American International University- Bangladesh(AIUB)

Department of Computer Science

Faculty of Science Technology

Summer 2023-24

Advance Database Management System

Section: A

Project Title: Office Recreational Fund Management

Submitted by:

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Contents

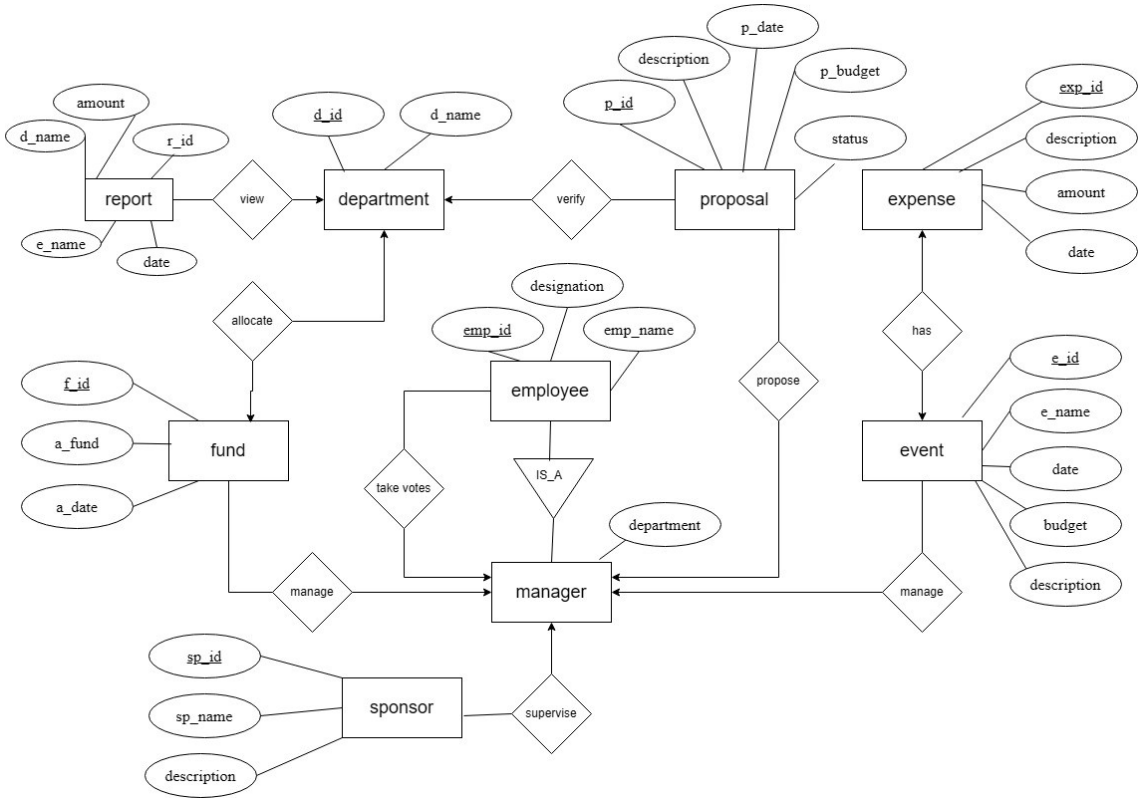
Introduction:

The office's Recreational Fund Management team helps organize fun events for employees using funds that are set aside each month or year. These events, like team outings or parties, have specific details such as event name, budget, and date, and each one has certain expenses, like food or decorations. Different departments in the company contribute money to the recreational fund, and the office manager oversees all the funds. The manager, who is also an employee, takes care of managing the money and making sure it's used wisely for events. Therefore, this system helps the office organize enjoyable activities while keeping track of all the money that's used for them.

Scenario Description:

The office recreational fund management organizes activities for employees. In an office, the Recreational Fund Management contributes monthly and yearly recreational funds to the events. Each event is identified by an event ID, name, date, budget, and description. An event has an expense. Each event expense has an expense ID, description, amount, and date. A department allocates a fund as a recreational fund. The office manager can manage multiple funds. Every fund has a fund ID, allocated fund, and allocation date. Each department has a department ID and name. The office manager is a special type of employee, and the department managed by the manager is stored in the database. Each employee has an employee ID, name, department, and designation. The office manager can supervise all the sponsors. Every sponsor has a sponsor ID, description, and name. The manager takes votes from the company's employees on decisions such as location and activities in a recreational event and can propose fund proposals to the department. Departments verify the proposals. Each proposal has a proposal ID, description, proposed date, and proposed budget and status, indicating whether the proposal is accepted or rejected. A department can view reports that provide a total overview of all the recreational funds. These reports include a report ID, department name, event name, amounts, and dates.

ER Diagram:


p_date
description
p_budget
p_id
status
amount
d_name
r_id
d_id
d_name
exp_id
description
amount
date
report
view
department
verify
proposal
expense
e_name
date
designation
allocate
has
emp_id
emp_name
propose
f_id
e_id
employee
a_fund
fund
take votes
IS_A
event
e_name
date
budget
description
a_date
department
manage
manager
manage
sp_id
sponsor
supervise
sp_name
description

Normalization

Manage_fund:

UNF: f_id, a_fund, a_date, emp_id, emp_name, designation, department

1NF: f_id, a_fund, a_date, emp_id, emp_name, designation, department

2NF:

1st: f_id, a_fund, a_date

2nd: emp_id, emp_name, designation, department

3NF:

1st: f_id, a_fund, a_date

2nd: emp_id, emp_name, designation, department

Table:

1. f_id, a_fund, a_date, **emp_id**
2. emp_id, emp_name, designation, department

Has:

UNF: exp_id, description, amount, date, e_id, e_name, date, budget, description

1NF: exp_id, description, amount, date, e_id, e_name, date, budget, description

2NF:

1st: exp_id, description, amount, date

2nd: e_id, e_name, date, budget, description

3NF:

1st: exp_id, description, amount, date

2nd: e_id, e_name, date, budget, description

Table:

1. exp_id, description, amount, date
2. e_id, e_name, date, budget, description, **exp_id**

Manage_event:

UNF: emp_id, emp_name, designation, department, e_id, e_name, date, budget, description

1NF: emp_id, emp_name, designation, department, e_id, e_name, date, budget, description

2NF:

1st: emp_id, emp_name, designation, department

2nd: e_id, e_name, date, budget, description

3NF:

1st: emp_id, emp_name, designation, department

2nd: e_id, e_name, date, budget, description

Table:

1. emp_id, emp_name, designation, department
2. e_id, e_name, date, budget, description, **emp_id**

Supervise:

UNF: sp_id, description, sp_name, emp_id, emp_name, department, designation

1NF: sp_id, description, sp_name, emp_id, emp_name, department, designation

2NF:

1st: sp_id, description, sp_name

2nd: emp_id, emp_name, department, designation

3NF:

1st: sp_id, description, sp_name

2nd: emp_id, emp_name, department, designation

Table:

1. sp_id, description, sp_name, **emp_id**
2. emp_id, emp_name, department, designation

\

Propose:

UNF: p_id, description, p_date, p_budget, status, emp_id, emp_name, department, designation

1NF: p_id, description, p_date, p_budget, status, emp_id, emp_name, department, designation

2NF:

1st: p_id, description, p_date, p_budget, status

2nd: emp_id, emp_name, department, designation

3NF:

1st: p_id, description, p_date, p_budget, status

2nd: emp_id, emp_name, department, designation

Table:

1. p_id, description, p_date, p_budget, status, **emp_id**
2. emp_id, emp_name, department, designation

Allocate:

UNF: f_id, a_fund, a_date, d_id, d_name

1NF: f_id, a_fund, a_date, d_id, d_name

2NF:

1st: f_id, a_fund, a_date

2nd: d_id, d_name

3NF:

1st: f_id, a_fund, a_date

2nd: d_id, d_name

Table:

1. f_id, a_fund, a_date
2. d_id, d_name, **f_id**

Verify:

UNF: p_id, description, p_date, p_budget, status, d_id, d_name

1NF: p_id, description, p_date, p_budget, status, d_id, d_name

2NF:

1st: p_id, description, p_date, p_budget, status

2nd: d_id, d_name

3NF:

1st: p_id, description, p_date, p_budget, status

2nd: d_id, d_name

Table:

1. p_id, description, p_date, p_budget, status, **d_id**
2. d_id, d_name

View:

UNF: r_id, amount, date, d_name, e_name, d_id, d_name

1NF: r_id, amount, date, d_name, e_name, d_id, d_name

2NF:

1st: r_id, amount, date, d_name, e_name

2nd: d_id, d_name

3NF:

1st: r_id, amount, date, d_name, e_name

2nd: d_id, d_name

Table:

1. r_id, amount, date, d_name, e_name, **d_id**
2. d_id, d_name

Take votes:

UNF: emp_id, emp_name, designation, emp_id, emp_name, designation, department

1NF: emp_id, emp_name, designation, emp_id, emp_name, designation, department

2NF:

1st: emp_id, emp_name, designation

2nd: emp_id, emp_name, designation, department

3NF:

1st: emp_id, emp_name, designation

2nd: emp_id, emp_name, designation, department

Table:

1. emp_id, emp_name, designation, **emp_id (manager)**
2. emp_id, emp_name, designation, department

Table:

1. f_id, a_fund, a_date, **emp_id**
2. emp_id, emp_name, designation, department
3. exp_id, description, amount, date
4. e_id, e_name, date, budget, description, **exp_id**
5. emp_id, emp_name, designation, department
6. e_id, e_name, date, budget, description, **emp_id**
7. sp_id, description, sp_name, **emp_id**
8. emp_id, emp_name, department, designation
9. p_id, description, p_date, p_budget, status, **emp_id**
10. emp_id, emp_name, department, designation
11. f_id, a_fund, a_date
12. d_id, d_name, **f_id**
13. p_id, description, p_date, p_budget, status, **d_id**
14. d_id, d_name
15. r_id, amount, date, d_name, e_name, **d_id**
16. d_id, d_name
17. emp_id, emp_name, designation, **emp_id (manager)**
18. emp_id, emp_name, designation, department

Final tables:

1. exp_id, description, amount, date
2. emp_id, emp_name, designation, **emp_id (manager)**
3. emp_id, emp_name, designation, department
4. f_id, a_fund, a_date, **emp_id (manager)**
5. e_id, e_name, date, budget, description, **exp_id, emp_id (manager)**
6. sp_id, description, sp_name, **emp_id (manager)**
7. p_id, description, p_date, p_budget, status, **emp_id (manager), d_id**
8. d_id, d_name, **f_id**
9. r_id, amount, r_date, d_name, e_name, **d_id**

User Creation:

CREATE USER adbms_project IDENTIFIED BY admin;

GRANT UNLIMITED TABLESPACE TO adbms_project ;

GRANT CREATE SESSION TO adbms_project ;

GRANT CREATE TABLE TO adbms_project ;

GRANT CREATE VIEW TO adbms_project ;

GRANT CREATE SEQUENCE TO adbms_project ;

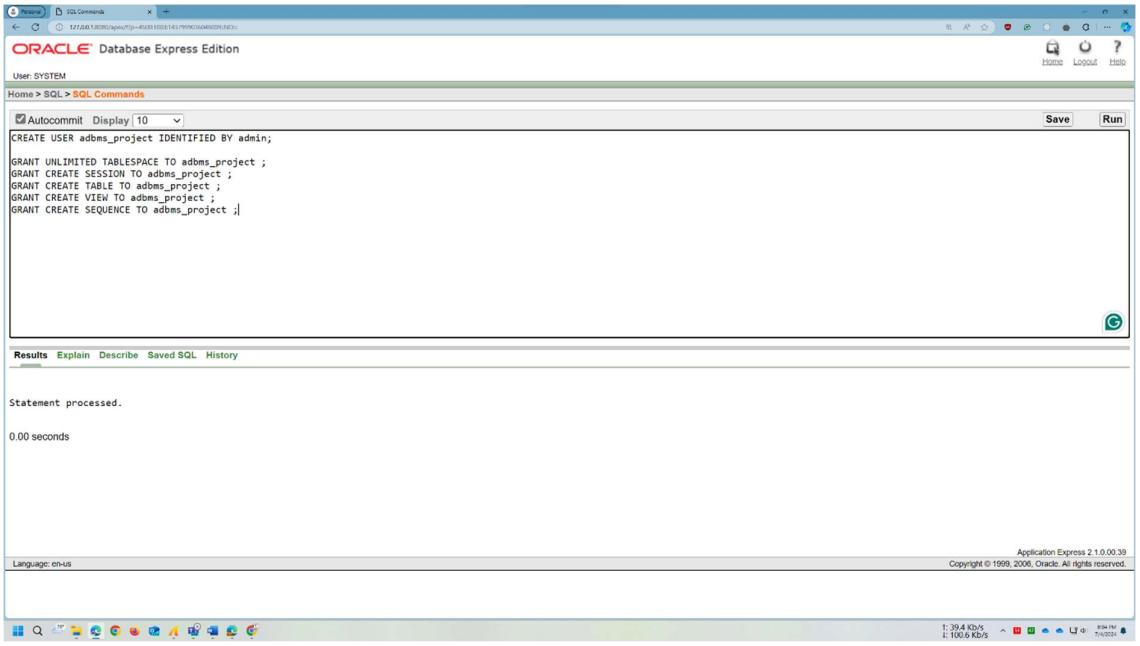
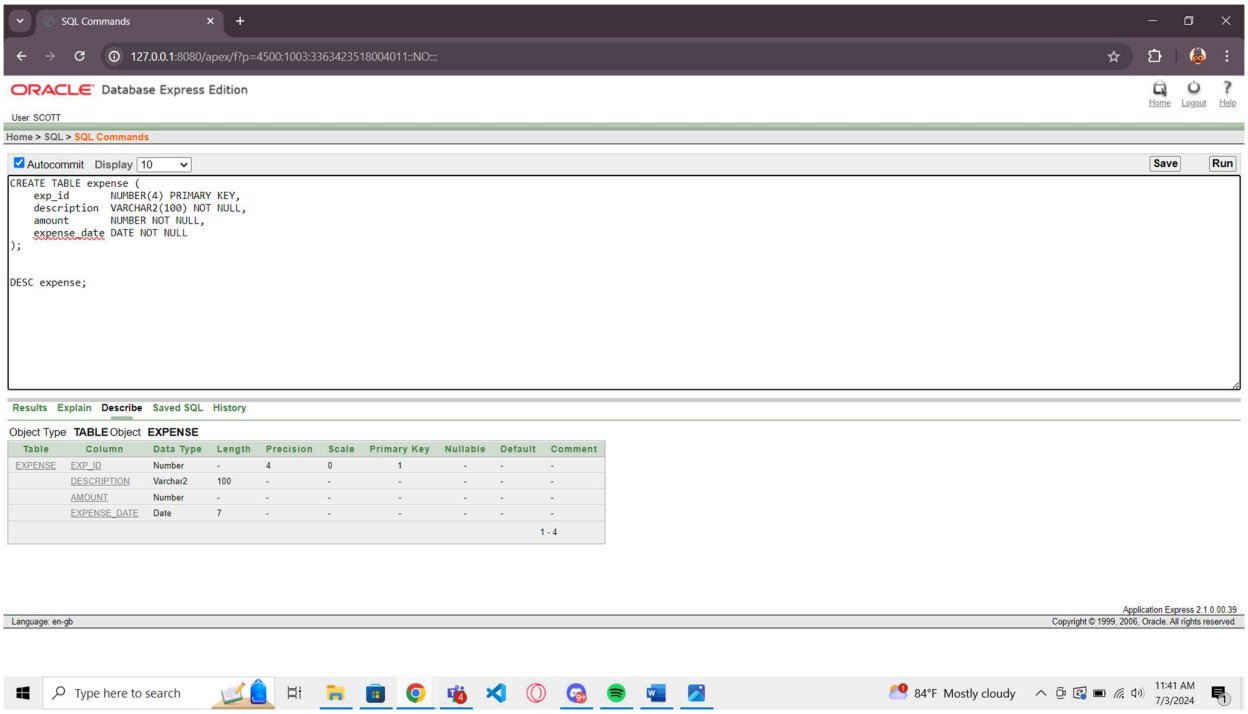


Table Creation:

expense		
Column Name	**Data type**	**Constraint**
exp_id	Number(4)	Primary Key
description	Varchar2(100)	Not null
Amount	Number	Not null
date	Date	Not null

```
CREATE TABLE expense (
exp_id       NUMBER(4) PRIMARY KEY,
description  VARCHAR2(100) NOT NULL,
amount       NUMBER NOT NULL,
expense_date DATE NOT NULL
);
DESC expense;
```



employee		
Column Name	**Data type**	**Constraint**
emp_id	Number(4)	Primary Key
emp_name	Varchar2(30)	Not null
designation	Varchar2(10)	Not null
manager_id	Number(4)	Foreign key

CREATE TABLE employee (

emp_id NUMBER(4) PRIMARY KEY,

emp_name VARCHAR2(30) NOT NULL,

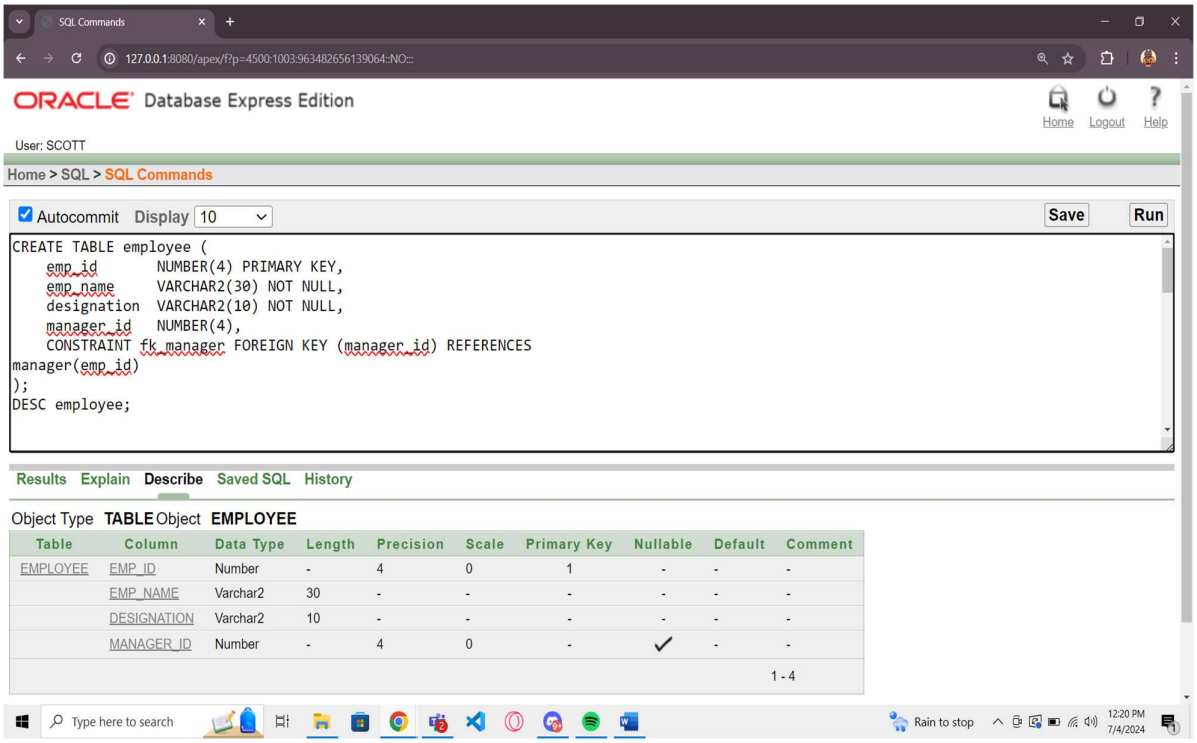
designation VARCHAR2(10) NOT NULL,

manager_id NUMBER(4),

CONSTRAINT fk_manager FOREIGN KEY (manager_id) REFERENCES

manager(emp_id)

