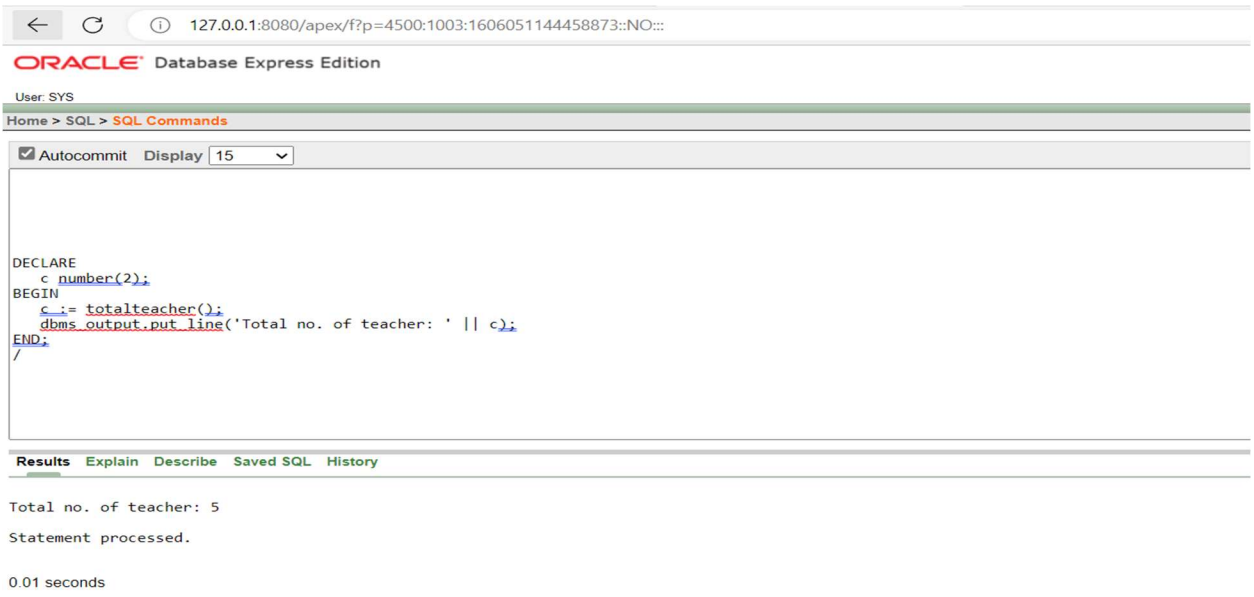
1.Create a function that returns the total number of student.

```
CREATE OR REPLACE FUNCTION totalstudent
RETURN number AS
  total number(2) := 0;
BEGIN
  SELECT count(*) into total
  FROM all_student;
  RETURN total;
END;
/
DECLARE
  c number(2);
BEGIN
  c := totalstudent();
  dbms_output.put_line('Total no. of student: ' || c);
END; /
```



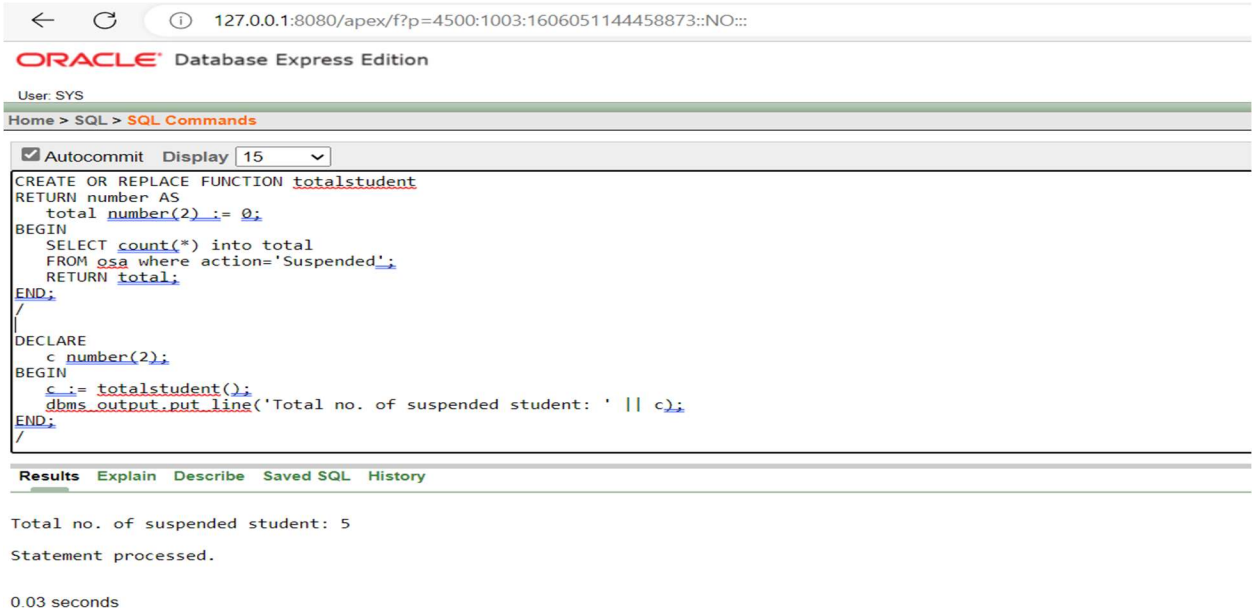
2.**Create a function that returns the total number of teacher.**

```
CREATE OR REPLACE FUNCTION totalteacher
RETURN number AS
  total number(2) := 0;
BEGIN
  SELECT count(*) into total
  FROM all_teachers;
  RETURN total;
END;
/
DECLARE
  c number(2);
BEGIN
  c := totalteacher();
  dbms_output.put_line('Total no. of teacher: ' || c);
END;
/
```



3.**Create a function that returns the total number of suspended student.**

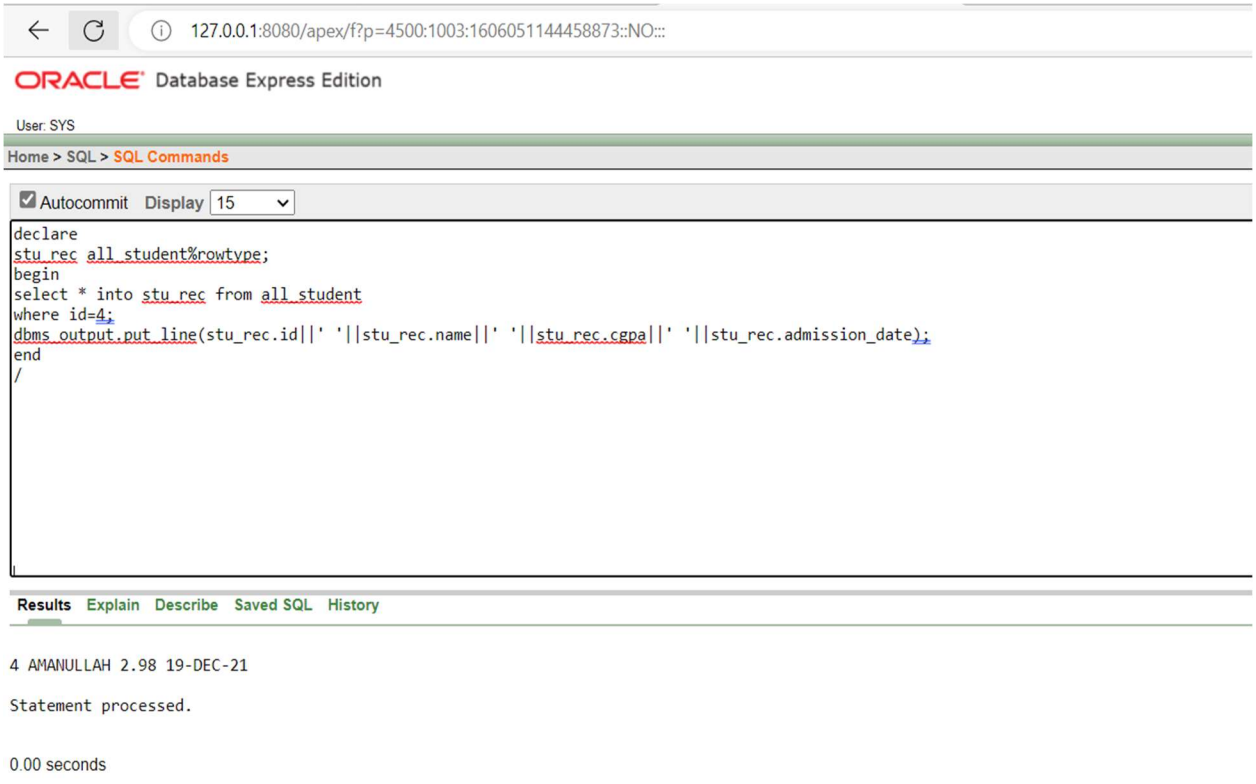
```
CREATE OR REPLACE FUNCTION totalstudent
RETURN number AS
  total number(2) := 0;
BEGIN
  SELECT count(*) into total
  FROM osa where action='Suspended';
  RETURN total;
END;
/
DECLARE
  c number(2);
BEGIN
  c := totalstudent();
  dbms_output.put_line('Total no. of suspended student: ' || c);
END;
/
```



Record:

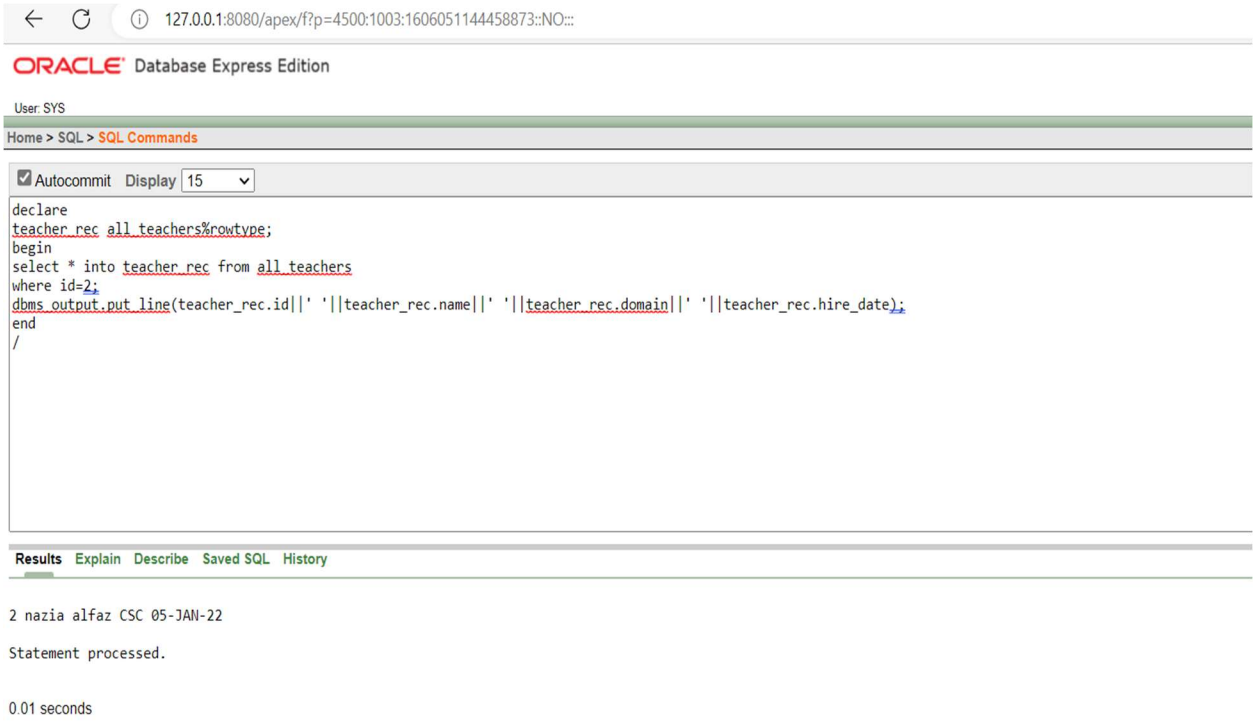
1.Create a record that can output the id, name, cgpa, and admission date of the student whose Id is 4

```
declare
stu_rec all_student%rowtype;
begin
select * into stu_rec from all_student
where id=4;
dbms_output.put_line(stu_rec.id||' '||stu_rec.name||' '||stu_rec.cgpa||' '||stu_rec.admission_date);
end
/
```



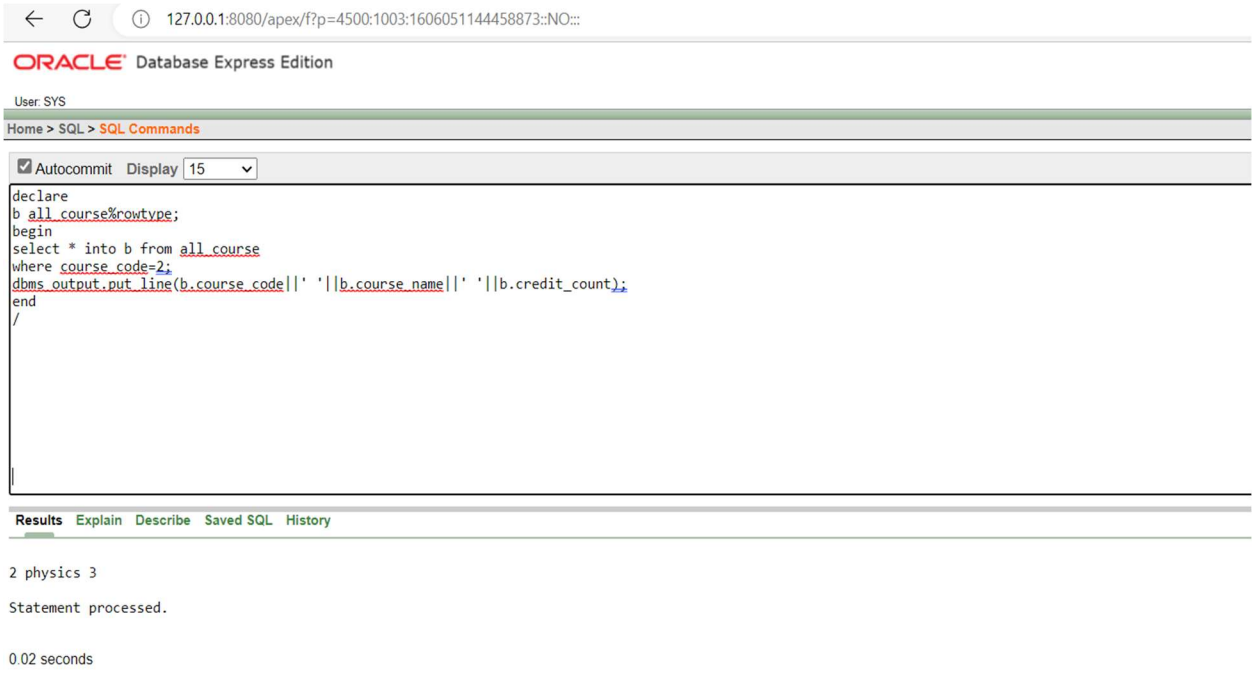
2.Create a record that can output the id, name, domain, and hire date of the teacher whose Id is 2

```
declare

teacher_rec all_teachers%rowtype;

begin

select * into teacher_rec from all_teachers

where id=2;

dbms_output.put_line(teacher_rec.id||' '||teacher_rec.name||' '||teacher_rec.domain||' '||teacher_rec.hire_date);

end

/
```