);DESC employee;



department		
Column Name	**Data type**	**Constraint**
d_id	Number(4)	Primary Key
d_name	Varchar2(30)	Not null
f_id	Number(4)	Foreign Key

CREATE TABLE department (

d_id NUMBER(4) PRIMARY KEY,

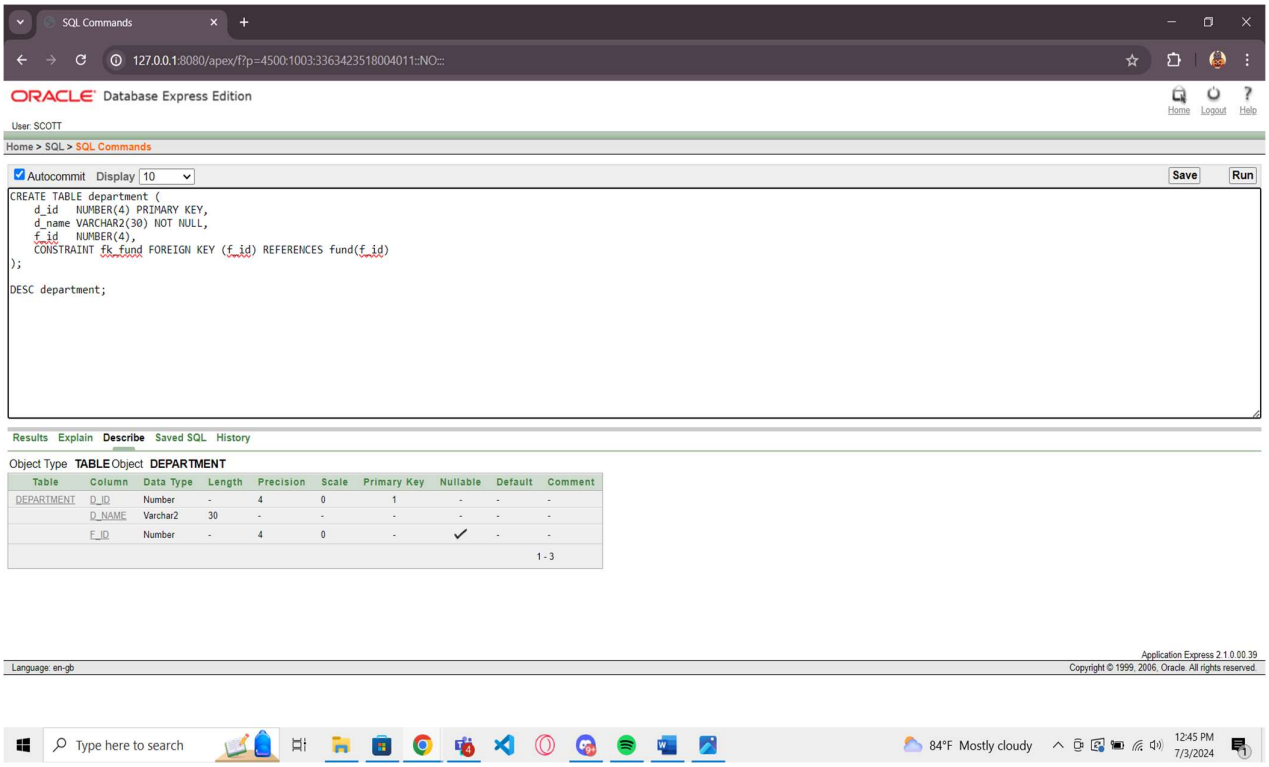
d_name VARCHAR2(30) NOT NULL,

f_id NUMBER(4),

CONSTRAINT fk_fund FOREIGN KEY (f_id) REFERENCES fund(f_id)

);

DESC department;



manager		
Column Name	**Data type**	**Constraint**
emp_id	Number(4)	Primary Key
emp_name	Varchar2(30)	Not null
designation	Varchar2(10)	Not null
department	Varchar2(10)	Not null

CREATE TABLE manager (

emp_id NUMBER(4) PRIMARY KEY,

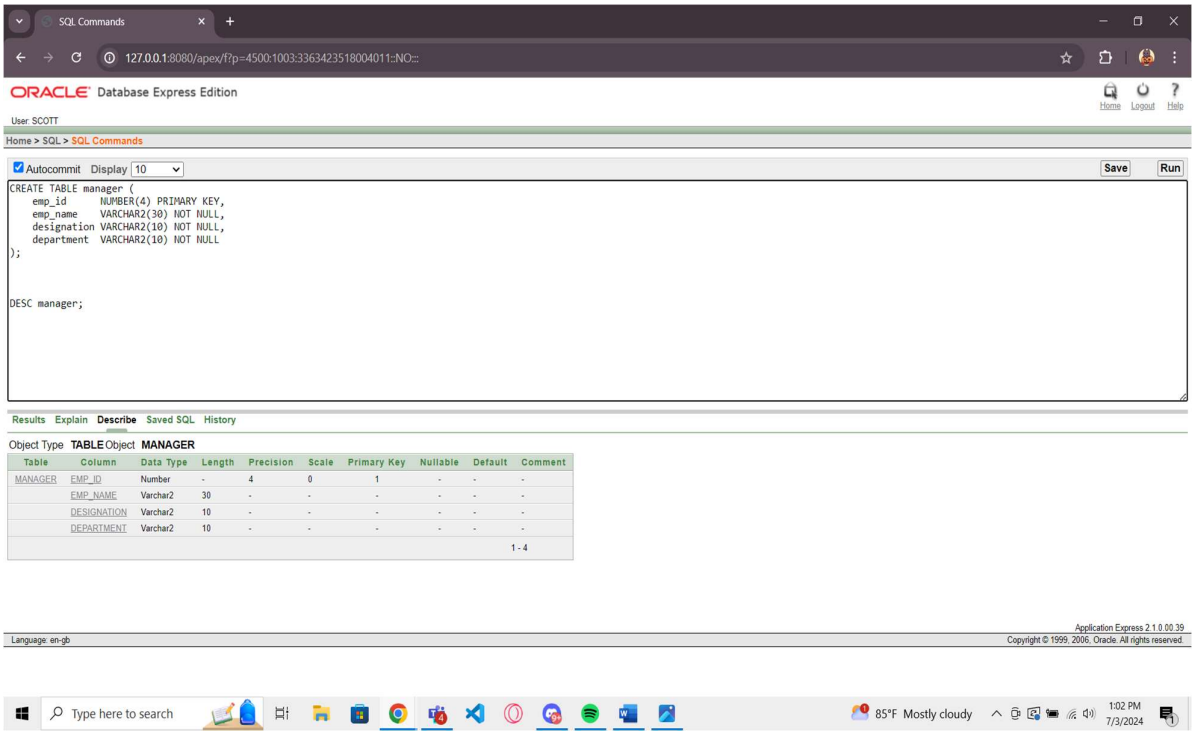
emp_name VARCHAR2(30) NOT NULL,

designation VARCHAR2(10) NOT NULL,

department VARCHAR2(10) NOT NULL

);

DESC manager;



	fund	
Column Name	**Data type**	**Constraint**
f_id	Number(4)	Primary Key
a_fund	Number(10)	Not null
a_date	Date	Not null
emp_id	Number(4)	Foreign Key

CREATE TABLE fund (

f_id NUMBER(4) PRIMARY KEY,

a_fund NUMBER NOT NULL,

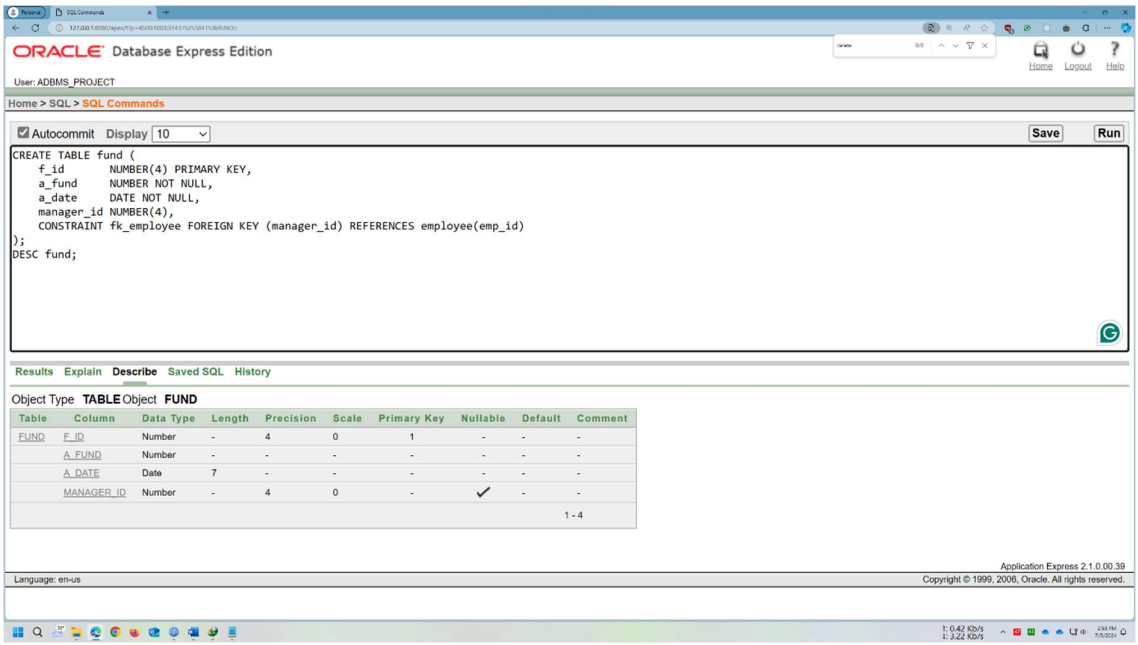
a_date DATE NOT NULL,

manager_id NUMBER(4),

CONSTRAINT fk_employee FOREIGN KEY (manager_id) REFERENCES employee(emp_id)

);

DESC fund;



event		
Column Name	**Data type**	**Constraint**
e_id	Number(4)	Primary Key
e_name	Varchar2(30)	Not null
event_date	Date	Not null
budget	Number(10)	Not null
description	Varchar2(100)	Not null
exp_id	Number(4)	Foreign Key
emp_id	Number(4)	Foreign Key

CREATE TABLE event (

e_id NUMBER(4) PRIMARY KEY,

e_name VARCHAR2(30) NOT NULL,

event_date DATE NOT NULL,

budget NUMBER(10) NOT NULL,

description VARCHAR2(100) NOT NULL,

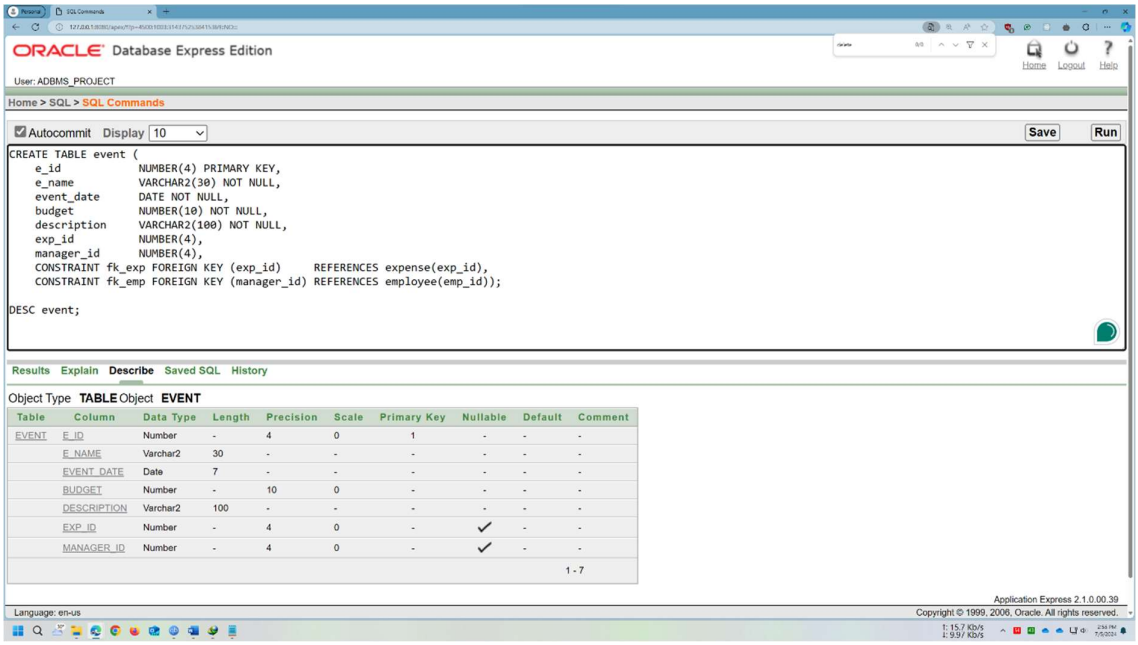
exp_id NUMBER(4),

manager_id NUMBER(4),

CONSTRAINT fk_exp FOREIGN KEY (exp_id) REFERENCES expense(exp_id),

CONSTRAINT fk_emp FOREIGN KEY (manager_id) REFERENCES employee(emp_id));

DESC event;



sponsor		
Column Name	**Data type**	**Constraint**
sp_id	Number(4)	Primary Key
description	Varchar2(100)	Not null
sp_name	Varchar2(30)	Not null
emp_id	Number(4)	Foreign Key

CREATE TABLE sponsor (

sp_id NUMBER(4) PRIMARY KEY,

description VARCHAR2(100) NOT NULL,

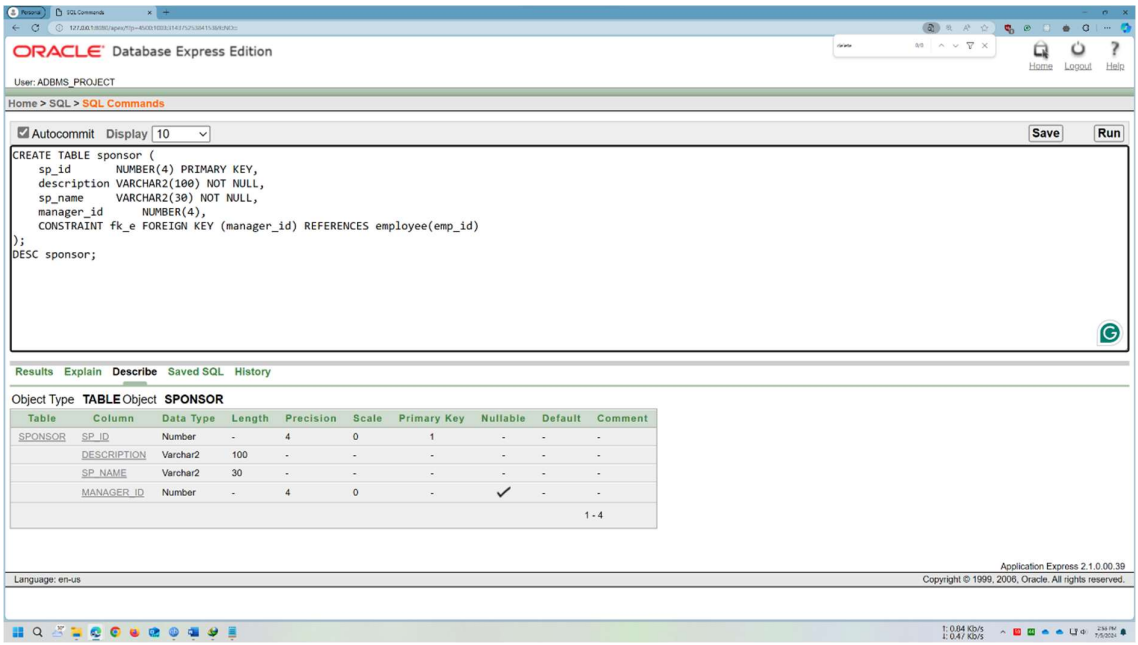
sp_name VARCHAR2(30) NOT NULL,

manager_id NUMBER(4),

CONSTRAINT fk_e FOREIGN KEY (manager_id) REFERENCES employee(emp_id)

);

DESC sponsor;



proposal		
Column Name	**Data type**	**Constraint**
p_id	Number(4)	Primary Key
description	Varchar2(100)	Not null
p_date	Date	Not null
p_budget	Number(10)	Not null
status	Varchar2(30)	Not null
emp_id	Number(4)	Foreign Key
d_id	Number(4)	Foreign Key