3.Create a record that can output the id, name, domain, and hire date of the course whose Id is 2

```
declare
b all_course%rowtype;
begin
select * into b from all_course
where course_code=2;
dbms_output.put_line(b.course_code||' '||b.course_name||' '||b.credit_count);
end
/
```

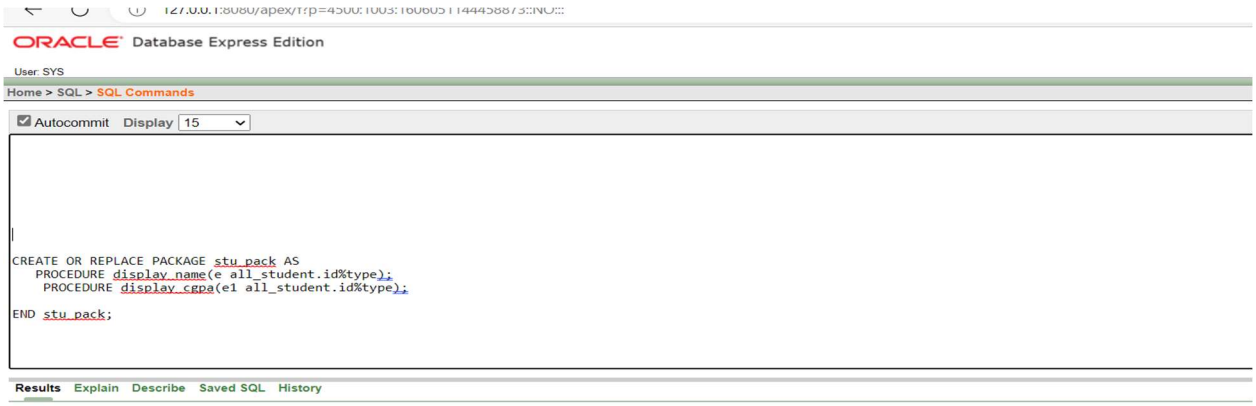


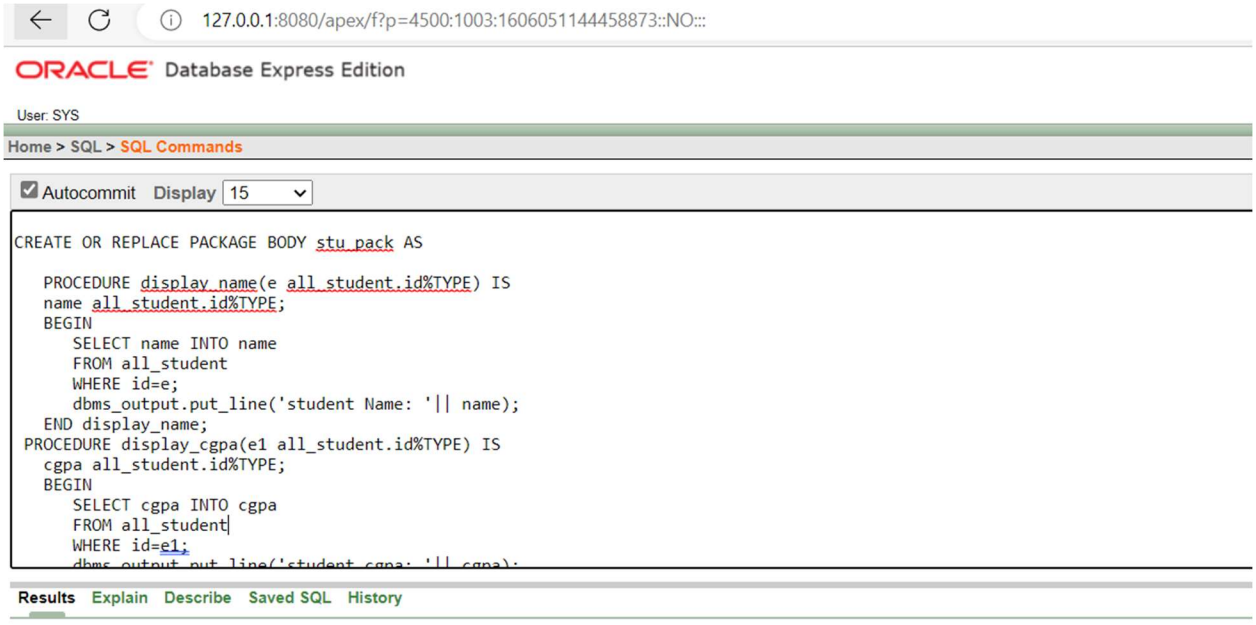
Package:

1.**Create a package that contains a procedure which can display the name,cgpa whose id is passed as its parameter**

```
CREATE OR REPLACE PACKAGE BODY stu_pack AS
  PROCEDURE display_name(e all_student.id%TYPE) IS
  name all_student.id%TYPE;
  BEGIN
    SELECT name INTO name
    FROM all_student
    WHERE id=e;
    dbms_output.put_line('student Name: '|| name);
  END display_name;
 PROCEDURE display_cgpa(e1 all_student.id%TYPE) IS
  cgpa all_student.id%TYPE;
  BEGIN
    SELECT cgpa INTO cgpa
    FROM all_student
    WHERE id=e1;
    dbms_output.put_line('student cgpa: '|| cgpa);
  END display_cgpa;
END stu_pack;
/

CREATE OR REPLACE PACKAGE stu_pack AS
  PROCEDURE display_name(e all_student.id%type);
   PROCEDURE display_cgpa(e1 all_student.id%type);
   END stu_pack;
```

```
begin
stu_pack.display_name('2');
stu_pack.display_cgpa('2');

end
```





2.**Create a package that contains a procedure which can display the name,domain whose id is passed as its parameter from teacher table**

```
CREATE OR REPLACE PACKAGE BODY tea_pack AS
  PROCEDURE display_name(e all_teachers.id%TYPE) IS
  name all_teachers.name%TYPE;
  BEGIN
    SELECT name INTO name
    FROM all_teachers
    WHERE id=e;
    dbms_output.put_line('teachers Name: '|| name);
  END display_name;
 PROCEDURE display_domain(e1 all_teachers.id%TYPE) IS
  domain all_teachers.domain%TYPE;
  BEGIN
    SELECT domain INTO domain
    FROM all_teachers
    WHERE id=e1;
    dbms_output.put_line('teachers domain: '|| domain);
  END display_domain;
END tea_pack;
/
CREATE OR REPLACE PACKAGE tea_pack AS
  PROCEDURE display_name(e all_teachers.id%type);
   PROCEDURE display_domain(e1 all_teachers.id%type);

END tea_pack;
```