CREATE TABLE proposal (

p_id NUMBER(4) PRIMARY KEY,

description VARCHAR2(100) NOT NULL,

p_date DATE NOT NULL,

p_budget NUMBER(10) NOT NULL,

status VARCHAR2(30) NOT NULL,

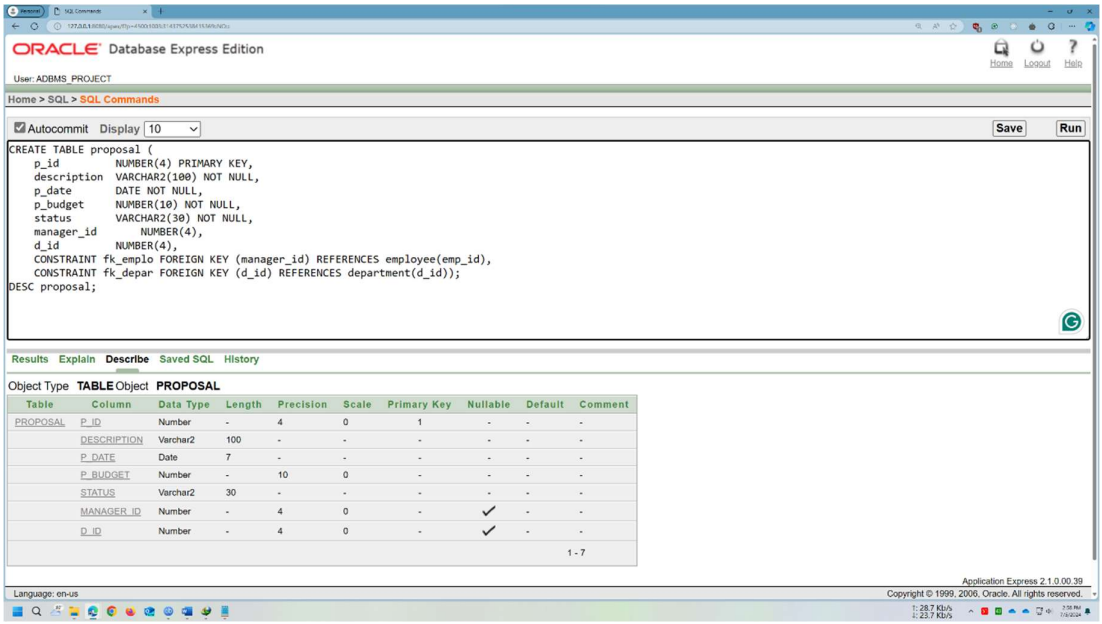
manager_id NUMBER(4),

d_id NUMBER(4),

CONSTRAINT fk_emplo FOREIGN KEY (manager _id) REFERENCES employee(emp_id),

CONSTRAINT fk_depar FOREIGN KEY (d_id) REFERENCES department(d_id));

DESC proposal;



report		
Column Name	**Data type**	**Constraint**
r_id	Number(4)	Primary Key
amount	Number(10)	Not null
r_date	Date	Not null
d_name	Varchar2(30)	Not null
e_name	Varchar2(30)	Not null
d_id	Number(4)	Foreign Key

CREATE TABLE report (

r_id NUMBER(4) PRIMARY KEY,

amount NUMBER(10) NOT NULL,

r_date DATE NOT NULL,

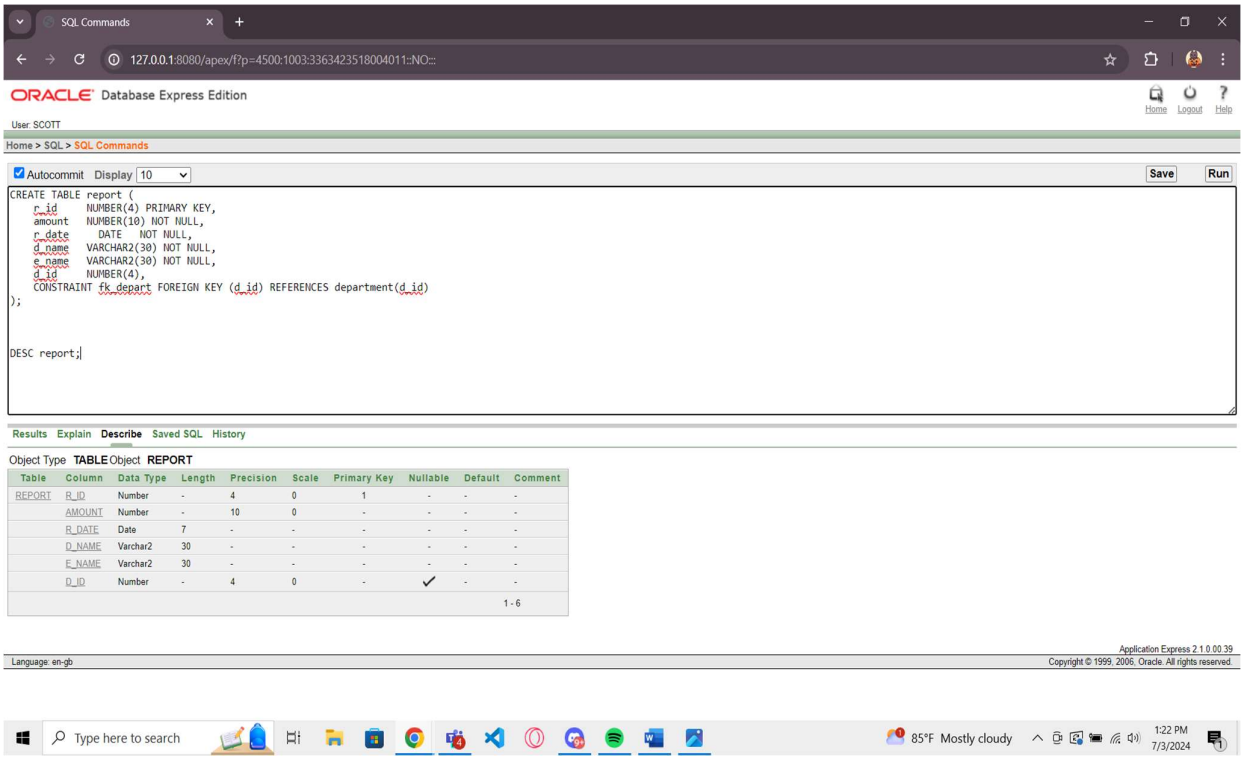
d_name VARCHAR2(30) NOT NULL,

e_name VARCHAR2(30) NOT NULL,

d_id NUMBER(4),

CONSTRAINT fk_depart FOREIGN KEY (d_id) REFERENCES department(d_id));

DESC report;



Data Insertion

Table name: employee

INSERT INTO employee VALUES (1001, 'Sumaiya Tasnim', 'Developer', 1007);

INSERT INTO employee VALUES (1002, 'Nishat Afla', 'Developer', 1009);

INSERT INTO employee VALUES (1003, 'Mahmud Al Ashiq', 'Engineer', 1007);

INSERT INTO employee VALUES (1004, 'Chondrima Kumari', 'Developer', 1010);

INSERT INTO employee VALUES (1005, 'Kamal Hasib', 'Analyst', 1008);

INSERT INTO employee VALUES (1006, 'Rodoshie Reehean', 'Engineer', 1010);

INSERT INTO employee VALUES (1007, 'Baria Ifteen', 'Manager', NULL);

INSERT INTO employee VALUES (1008, 'Tahsib Alam', 'Manager', NULL);

INSERT INTO employee VALUES (1009, 'Lance Florida', 'Manager', NULL);

INSERT INTO employee VALUES (1010, 'Jessia Islam', 'Manager', NULL);

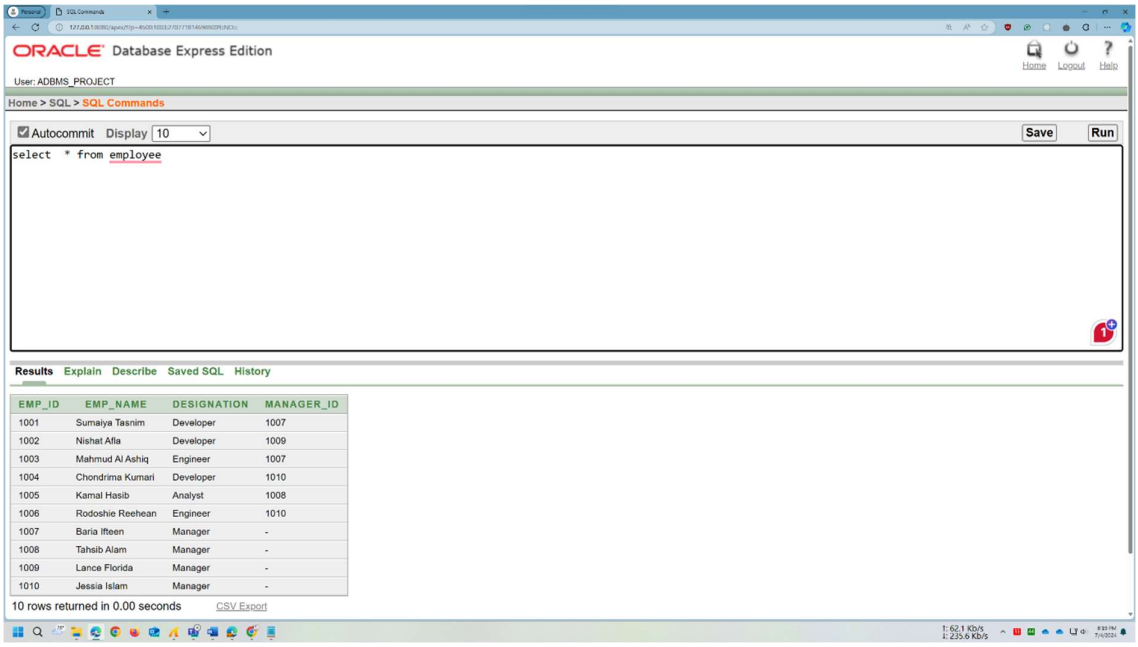


Table name: manager

INSERT INTO manager VALUES (1007, 'Baria Ifteen', 'Manager', 'IT');

INSERT INTO manager VALUES (1008, 'Tahsib Alam', 'Manager', 'Networking');

INSERT INTO manager VALUES (1009, 'Lance Florida', 'Manager', 'Finance');

INSERT INTO manager VALUES (1010, 'Jessia Islam', 'Manager', 'HR');

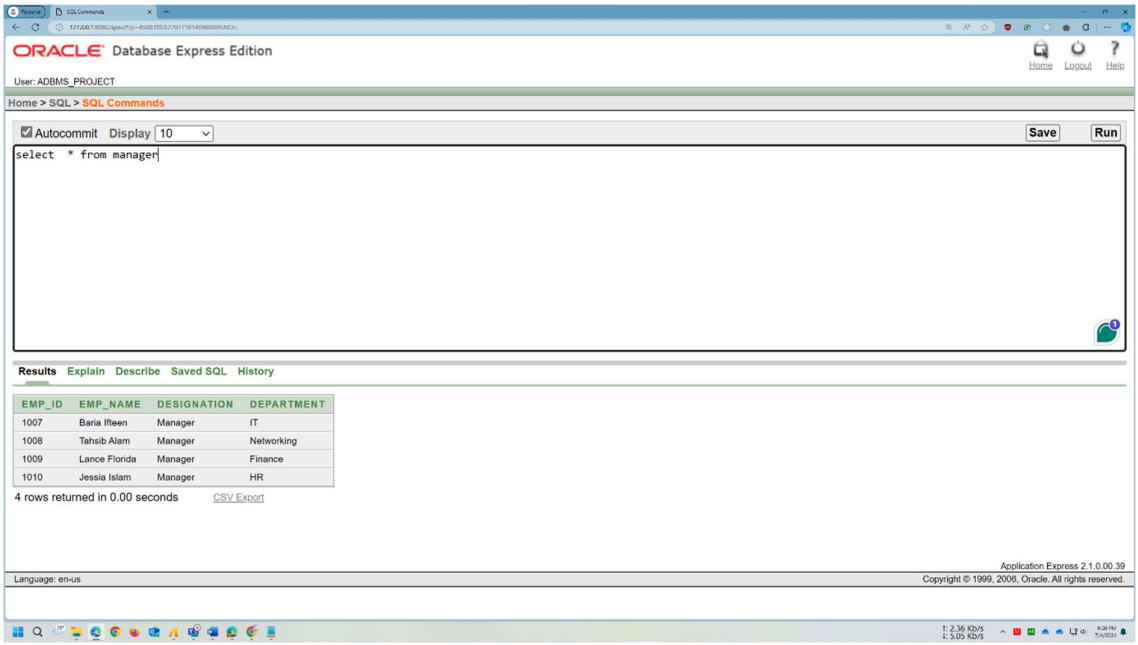


Table name: expense

INSERT INTO expense VALUES (3001, 'Picnic for new years eve', 8000, TO_DATE('2024-01-01', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3002, 'Birthday Surprise to Sumaiya', 3000, TO_DATE('2024-01-10', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3003, 'Dinner Outing to a Banani restaurant', 6500, TO_DATE('2024-02-17', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3004, 'Sudden Lunch plan to nearby cafe', 1000, TO_DATE('2024-02-20', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3005, 'Dinner outing for company anniversary', 8500, TO_DATE('2024-03-11', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3006, 'Picnic to Savar', 4000, TO_DATE('2024-05-23', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3007, 'Birthday Surprise to Lance Florida', 3000, TO_DATE('2024-06-22', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3008, 'Tent camping tour to Khulna', 11000, TO_DATE('2024-07-16', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3009, 'Tour to Mindset IT Industry for visit and lunch', 4000, TO_DATE('2024-09-11', 'YYYY-MM-DD'));

INSERT INTO expense VALUES (3010, 'Yearly 5 day long vacation tour', 33000, TO_DATE('2024-12-05', 'YYYY-MM-DD'));

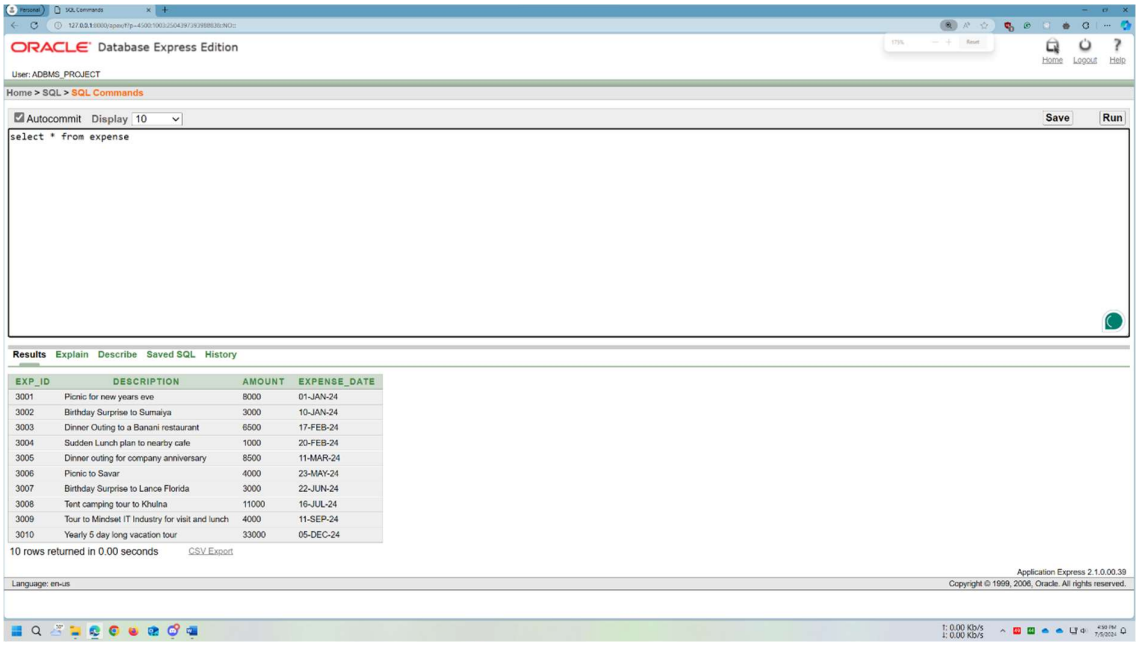


Table name: fund

INSERT INTO fund VALUES (4001, 15000, TO_DATE('2024-01-01','YYYY-MM-DD'), 1007);

INSERT INTO fund VALUES (4002, 10000, TO_DATE('2024-01-03','YYYY-MM-DD'), 1008);

INSERT INTO fund VALUES (4003, 8000, TO_DATE('2024-01-04','YYYY-MM-DD'), 1009);

INSERT INTO fund VALUES (4004, 9000, TO_DATE('2024-01-06','YYYY-MM-DD'), 1010);

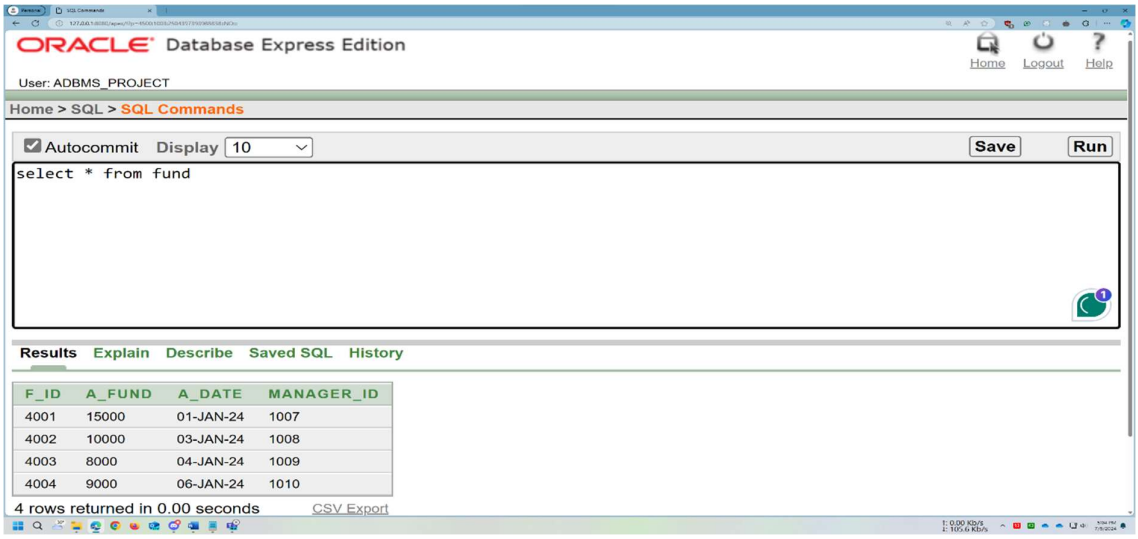


Table name: department

INSERT INTO department VALUES (5001,'IT', 4001);

INSERT INTO department VALUES (5002,'Finance', 4002);

INSERT INTO department VALUES (5003,'Networking', 4003);

INSERT INTO department VALUES (5004,'HR', 4004);

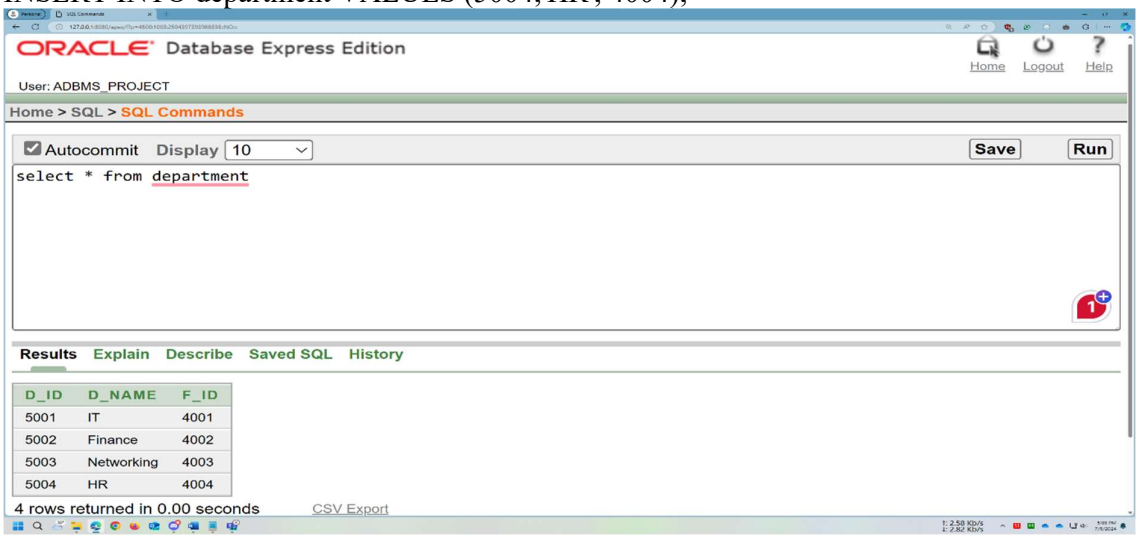


Table name: event

INSERT INTO event VALUES (6001,'New Year Party', TO_DATE('2024-01-01', 'YYYY-MM-DD'),8000,'Picnic done in Kolabagan', 3001, 1007);

INSERT INTO event VALUES (6002,'Birthday Party', TO_DATE('2024-01-10', 'YYYY-MM-DD'),3000,'Surprise to a IT dept member', 3002, 1007);

INSERT INTO event VALUES (6004,'Cafe outing', TO_DATE('2024-02-24', 'YYYY-MM-DD'),1000,'Cafe foods supplied', 3004, 1009);

INSERT INTO event VALUES (6005,'Anniversary celebration', TO_DATE('2024-03-24', 'YYYY-MM-DD'),8500,'Anniversary of the company celebrated', 3005, 1010);

INSERT INTO event VALUES (6006,'Picnic', TO_DATE('2024-01-10', 'YYYY-MM-DD'),4000,'Savar picnic in early morning', 3006, 1008);

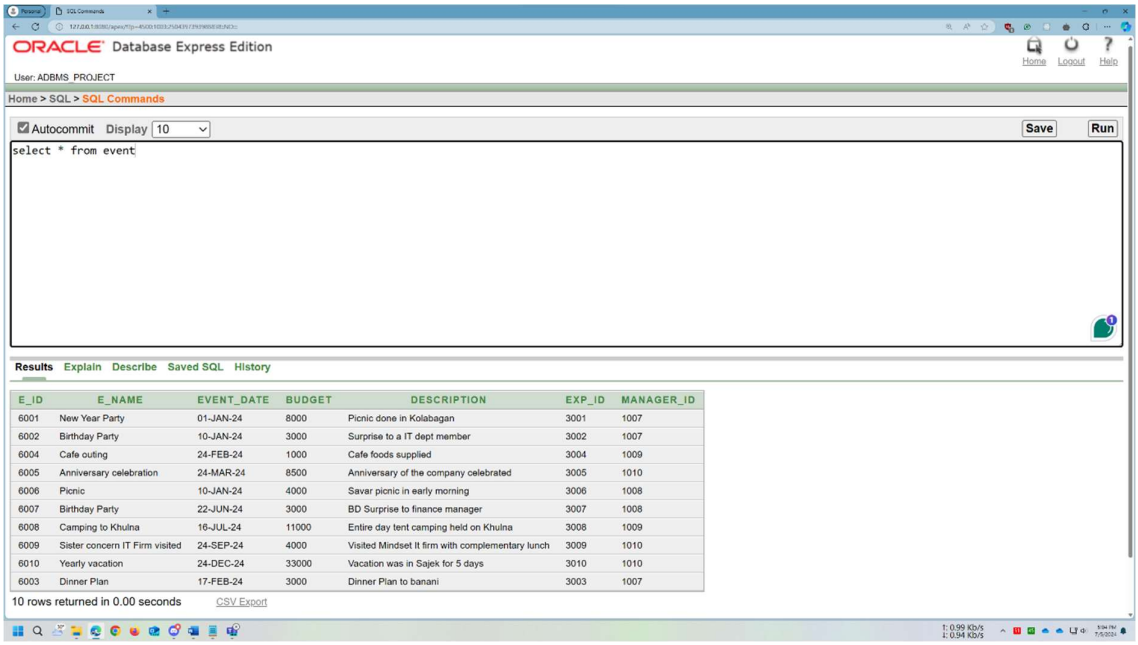
INSERT INTO event VALUES (6007,'Birthday Party', TO_DATE('2024-06-22', 'YYYY-MM-DD'),3000,'BD Surprise to finance manager', 3007,1008);

INSERT INTO event VALUES (6008,'Camping to Khulna', TO_DATE('2024-07-16', 'YYYY-MM-DD'),11000,'Entire day tent camping held on Khulna', 3008, 1009);

INSERT INTO event VALUES (6009,'Sister concern IT Firm visited', TO_DATE('2024-09-24', 'YYYY-MM-DD'),4000,'Visited Mindset It firm with complementary lunch', 3009,1010);

INSERT INTO event VALUES (6010,'Yearly vacation', TO_DATE('2024-12-24', 'YYYY-MM-DD'),33000,'Vacation was in Sajek for 5 days', 3010, 1010);

INSERT INTO event VALUES (6003,'Dinner Plan', TO_DATE('2024-02-17', 'YYYY-MM-DD'),3000,'Dinner Plan to banani', 3003, 1007);



E_ID	E_NAME	EVENT_DATE	BUDGET	DESCRIPTION	EXP_ID	MANAGER_ID
6001	New Year Party	01-JAN-24	8000	Picnic done in Kolabagan	3001	1007
6002	Birthday Party	10-JAN-24	3000	Surprise to a IT dept member	3002	1007
6004	Cafe outing	24-FEB-24	1000	Cafe foods supplied	3004	1009
6005	Anniversary celebration	24-MAR-24	8500	Anniversary of the company celebrated	3005	1010
6006	Picnic	10-JAN-24	4000	Savar picnic in early morning	3006	1008
6007	Birthday Party	22-JUN-24	3000	BD Surprise to finance manager	3007	1008
6008	Camping to Khulna	16-JUL-24	11000	Entire day tent camping held on Khulna	3008	1009
6009	Sister concern IT Firm visited	24-SEP-24	4000	Visited Mindset It firm with complementary lunch	3009	1010
6010	Yearly vacation	24-DEC-24	33000	Vacation was in Sajek for 5 days	3010	1010
6003	Dinner Plan	17-FEB-24	3000	Dinner Plan to banani	3003	1007

Table name: sponsor

INSERT INTO sponsor VALUES (7001,'New Year Party for the firm', 'Steven Gadgets', 1007);

INSERT INTO sponsor VALUES (7002,'Birthday Party thrown for an employee from IT dept', 'Pran Ltd', 1007);

INSERT INTO sponsor VALUES (7003,'Dinner to a banani restaurant named bao', 'FIC Insurance', 1009);

INSERT INTO sponsor VALUES (7004,'Cafe outing to cha and chill', 'Pran Ltd', 1010);

INSERT INTO sponsor VALUES (7005,'Company anniversary expenses for gifts and dinner', 'Dolby Company', 1008);

INSERT INTO sponsor VALUES (7006,'Savar outing picnic', 'Dolby Company',1008);

INSERT INTO sponsor VALUES (7007,'Birthday Party thrown for a manager', 'Steven Gadgets', 1009);

INSERT INTO sponsor VALUES (7008,'Camping on Khulna and expenses on tickets, foods, tents and supplies', 'Micro Supplies Ltd', 1010);

INSERT INTO sponsor VALUES (7009,'Sister Concern company visit', 'FIC Insurance', 1010);

INSERT INTO sponsor VALUES (7010,'5 day vacation to sajek and costs of transportation, hotels, recreation', 'Dolby Company', 1007);

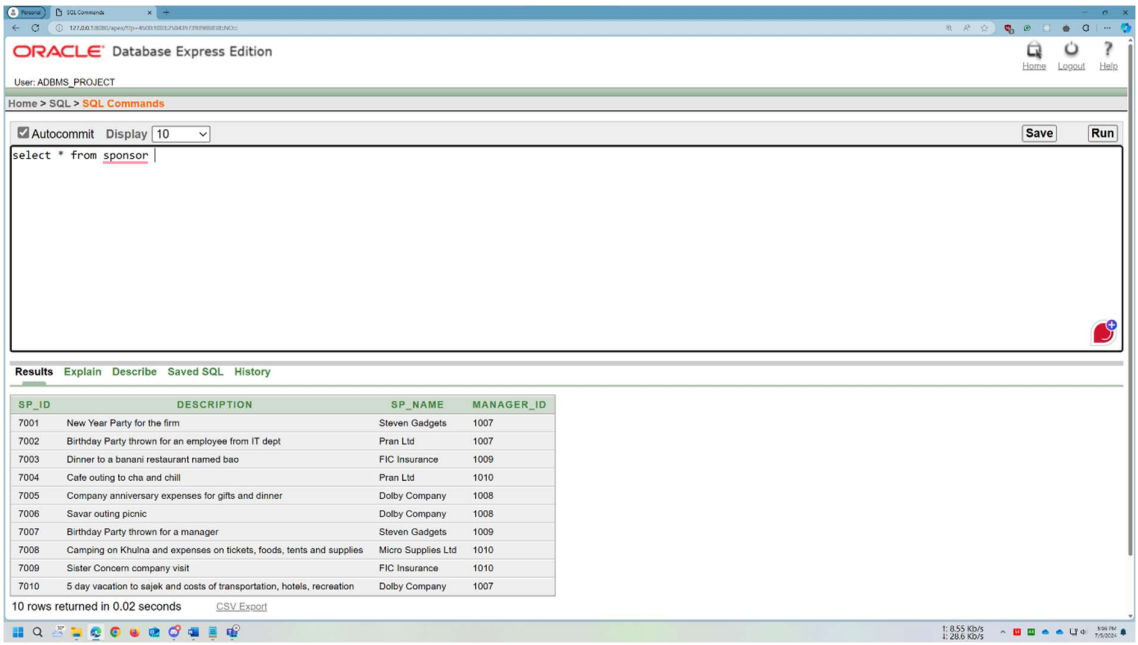


Table name: proposal

INSERT INTO proposal VALUES (8001,'New Year Party', TO_DATE('2023-12-05', 'YYYY-MM-DD'),8000,'completed', 1007, 5001);

INSERT INTO proposal VALUES (8002,'Birthday surprise to employee', TO_DATE('2024-01-02', 'YYYY-MM-DD'),3000,'completed', 1007, 5001);

INSERT INTO proposal VALUES (8003,'Dinner outing', TO_DATE('2024-01-31', 'YYYY-MM-DD'),3000,'completed', 1009, 5003);

INSERT INTO proposal VALUES (8004,'Cafe outing', TO_DATE('2024-02-20', 'YYYY-MM-DD'),1000,'completed', 1010, 5004);

INSERT INTO proposal VALUES (8005,'Company Anniversary', TO_DATE('2024-03-01', 'YYYY-MM-DD'),8500,'completed', 1008, 5002);

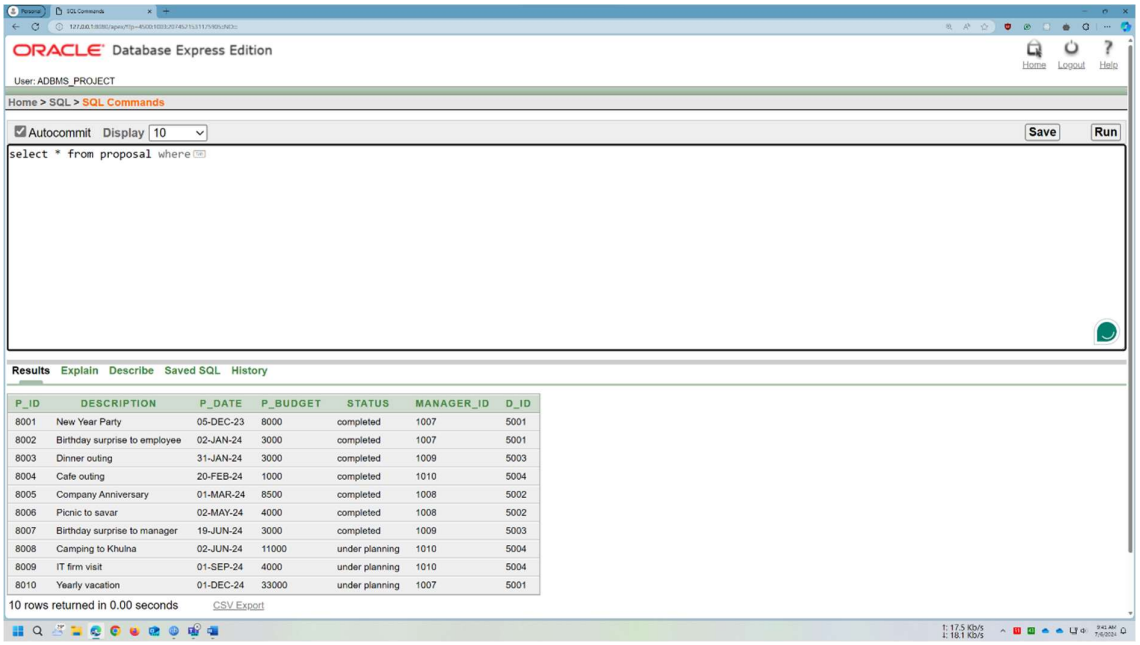
INSERT INTO proposal VALUES (8006,'Picnic to savar', TO_DATE('2024-05-02', 'YYYY-MM-DD'),4000,'completed', 1008, 5002);

INSERT INTO proposal VALUES (8007,'Birthday surprise to manager', TO_DATE('2024-06-19', 'YYYY-MM-DD'),3000,'completed', 1009, 5003);

INSERT INTO proposal VALUES (8008,'Camping to Khulna', TO_DATE('2024-06-02', 'YYYY-MM-DD'),11000,'under planning',1010, 5004);

INSERT INTO proposal VALUES (8009,'IT firm visit', TO_DATE('2024-09-01', 'YYYY-MM-DD'),4000,'under planning', 1010, 5004);

INSERT INTO proposal VALUES (8010,'Yearly vacation', TO_DATE('2024-12-01', 'YYYY-MM-DD'),33000,'under planning', 1007, 5001);



P_ID	DESCRIPTION	P_DATE	P_BUDGET	STATUS	MANAGER_ID	D_ID
8001	New Year Party	05-DEC-23	8000	completed	1007	5001
8002	Birthday surprise to employee	02-JAN-24	3000	completed	1007	5001
8003	Dinner outing	31-JAN-24	3000	completed	1009	5003
8004	Cafe outing	20-FEB-24	1000	completed	1010	5004
8005	Company Anniversary	01-MAR-24	8500	completed	1008	5002
8006	Picnic to savar	02-MAY-24	4000	completed	1008	5002
8007	Birthday surprise to manager	19-JUN-24	3000	completed	1009	5003
8008	Camping to Khulna	02-JUN-24	11000	under planning	1010	5004
8009	IT firm visit	01-SEP-24	4000	under planning	1010	5004
8010	Yearly vacation	01-DEC-24	33000	under planning	1007	5001

Table name: report

INSERT INTO report VALUES (9001, 8000, TO_DATE('2023-01-01', 'YYYY-MM-DD'),'IT', 'New year celebration', 5001);

INSERT INTO report VALUES (9002, 3000, TO_DATE('2023-01-10', 'YYYY-MM-DD'),'IT', 'BD celebration', 5001);

INSERT INTO report VALUES (9003, 3000, TO_DATE('2023-01-01', 'YYYY-MM-DD'),'Networking', 'Dinner plan', 5003);

INSERT INTO report VALUES (9004, 1000, TO_DATE('2023-02-24', 'YYYY-MM-DD'),'IT', 'Cafe outing', 5004);

INSERT INTO report VALUES (9005, 8500, TO_DATE('2023-01-01', 'YYYY-MM-DD'),'Finance', 'Anniversary celebration', 5002);

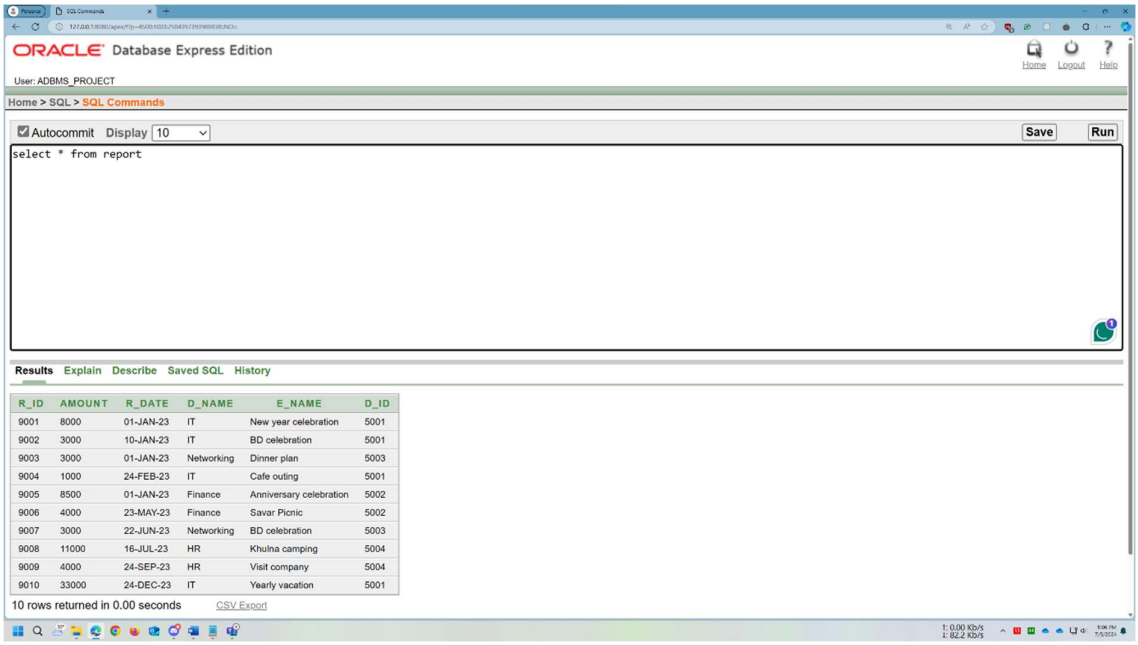
INSERT INTO report VALUES (9006, 4000, TO_DATE('2023-05-23', 'YYYY-MM-DD'),'Finance', 'Savar Picnic', 5002);