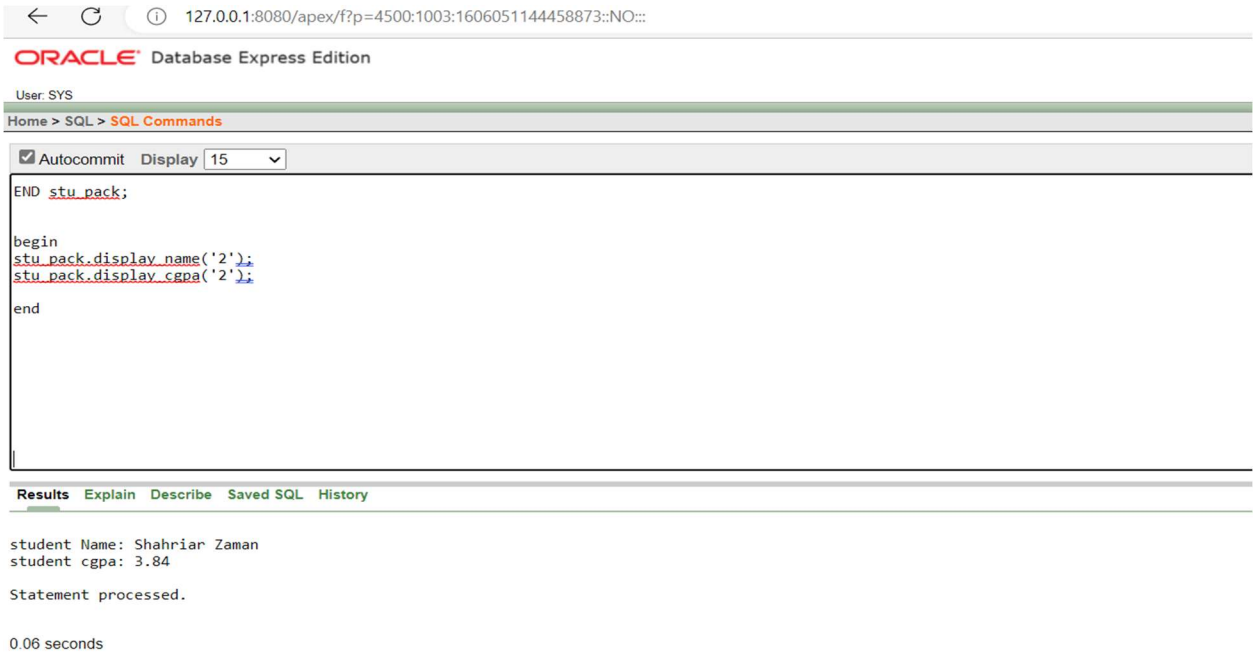
select * from all_teachers

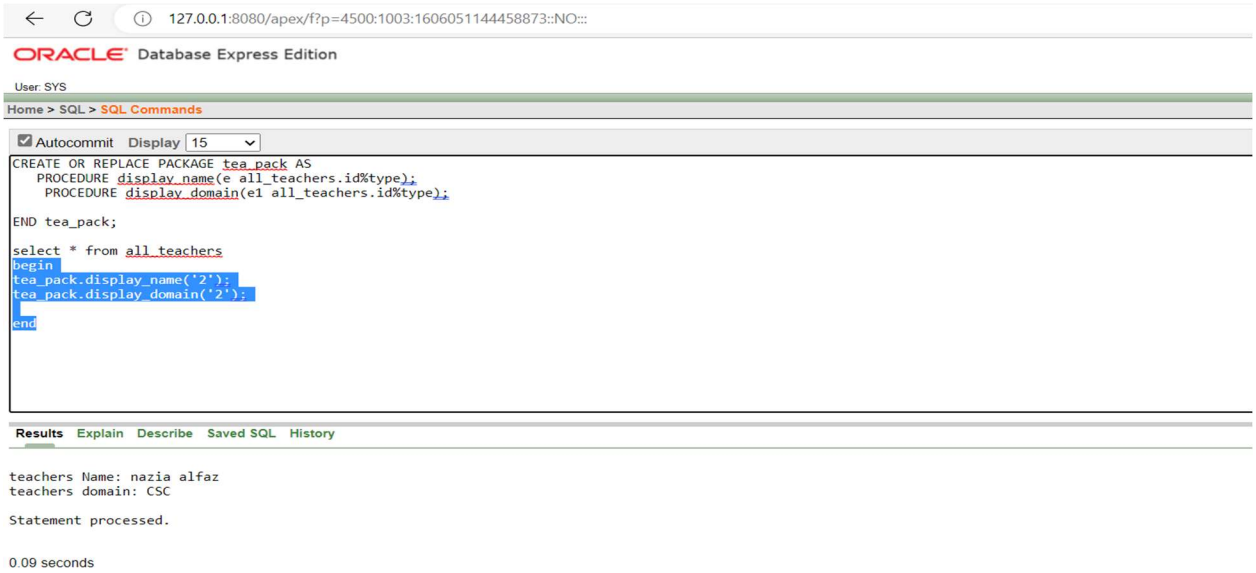
begin

tea_pack.display_name('2');

tea_pack.display_domain('2');

end





Trigger:

1. **Display a trigger that give reminder when banlance is 0.**

create or replace trigger expenditure_recorder

before update on all_teachers

for each row

begin

update this_semester_report set expenditure=expenditure+:new.balance-:old.balance;

end;

```
CREATE OR REPLACE TRIGGER checkBalance

BEFORE INSERT OR UPDATE OF balance ON all_teachers

FOR EACH ROW
WHEN (new.balance<0)

BEGIN
raise_application_error(-20000, 'Balance can not be Zero');
END;
```