INSERT INTO report VALUES (9007, 3000, TO_DATE('2023-06-22', 'YYYY-MM-DD'),'Networking', 'BD celebration', 5003);

INSERT INTO report VALUES (9008, 11000, TO_DATE('2023-07-16', 'YYYY-MM-DD'),'HR', 'Khulna camping', 5004);

INSERT INTO report VALUES (9009, 4000, TO_DATE('2023-09-24', 'YYYY-MM-DD'),'HR', 'Visit company', 5004);

INSERT INTO report VALUES (9010, 33000, TO_DATE('2023-12-24', 'YYYY-MM-DD'),'IT', 'Yearly vacation', 5001);



R_ID	AMOUNT	R_DATE	D_NAME	E_NAME	D_ID
9001	8000	01-JAN-23	IT	New year celebration	5001
9002	3000	10-JAN-23	IT	BD celebration	5001
9003	3000	01-JAN-23	Networking	Dinner plan	5003
9004	1000	24-FEB-23	IT	Cafe outing	5001
9005	8500	01-JAN-23	Finance	Anniversary celebration	5002
9006	4000	23-MAY-23	Finance	Savar Picnic	5002
9007	3000	22-JUN-23	Networking	BD celebration	5003
9008	11000	16-JUL-23	HR	Khulna camping	5004
9009	4000	24-SEP-23	HR	Visit company	5004
9010	33000	24-DEC-23	IT	Yearly vacation	5001

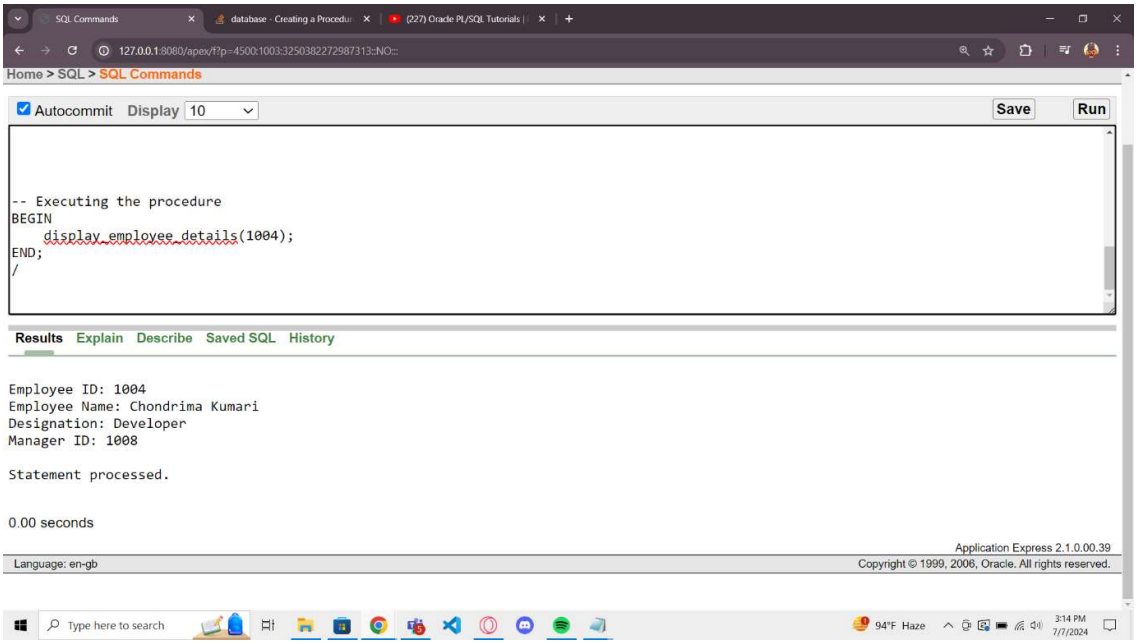
Query Writing: Basic PL/SQL

Variables:

Q.1 Take user input of employee id and display details.

Query:

```
CREATE OR REPLACE PROCEDURE display_employee_details (
p_emp_id IN NUMBER) IS
v_emp_name      VARCHAR2(30);
v_designation   VARCHAR2(10);
v_manager_id    NUMBER(4);
BEGIN
   SELECT emp_name, designation, manager_id INTO v_emp_name, v_designation,
   v_manager_id FROM employee WHERE emp_id = p_emp_id;
DBMS_OUTPUT.PUT_LINE('Employee ID: ' || p_emp_id);
DBMS_OUTPUT.PUT_LINE('Employee Name: ' || v_emp_name);
DBMS_OUTPUT.PUT_LINE('Designation: ' || v_designation);
DBMS_OUTPUT.PUT_LINE('Manager ID: ' || NVL(TO_CHAR(v_manager_id), 'No
Manager'));
EXCEPTION
WHEN NO_DATA_FOUND THEN
DBMS_OUTPUT.PUT_LINE('No employee found with ID ' || p_emp_id);
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);
END;
/
```

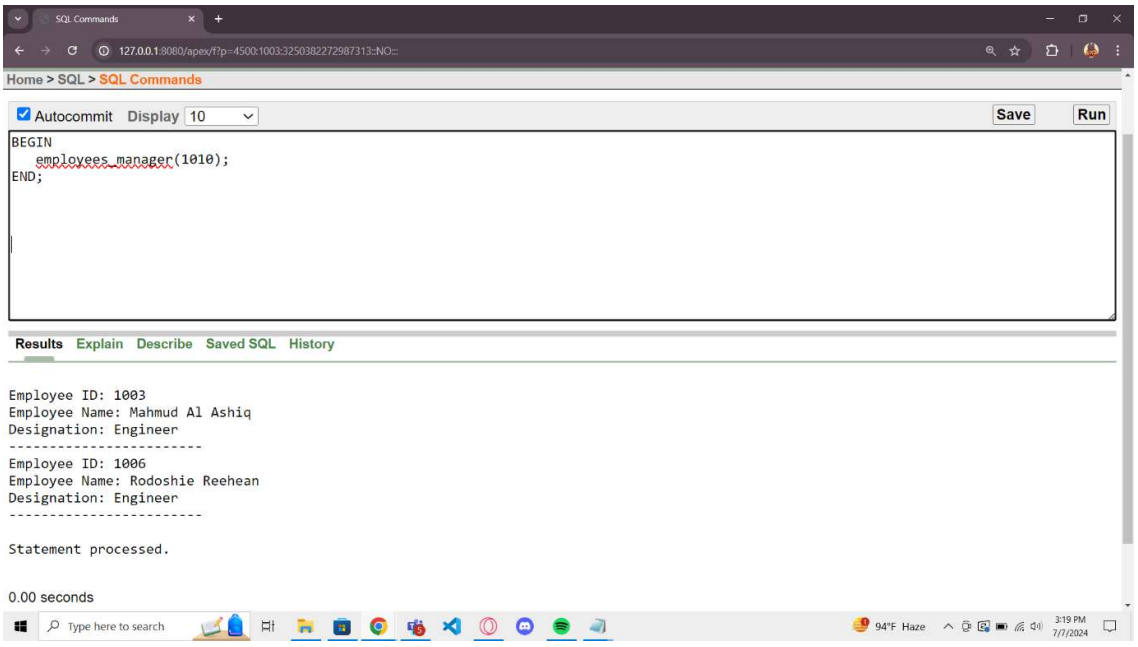


Q.2 Take user input of manager's employee id and display employees working under that manager

Query:

```
CREATE OR REPLACE PROCEDURE employees_manager (
p_manager_id IN NUMBER) IS
CURSOR emp_cursor IS
        SELECT emp_id, emp_name, designation FROM employee WHERE manager_id =
        p_manager_id;
v_emp_id      employee.emp_id%TYPE;
v_emp_name    employee.emp_name%TYPE;
v_designation employee.designation%TYPE;
BEGIN
OPEN emp_cursor;
LOOP
FETCH emp_cursor INTO v_emp_id, v_emp_name, v_designation;
EXIT WHEN emp_cursor%NOTFOUND;


DBMS_OUTPUT.PUT_LINE('Employee ID: ' || v_emp_id);
```

```
DBMS_OUTPUT.PUT_LINE('Employee Name: ' || v_emp_name);
DBMS_OUTPUT.PUT_LINE('Designation: ' || v_designation);
DBMS_OUTPUT.PUT_LINE('-----------------------');
END LOOP;
CLOSE emp_cursor;
EXCEPTION
WHEN NO_DATA_FOUND THEN
DBMS_OUTPUT.PUT_LINE('No employees found' || p_manager_id);
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);
END;
/
```



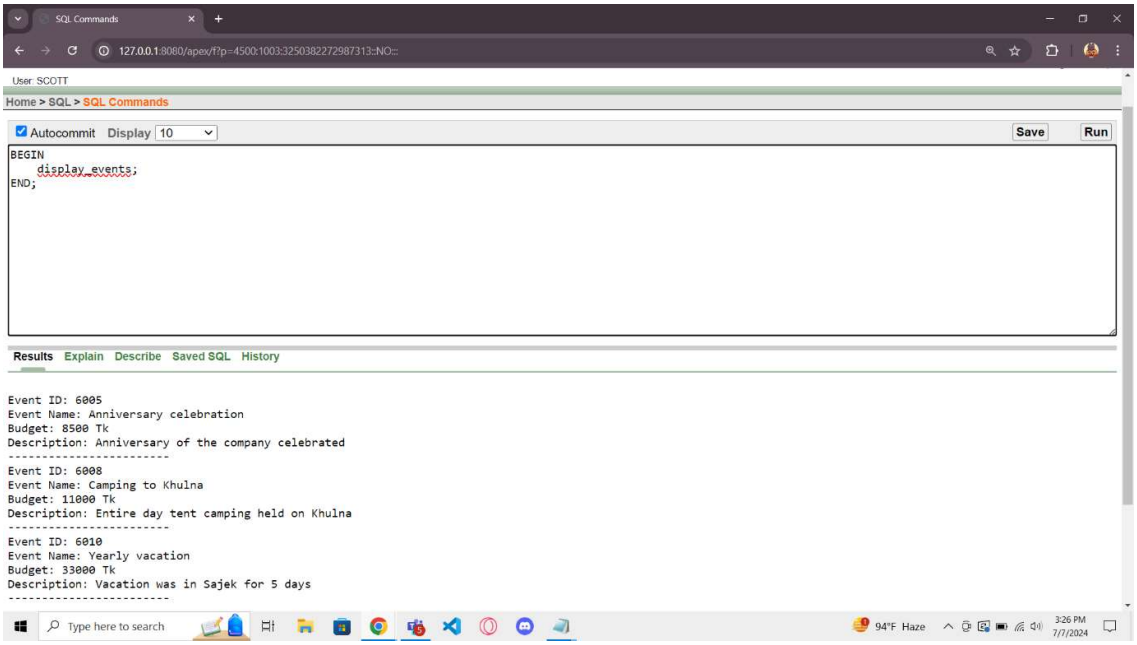
Operators:

Q.3 Display the events whose budget is more than 8000Tk.

Query:

```
CREATE OR REPLACE PROCEDURE display_events
IS
CURSOR event_cursor IS
SELECT e_id, e_name, budget, description
FROM event
WHERE budget > 8000;

v_e_id        event.e_id%TYPE;
v_e_name      event.e_name%TYPE;
v_budget      event.budget%TYPE;
v_description event.description%TYPE;
BEGIN
OPEN event_cursor;
LOOP
FETCH event_cursor INTO v_e_id, v_e_name, v_budget, v_description;
EXIT WHEN event_cursor%NOTFOUND;

DBMS_OUTPUT.PUT_LINE('Event ID: ' || v_e_id);
DBMS_OUTPUT.PUT_LINE('Event Name: ' || v_e_name);
DBMS_OUTPUT.PUT_LINE('Budget: ' || v_budget || ' Tk');
DBMS_OUTPUT.PUT_LINE('Description: ' || v_description);
DBMS_OUTPUT.PUT_LINE('------------------------');
END LOOP;
CLOSE event_cursor;
EXCEPTION
WHEN NO_DATA_FOUND THEN
```

```
DBMS_OUTPUT.PUT_LINE('No events found with budget greater than 8000 Tk');
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);
END;
/
```

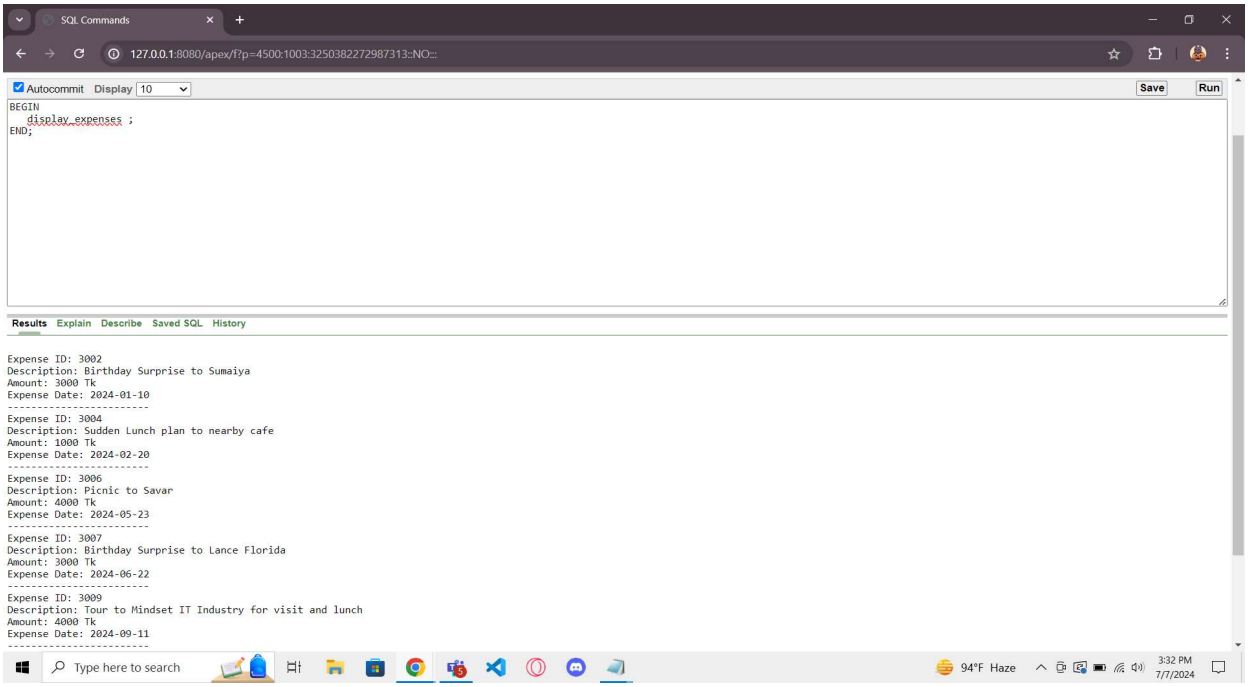


Q.4 Display the expenses that are less than 6000Tk.

Query:

```
CREATE OR REPLACE PROCEDURE display_expenses  IS
CURSOR expense_cursor IS
SELECT exp_id, description, amount, expense_date
FROM expense
WHERE amount < 6000;
v_exp_id        expense.exp_id%TYPE;
v_description   expense.description%TYPE;
v_amount        expense.amount%TYPE;
v_expense_date  expense.expense_date%TYPE;
BEGIN
```

```
OPEN expense_cursor;
LOOP
FETCH expense_cursor INTO v_exp_id, v_description, v_amount, v_expense_date;
EXIT WHEN expense_cursor%NOTFOUND;
DBMS_OUTPUT.PUT_LINE('Expense ID: ' || v_exp_id);
DBMS_OUTPUT.PUT_LINE('Description: ' || v_description);
DBMS_OUTPUT.PUT_LINE('Amount: ' || v_amount || ' Tk');
DBMS_OUTPUT.PUT_LINE('Expense Date: ' || TO_CHAR(v_expense_date, 'YYYY-MM-DD'));
DBMS_OUTPUT.PUT_LINE('-------------------------');
END LOOP;
CLOSE expense_cursor;
EXCEPTION
WHEN NO_DATA_FOUND THEN
DBMS_OUTPUT.PUT_LINE('No expenses found with amount less than 6000 Tk');
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);
END;
```



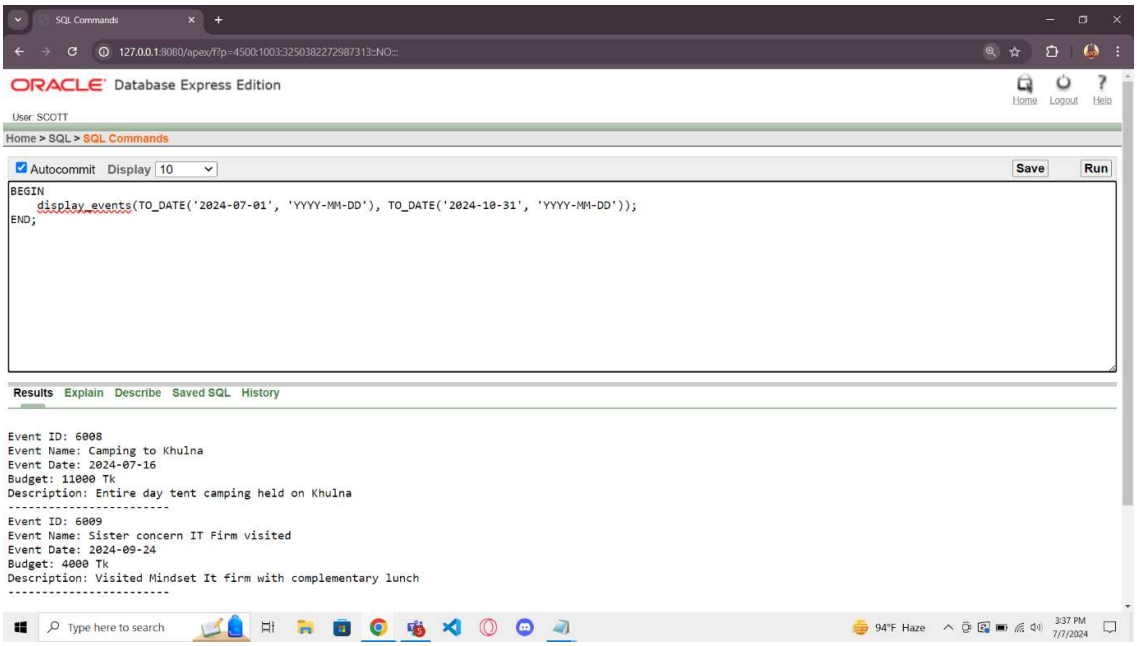
Single-row functions:

Q.5 Display the events between three months

Query:

```
CREATE OR REPLACE PROCEDURE display_events (
p_start_date IN DATE,
p_end_date IN DATE) IS
CURSOR event_cursor IS
SELECT e_id, e_name, event_date, budget, description
FROM event
WHERE event_date BETWEEN p_start_date AND p_end_date;
v_e_id        event.e_id%TYPE;
v_e_name      event.e_name%TYPE;
v_event_date  event.event_date%TYPE;
v_budget      event.budget%TYPE;
v_description event.description%TYPE;
BEGIN
OPEN event_cursor;
LOOP
FETCH event_cursor INTO v_e_id, v_e_name, v_event_date, v_budget, v_description;
EXIT WHEN event_cursor%NOTFOUND;
DBMS_OUTPUT.PUT_LINE('Event ID: ' || v_e_id);
DBMS_OUTPUT.PUT_LINE('Event Name: ' || v_e_name);
DBMS_OUTPUT.PUT_LINE('Event Date: ' || TO_CHAR(v_event_date, 'YYYY-MM-
DD'));
DBMS_OUTPUT.PUT_LINE('Budget: ' || v_budget || ' Tk');
DBMS_OUTPUT.PUT_LINE('Description: ' || v_description);
DBMS_OUTPUT.PUT_LINE('------------------------');
END LOOP;
CLOSE event_cursor;
```

```
EXCEPTION
WHEN NO_DATA_FOUND THEN
DBMS_OUTPUT.PUT_LINE('No events found within the specified date range');
WHEN OTHERS THEN
DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);
END;
/
```

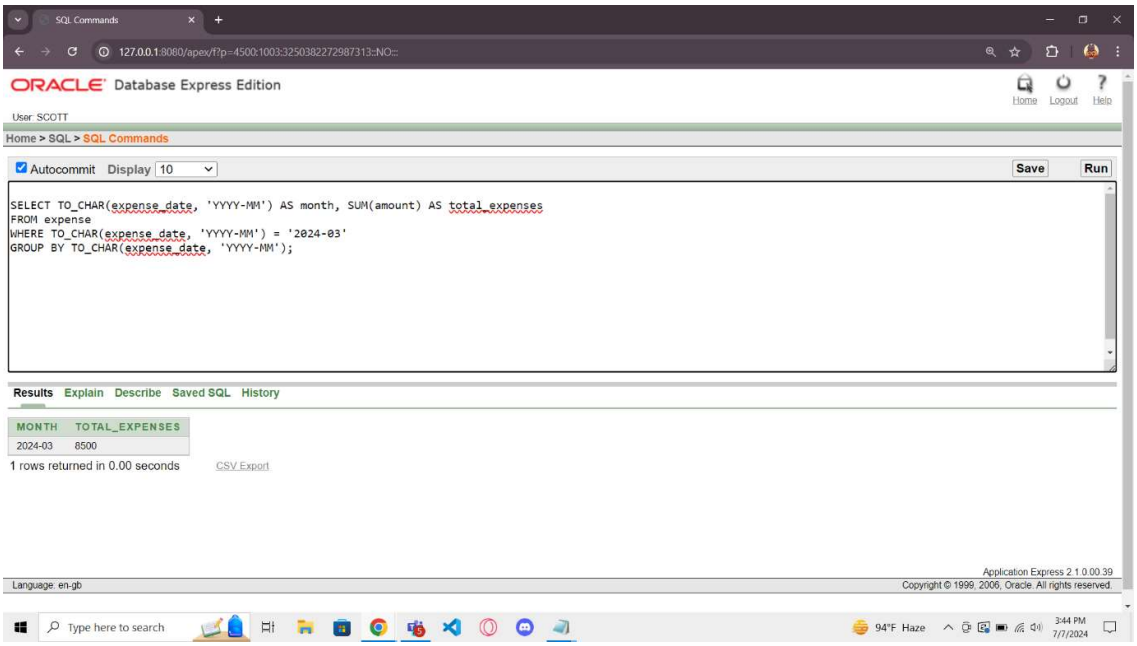


Q.6 Display total expenses of a single month

Query:

```
DECLARE
v_month VARCHAR2(7) := '2024-01'; -- Specify the month in 'YYYY-MM' format
v_total_expenses NUMBER;
BEGIN
SELECT SUM(amount)
INTO v_total_expenses
FROM expense
WHERE TO_CHAR(expense_date, 'YYYY-MM') = v_month;
```

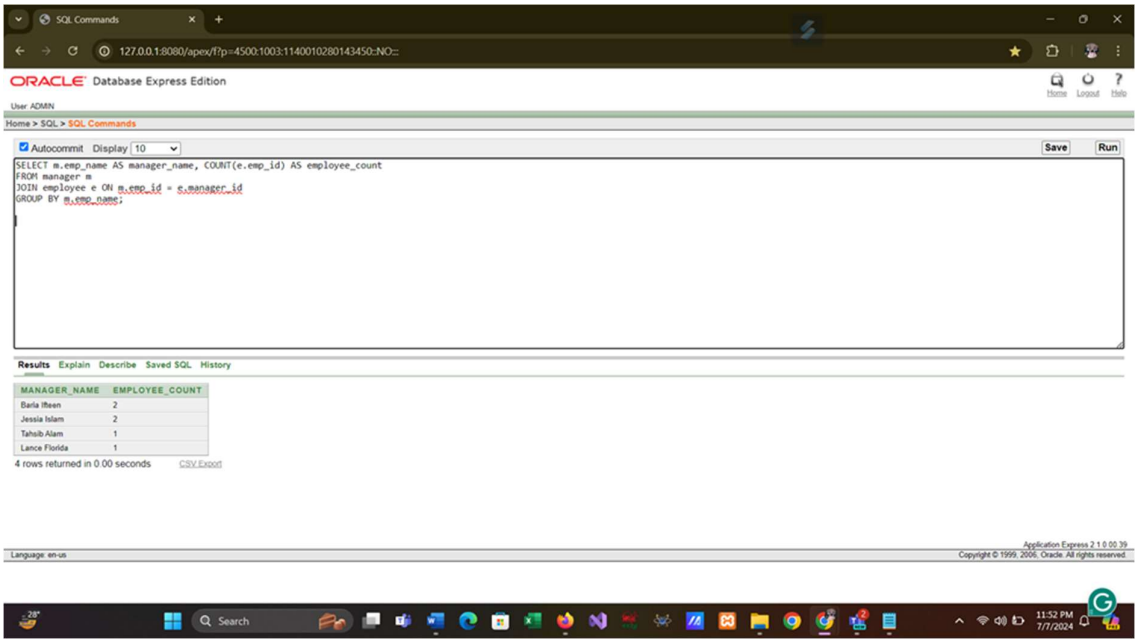
```
DBMS_OUTPUT.PUT_LINE('Total expenses for ' || v_month || ': ' || v_total_expenses || ' Tk');

EXCEPTION

WHEN NO_DATA_FOUND THEN

DBMS_OUTPUT.PUT_LINE('No expenses found for ' || v_month);

WHEN OTHERS THEN

DBMS_OUTPUT.PUT_LINE('An error occurred: ' || SQLERRM);

END;
```



Group function:

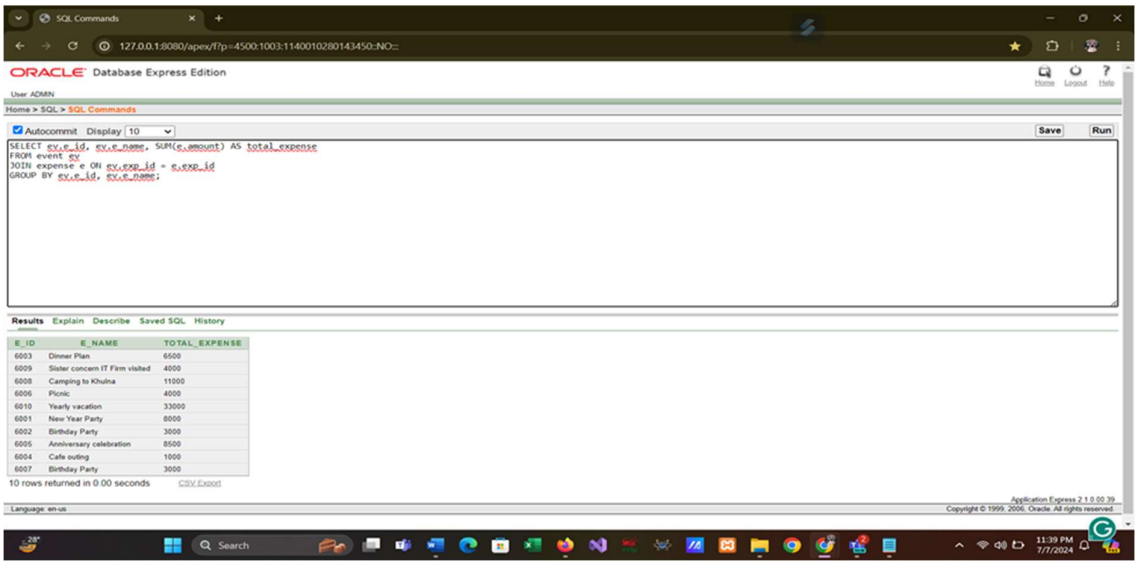
Q.7 Count the number of employees managed by each manager.

```
SELECT m.emp_name AS manager_name, COUNT(e.emp_id) AS employee_count

FROM manager m

JOIN employee e ON m.emp_id = e.manager_id

GROUP BY m.emp_name;
```



Q.8 Display Total Expenses Grouped by each Event

```
SELECT ev.e_id, ev.e_name, SUM(e.amount) AS total_expense
FROM event ev
JOIN expense e ON ev.exp_id = e.exp_id
GROUP BY ev.e_id, ev.e_name;
```

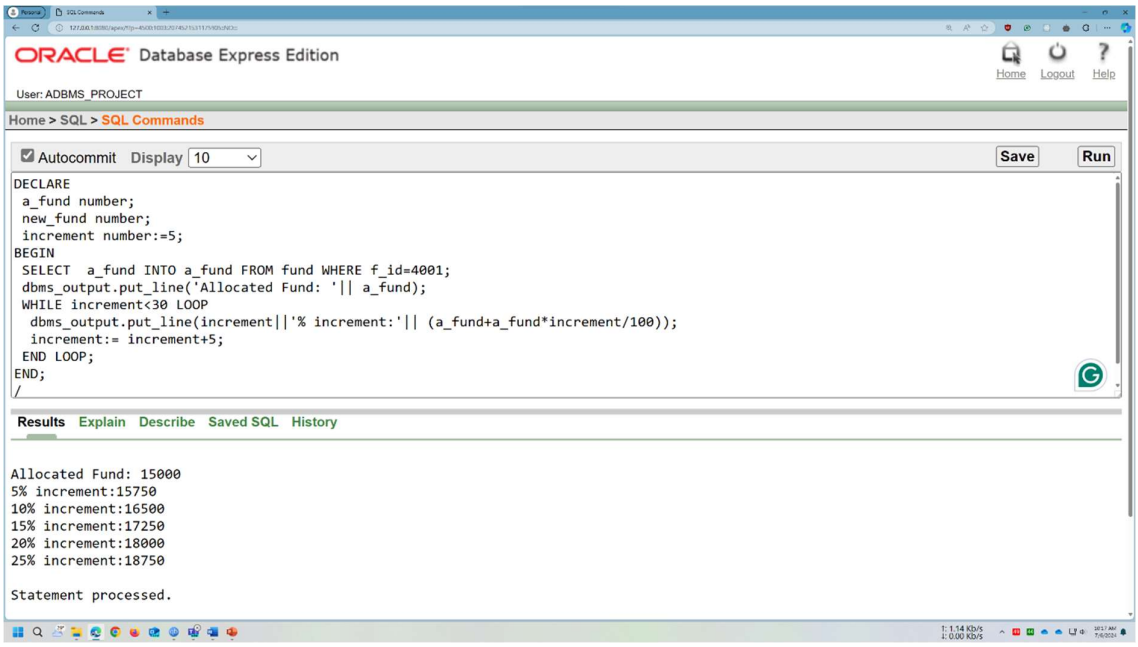


Loop:

Q.9 Display the allocated fund of a department with an additional 5%, 10%, 15%, 20%, 25% increment.

Query:

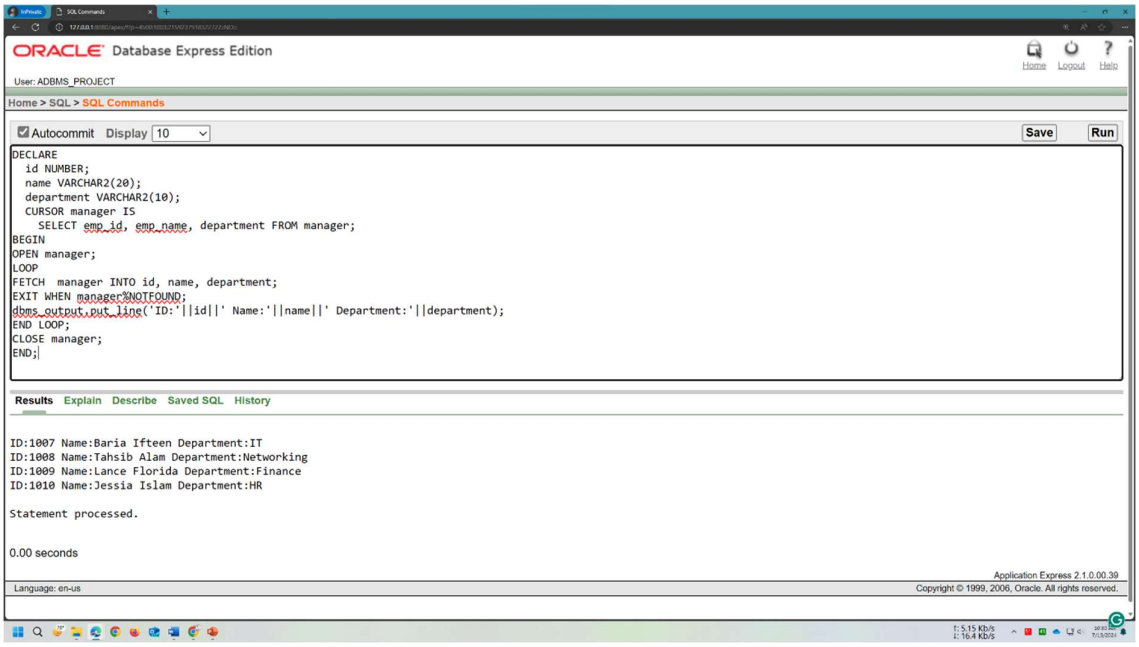
```
DECLARE
a_fund number;
increment number:=5;
BEGIN
SELECT  a_fund INTO a_fund FROM fund WHERE f_id=4001;
dbms_output.put_line('Allocated Fund: '|| a_fund);
WHILE increment<30 LOOP
dbms_output.put_line(increment||'% increment:'|| (a_fund+a_fund*increment/100));
increment:= increment+5;
END LOOP;
END;
/
```



Q.10 Display all the managers using loop

Query:

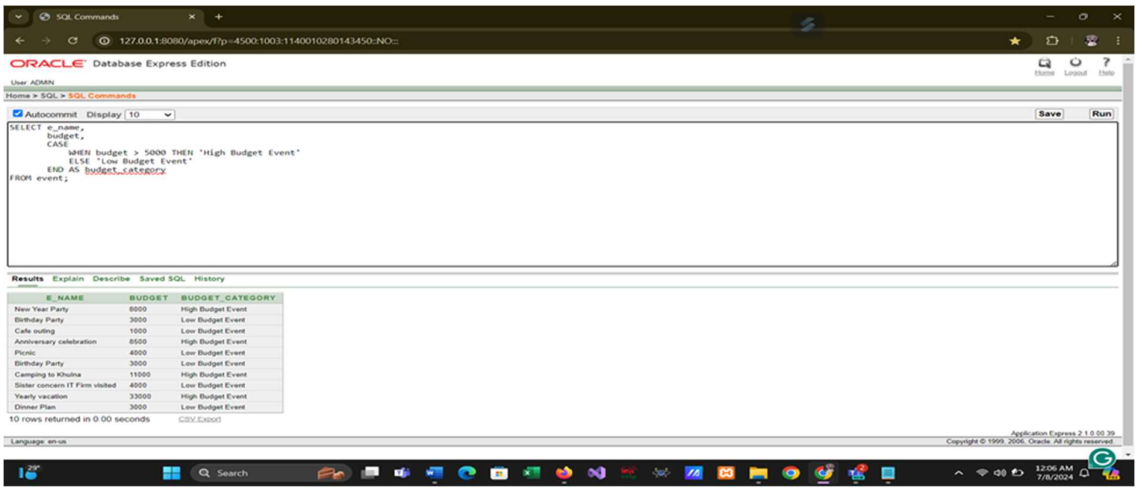
```
DECLARE
id NUMBER;
name VARCHAR2(20);
department VARCHAR2(10);
CURSOR manager IS
SELECT emp_id, emp_name, department FROM manager;
BEGIN
OPEN manager;
LOOP
FETCH  manager INTO id, name, department;
EXIT WHEN manager%NOTFOUND;
dbms_output.put_line('ID:'||id||' Name:'||name||' Department:'||department);
END LOOP;
CLOSE manager;
END;
/
```



Conditional statements:

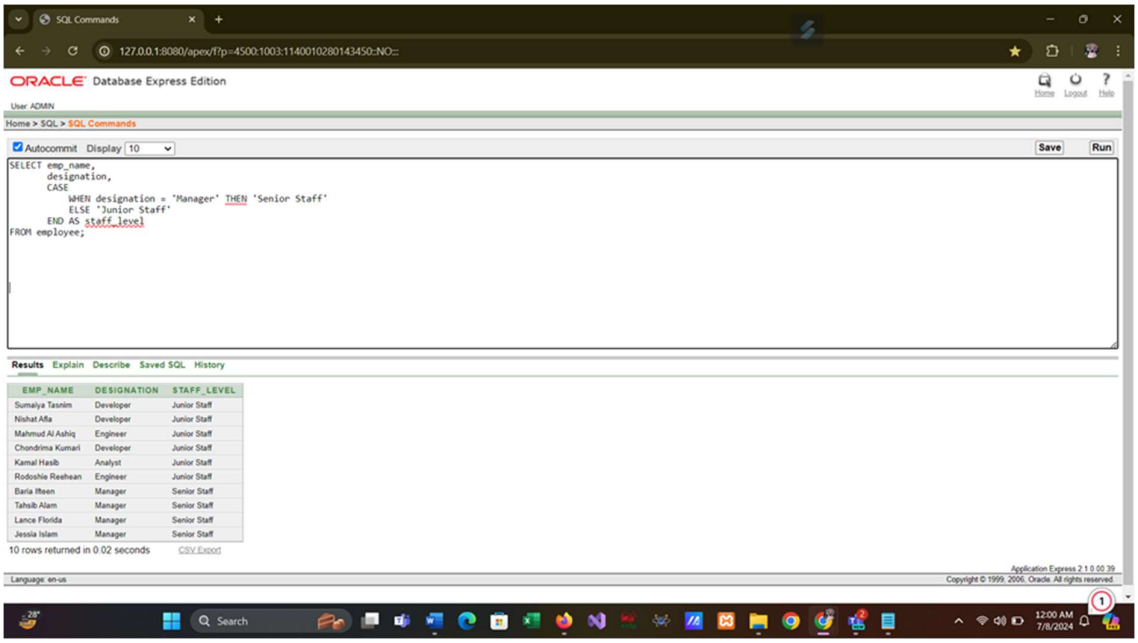
Q.11 Display the event names and their budgets. If the budget is greater than 5000, display 'High Budget Event', otherwise display 'Low Budget Event'.

```
SELECT e_name,
budget,
CASE
WHEN budget > 5000 THEN 'High Budget Event'
ELSE 'Low Budget Event'
END AS budget_category
FROM event;
```



Q.12 Display the name and designation of employees. If an employee's designation is 'Manager', display 'Senior Staff', otherwise display 'Junior Staff'.

```
SELECT emp_name,
designation,
CASE
WHEN designation = 'Manager' THEN 'Senior Staff'
ELSE 'Junior Staff'
END AS staff_level
FROM employee;
```

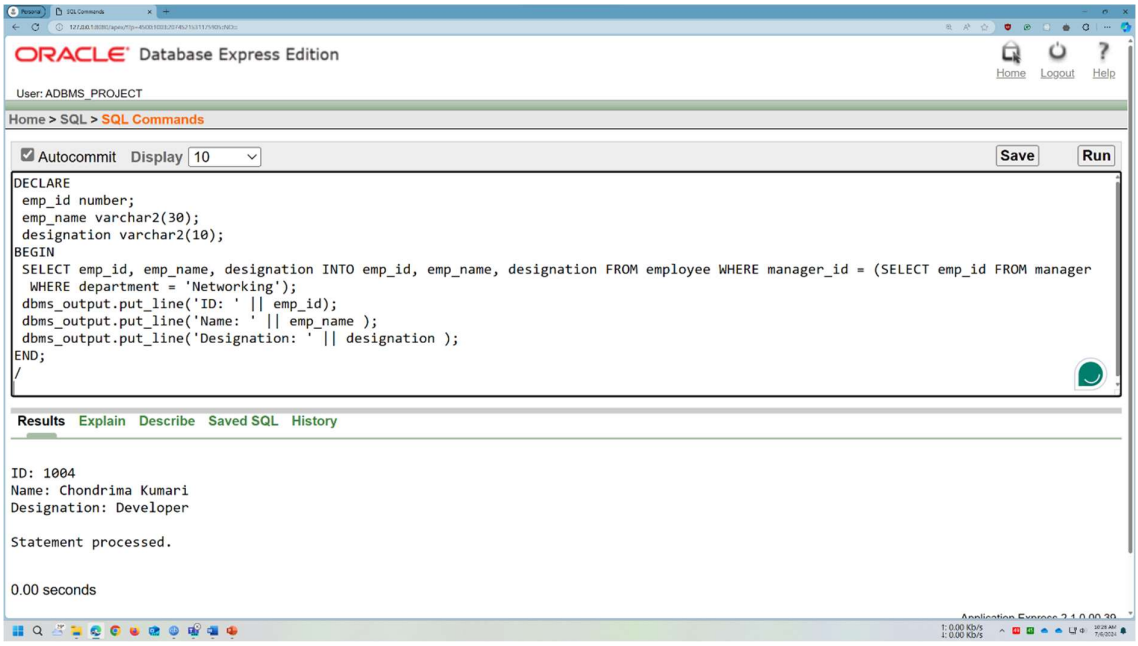


Subquery:

Q.13 Display the employees under the manager of the ‘Networking’ department

Query:

```
DECLARE

emp_id number;

emp_name varchar2(30);

designation varchar2(10);

BEGIN

SELECT emp_id, emp_name, designation INTO emp_id, emp_name, designation FROM employee WHERE manager_id = (SELECT emp_id FROM manager

WHERE department = 'Networking');

dbms_output.put_line('ID: ' || emp_id);

dbms_output.put_line('Name: ' || emp_name );

dbms_output.put_line('Designation: ' || designation );

END;

/
```



Q.14 Display the alphabetically first sponsor's details

Query:

DECLARE

id number;

name varchar2(30);

description varchar2(100);

BEGIN

SELECT sp_id, description, sp_name INTO id, description, name FROM (SELECT * FROM sponsor ORDER BY sp_name) WHERE ROWNUM = 1;

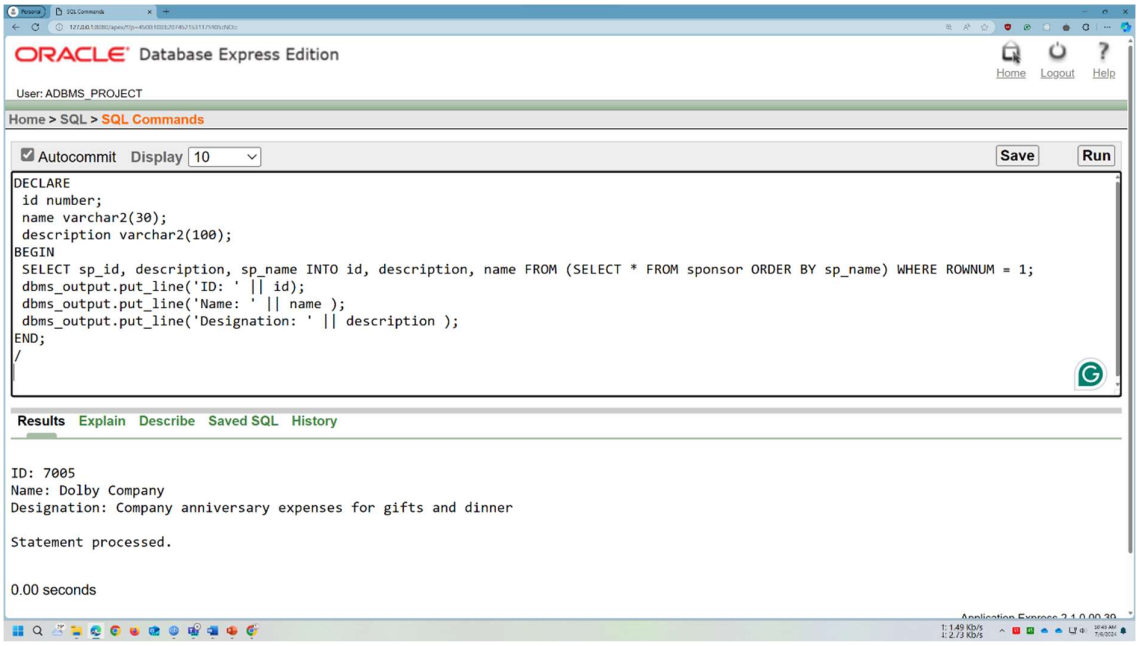
dbms_output.put_line('ID: ' || id);

dbms_output.put_line('Name: ' || name);

dbms_output.put_line('Designation: ' || description);

END;

/

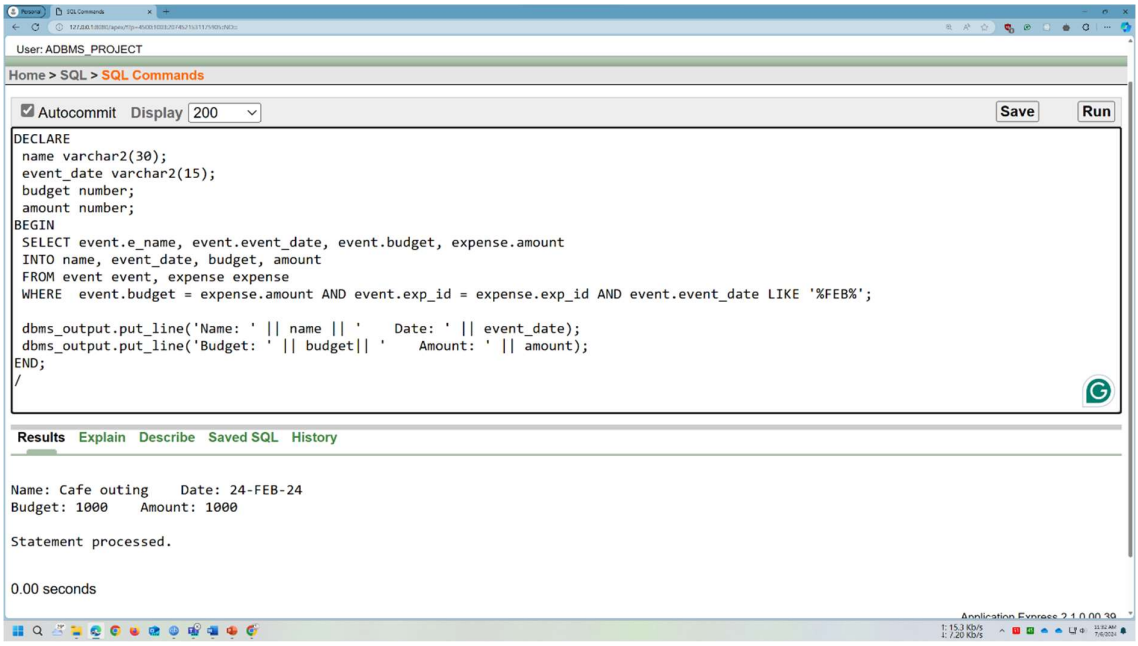


Joining:

Q.15 Display the event in which budget and expense are the same

Query:

```
DECLARE
name varchar2(30);
event_date varchar2(15);
budget number;
amount number;
BEGIN
SELECT event.e_name, event.event_date, event.budget, expense.amount
INTO name, event_date, budget, amount
FROM event event, expense expense
WHERE  event.budget = expense.amount AND event.exp_id = expense.exp_id AND
event.event_date LIKE '%FEB%';
dbms_output.put_line('Name: ' || name || '    Date: ' || event_date);
dbms_output.put_line('Budget: ' || budget|| '    Amount: ' || amount);
END;
/
```



Q.16 Display employee and their manager's information where employee name has 'Ashiq'

Query:

DECLARE

id number;

name varchar2(30);

designation varchar2(15);

mgr_id number;

mgr_name varchar2(30);

department varchar2(15);

BEGIN

SELECT emp.emp_id, emp.emp_name, emp.designation, mgr.emp_id, mgr.emp_name, mgr.department

INTO id, name, designation, mgr_id, mgr_name, department

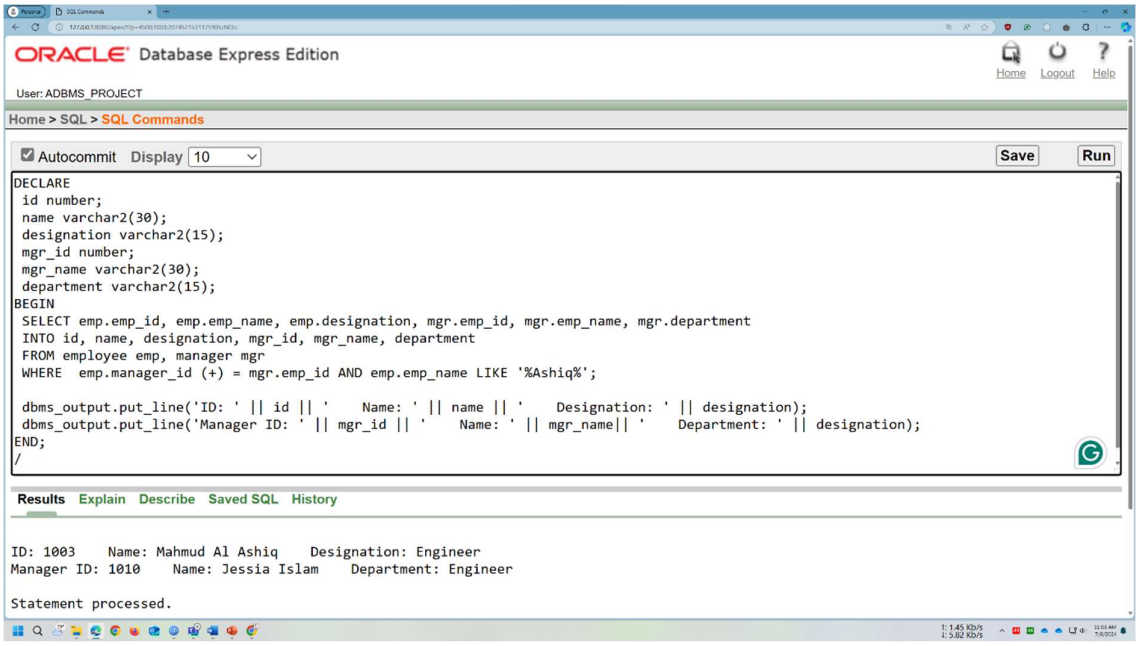
FROM employee emp, manager mgr

WHERE emp.manager_id (+) = mgr.emp_id AND emp.emp_name LIKE '%Ashiq%';

dbms_output.put_line('ID: ' || id || ' Name: ' || name || ' Designation: ' || designation);

dbms_output.put_line('Manager ID: ' || mgr_id || ' Name: ' || mgr_name|| ' Department: ' || designation);

END;



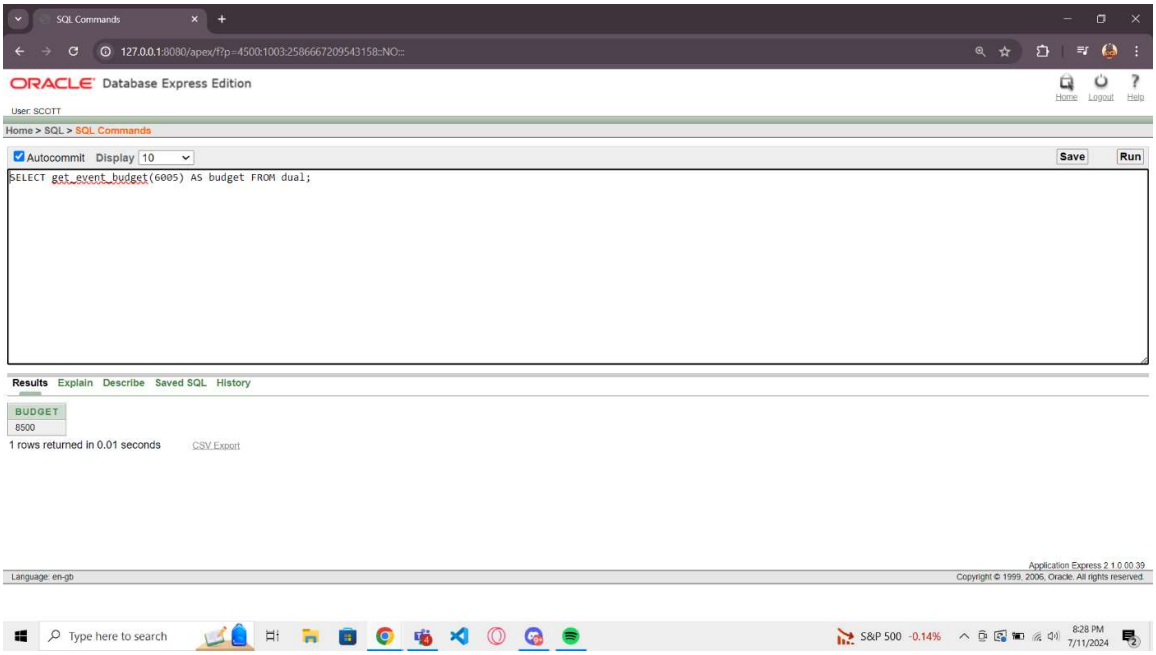
Advance PL/SQL

Stored Function:

Q.17 Create a stored function get_event_budget that takes an event ID as input and returns the budget of that event.