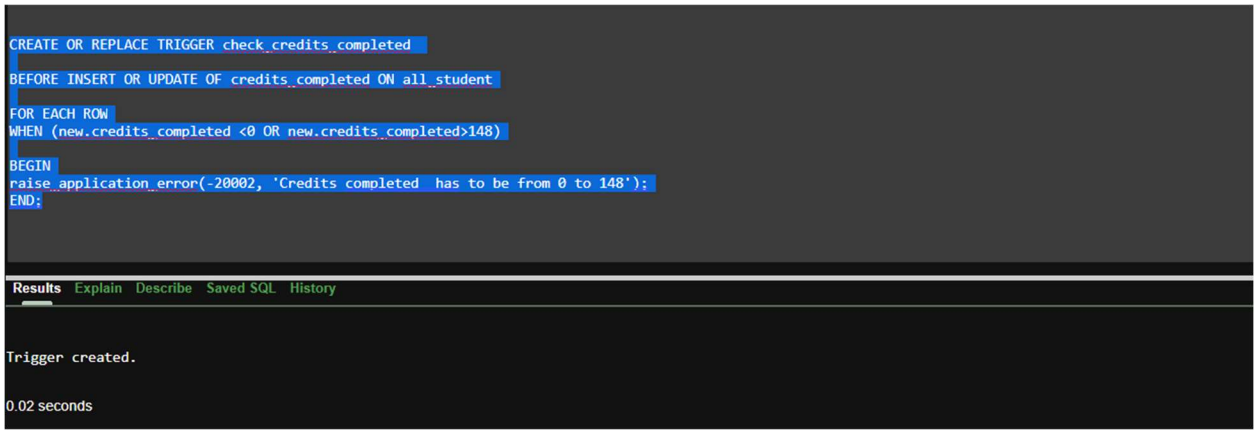
```
Results  Explain  Describe  Saved SQL  History

Trigger created.

0.27 seconds
```

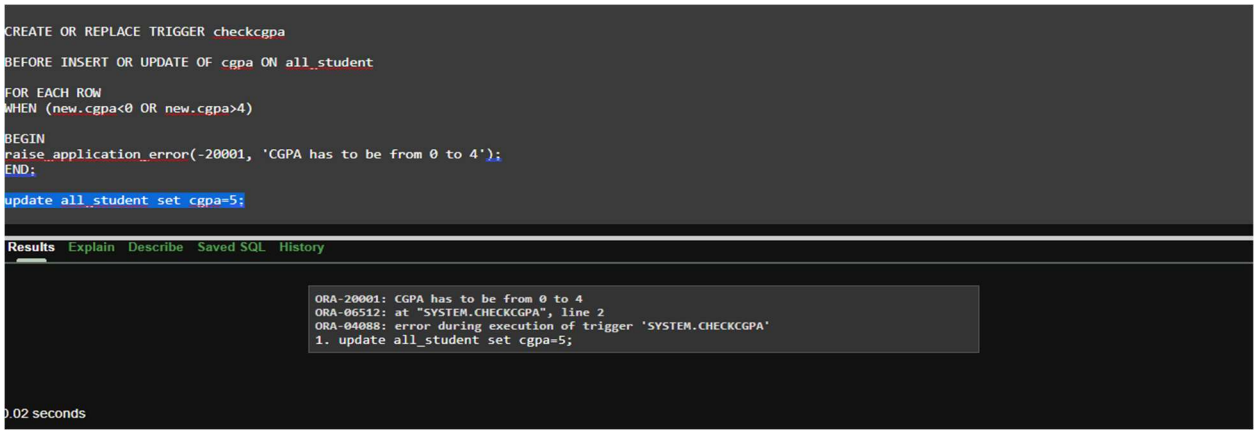
```
CREATE OR REPLACE TRIGGER checkBalance

BEFORE INSERT OR UPDATE OF balance ON all_teachers

FOR EACH ROW
WHEN (new.balance<0)

BEGIN
raise_application_error(-20000, 'Balance can not be Zero');
END;

update all_teachers set balance=-20000;
```

```
Results  Explain  Describe  Saved SQL  History

ORA-20000: Balance can not be Zero
ORA-06512: at "SYSTEM.CHECKBALANCE", line 2
ORA-04088: error during execution of trigger 'SYSTEM.CHECKBALANCE'
1. update all_teachers set balance=-20000;

0.02 seconds
```

2. **CGPA is between 0 to 4**

```
create or replace trigger marks_value_fixer

before update  of marks on   csrt

for each row

begin

if :new.marks>100 then

:new.marks:=100;

elsif :new.marks<0 then

:new.marks:=0;

end if;

end;
```





3. If credit complete is lower or higher than higher than 0 and 148.

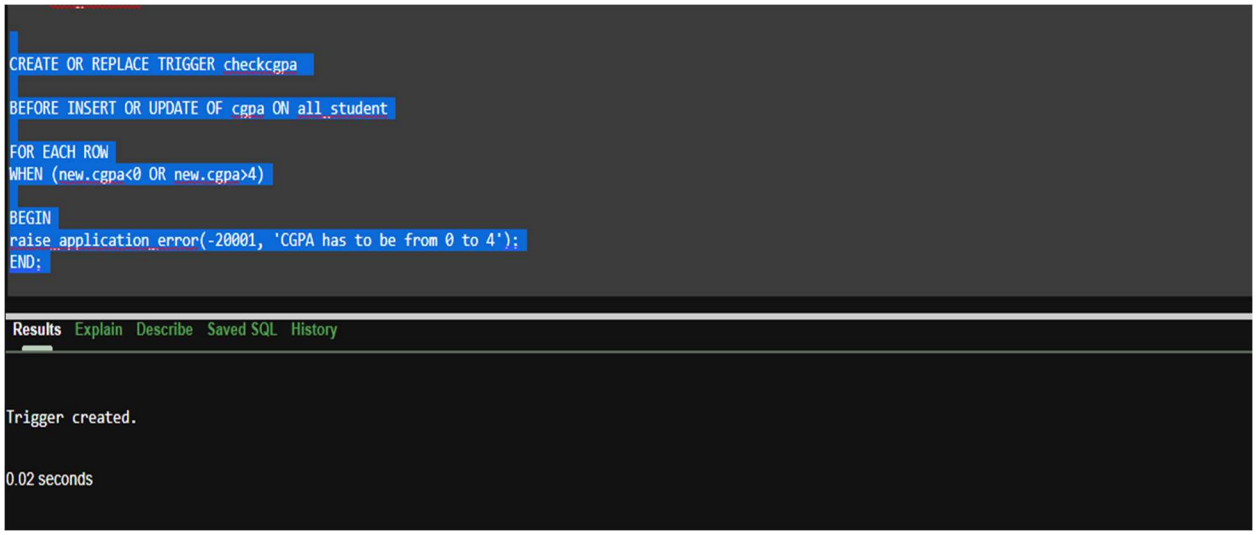
create or replace trigger result_log

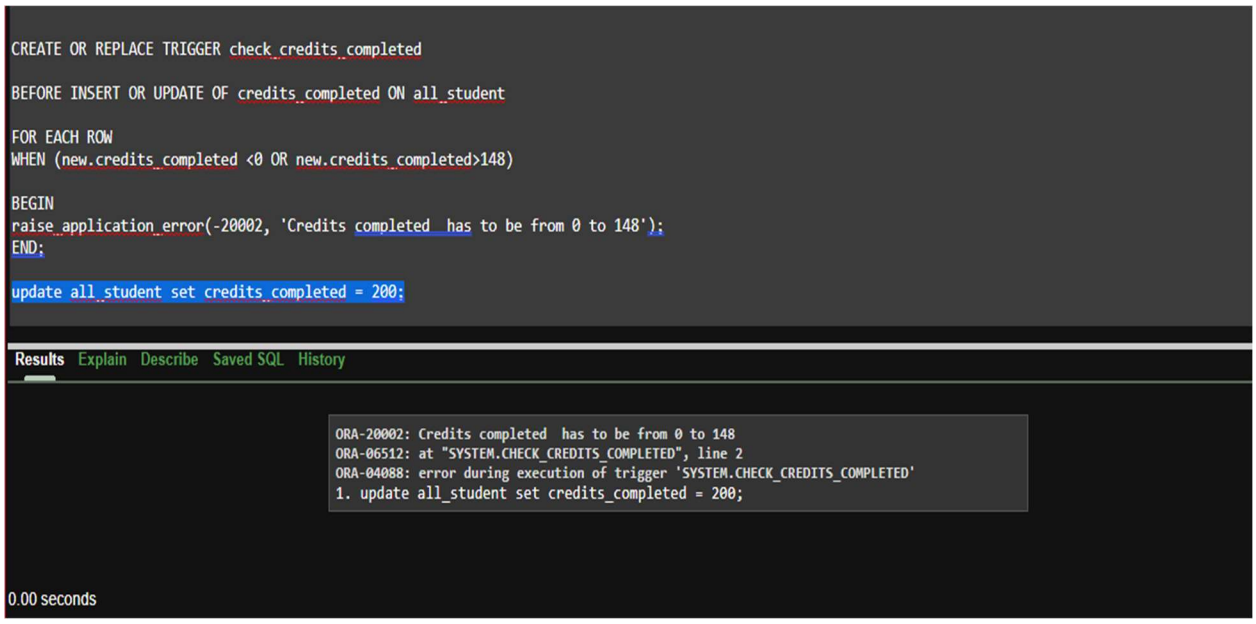
after update on csrt

begin

insert into task_log values((select id from loggedinTable),'Updating results',sysdate,SYSTIMESTAMP);

end;





Conclusion: In our project, there might be some minor problem. We will try to configure them if needed and we will provide more correct database for the software that we are going to done. In final term we implemented the PL/SQL in the project which we have implemented in our mid term. Here, we cannot provide a fully connected user interface for some sort of reason but we provide a interface which is also looks like same which we planed. A project always need to be upgrade. If change needed we can do that. There will be more changes in our project by following our upcoming plans if needed. We try to make more data to entry in our project and give a perfect output.