Query:

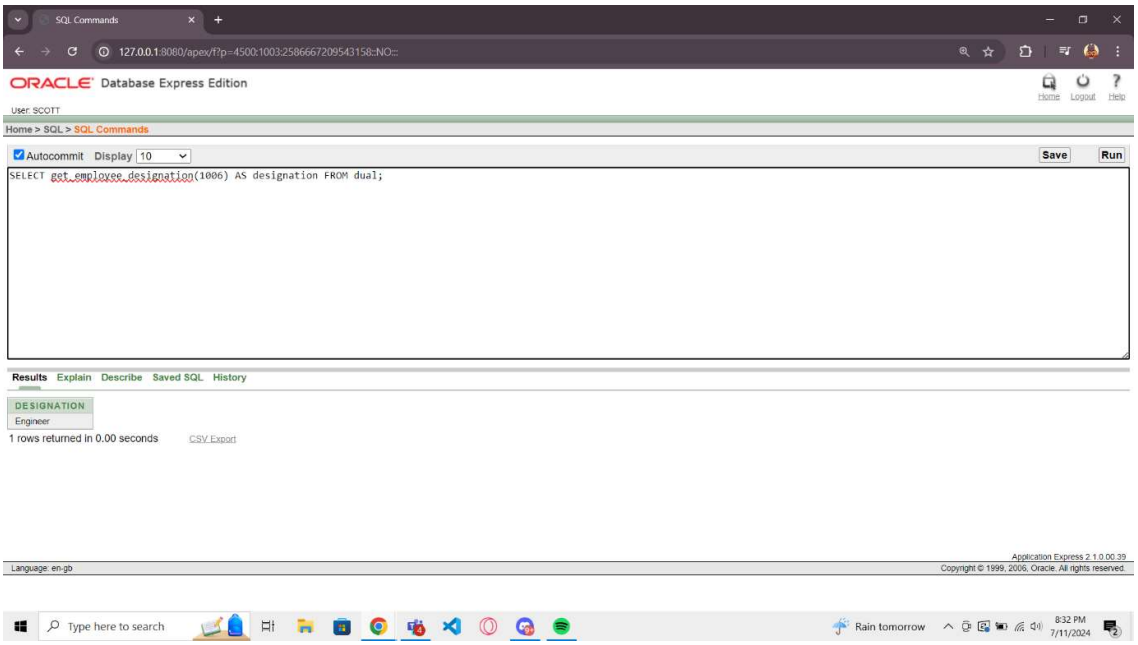
```
CREATE OR REPLACE FUNCTION get_event_budget (
p_event_id IN NUMBER
) RETURN NUMBER
IS
v_budget NUMBER;
BEGIN
SELECT budget INTO v_budget FROM event WHERE e_id = p_event_id;
RETURN v_budget;
EXCEPTION
WHEN NO_DATA_FOUND THEN
RETURN NULL;
WHEN OTHERS THEN
RAISE_APPLICATION_ERROR(-20001, 'An error occurred: ' || SQLERRM);
END;
```



Q.18 Create a stored function get_employee_designation that takes an employee ID as input and returns the designation of that employee.

Query:

```
CREATE OR REPLACE FUNCTION get_employee_designation (
p_emp_id IN NUMBER
) RETURN VARCHAR2
IS
v_designation VARCHAR2(10);
BEGIN
SELECT designation INTO v_designation FROM employee WHERE emp_id = p_emp_id;
RETURN v_designation;
EXCEPTION
WHEN NO_DATA_FOUND THEN
RETURN NULL;
WHEN OTHERS THEN
RAISE_APPLICATION_ERROR(-20001, 'An error occurred: ' || SQLERRM);
END;
/
```



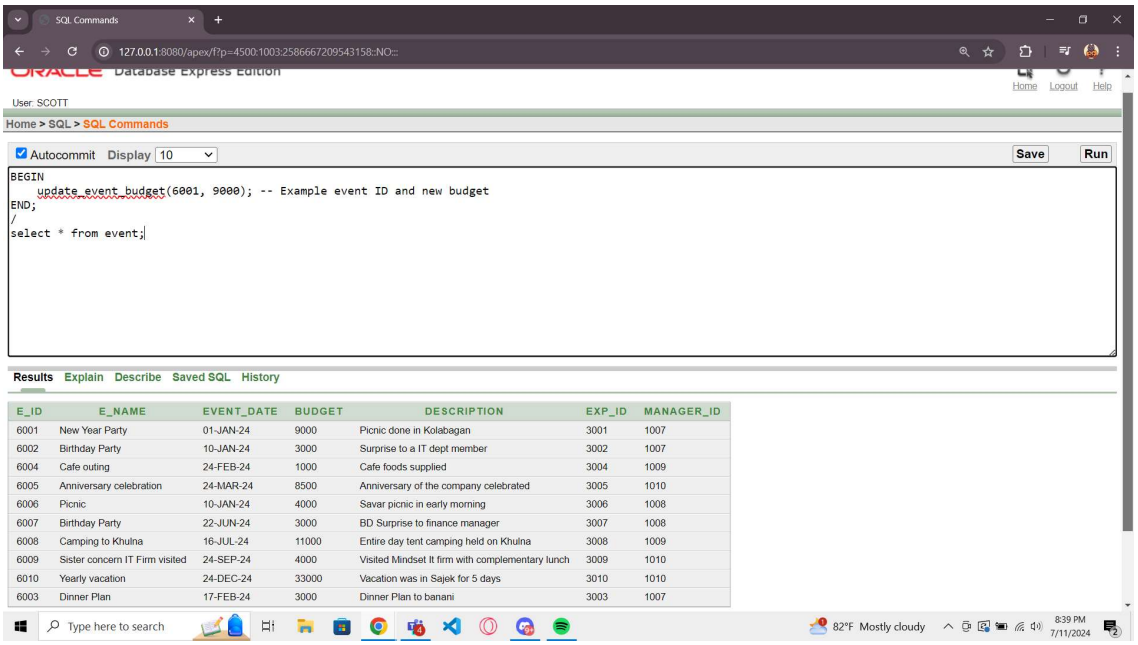
Stored Procedure:

Q.19 Create a stored procedure update_event_budget that takes an event ID and a new budget amount as input, then updates the budget for that event.

Query:

```
CREATE OR REPLACE PROCEDURE update_event_budget (
p_event_id IN NUMBER,
p_new_budget IN NUMBER) IS
BEGIN
UPDATE event SET budget = p_new_budget WHERE e_id = p_event_id;
IF SQL%ROWCOUNT = 0 THEN
RAISE_APPLICATION_ERROR(-20002, 'Event ID not found');
END IF;
COMMIT;
DBMS_OUTPUT.PUT_LINE('Budget updated successfully for event ID ' || p_event_id);
EXCEPTION
WHEN OTHERS THEN
ROLLBACK;
RAISE_APPLICATION_ERROR(-20001, 'An error occurred: ' || SQLERRM);
```

END;



Q.20 Create a stored procedure add_new_sponsor that takes sponsor details as input and adds a new sponsor to the database.

Query:

CREATE OR REPLACE PROCEDURE add_new_sponsor (

p_sp_id IN NUMBER,

p_description IN VARCHAR2,

p_sp_name IN VARCHAR2,

p_manager_id IN NUMBER) IS

BEGIN

INSERT INTO sponsor (sp_id, description, sp_name, manager_id)

VALUES (p_sp_id, p_description, p_sp_name, p_manager_id);

COMMIT;

DBMS_OUTPUT.PUT_LINE('Sponsor added successfully with ID ' || p_sp_id);

EXCEPTION

WHEN OTHERS THEN

ROLLBACK;

RAISE_APPLICATION_ERROR(-20001, 'An error occurred: ' || SQLERRM);

END;

/

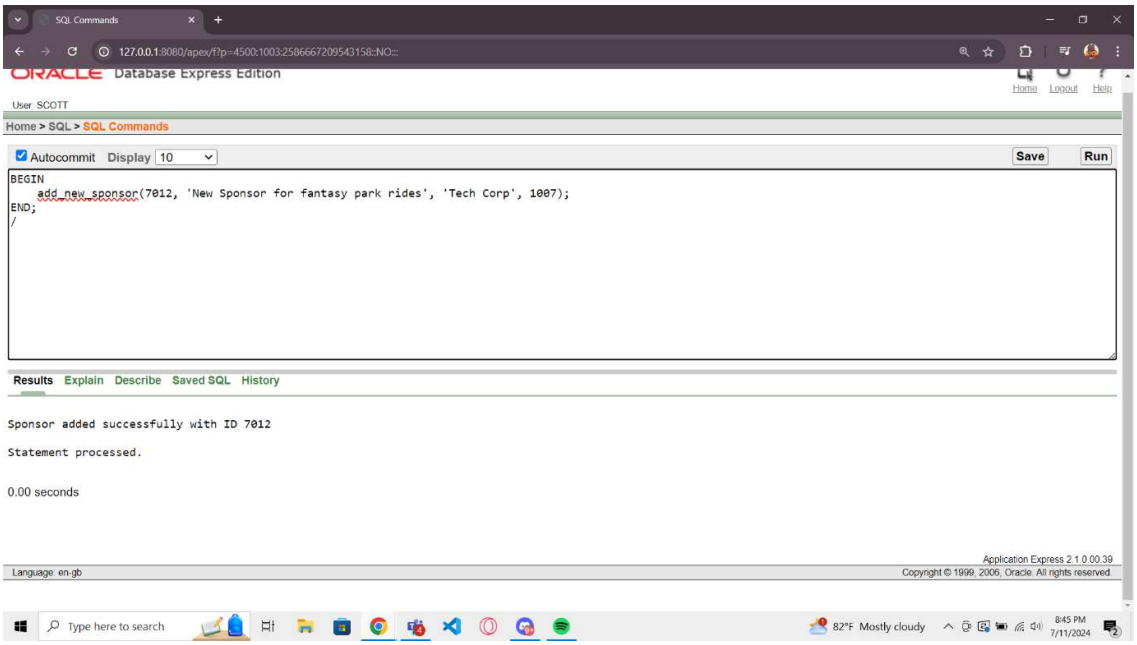
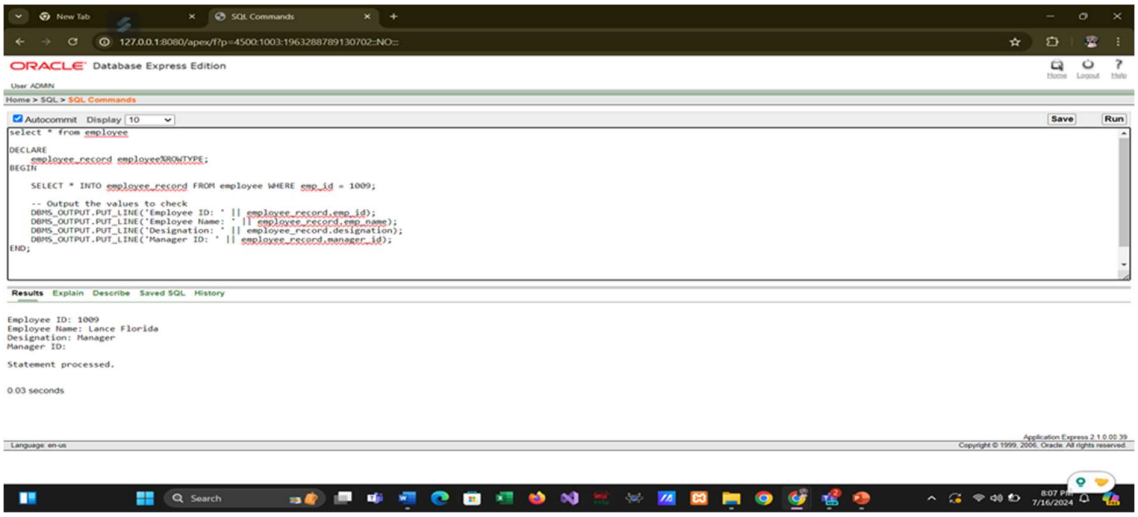


Table-based Record:

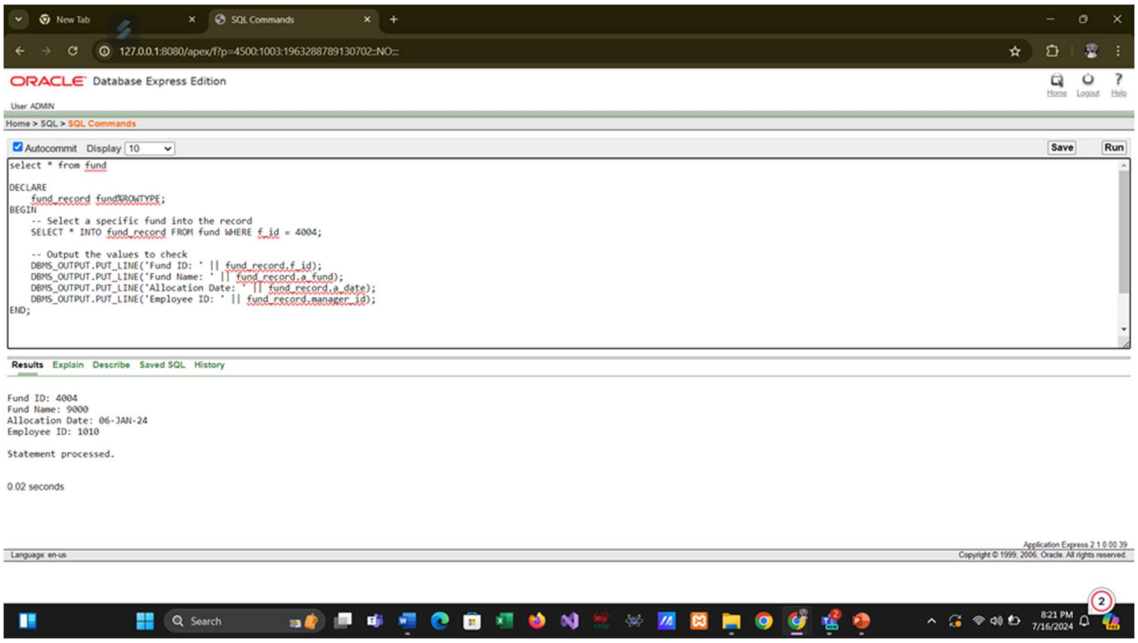
Q.21 Write a table-based record that retrieves a employee details.

```
DECLARE

employee_record employee%ROWTYPE;

BEGIN


SELECT * INTO employee_record FROM employee WHERE emp_id = 1009;


-- Output the values to check

DBMS_OUTPUT.PUT_LINE('Employee ID: ' || employee_record.emp_id);

DBMS_OUTPUT.PUT_LINE('Employee Name: ' || employee_record.emp_name);

DBMS_OUTPUT.PUT_LINE('Designation: ' || employee_record.designation);

DBMS_OUTPUT.PUT_LINE('Manager ID: ' || employee_record.manager_id);

END;
```



Q.22 Write a table-based record that retrieves the company's specific fund details.

```
DECLARE
fund_record fund%ROWTYPE;
BEGIN
-- Select a specific fund into the record
SELECT * INTO fund_record FROM fund WHERE f_id = 4004;

-- Output the values to check
DBMS_OUTPUT.PUT_LINE('Fund ID: ' || fund_record.f_id);
DBMS_OUTPUT.PUT_LINE('Fund Name: ' || fund_record.a_fund);
DBMS_OUTPUT.PUT_LINE('Allocation Date: ' || fund_record.a_date);
DBMS_OUTPUT.PUT_LINE('Employee ID: ' || fund_record.manager_id);
END;
```



Explicit Cursor:

Q.23 Create an explicit cursor employee_cursor that retrieves all employees working under a specific manager.

DECLARE

v_emp_id employee.emp_id%TYPE;

v_emp_name employee.emp_name%TYPE;

v_designation employee.designation%TYPE;

v_manager_id employee.manager_id%TYPE;

CURSOR employee_cursor IS

SELECT emp_id, emp_name, designation, manager_id

FROM employee

WHERE manager_id = 1007;

BEGIN

OPEN employee_cursor;

LOOP

FETCH employee_cursor INTO v_emp_id, v_emp_name, v_designation, v_manager_id;

EXIT WHEN employee_cursor%NOTFOUND;

DBMS_OUTPUT.PUT_LINE('Employee ID: ' || v_emp_id);

DBMS_OUTPUT.PUT_LINE('Employee Name: ' || v_emp_name);

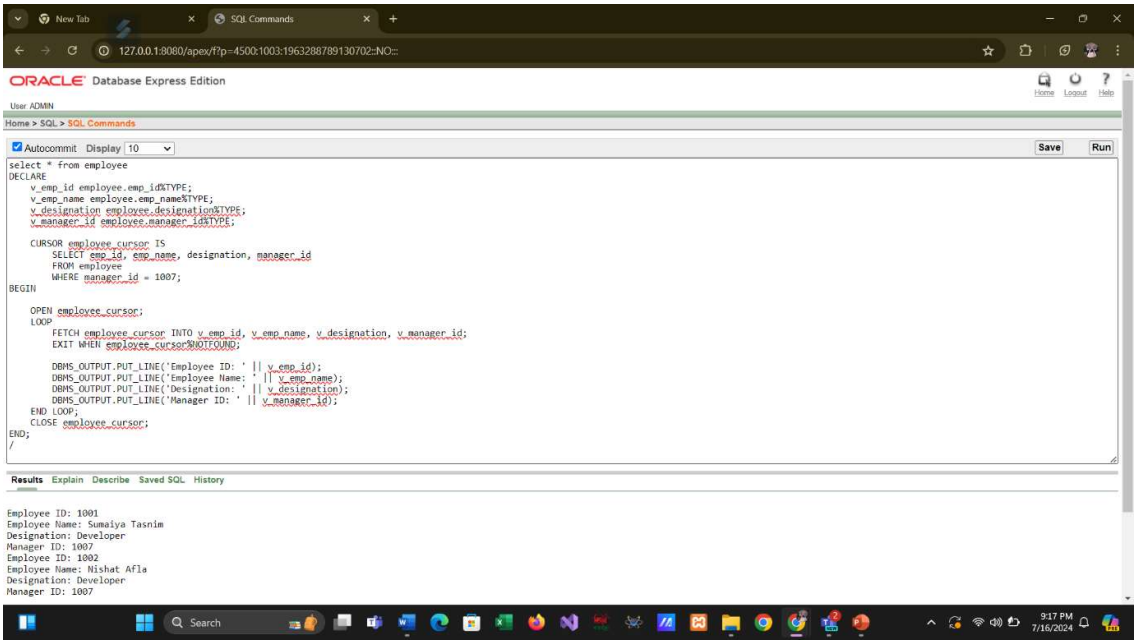
DBMS_OUTPUT.PUT_LINE('Designation: ' || v_designation);

DBMS_OUTPUT.PUT_LINE('Manager ID: ' || v_manager_id);

END LOOP;

CLOSE employee_cursor;

END;



Q.24 Create an explicit cursor event_cursor that retrieves all event with a specified manager ID.

DECLARE

CURSOR event_cursor IS

SELECT e_id, e_name, event_date, budget, description, exp_id, manager_id

FROM event

WHERE manager_id = 1009;

v_e_id event.e_id%TYPE;

v_e_name event.e_name%TYPE;

v_event_date event.event_date%TYPE;

v_budget event.budget%TYPE;

v_description event.description%TYPE;

v_exp_id event.exp_id%TYPE;

v_manager_id event.manager_id%TYPE;

BEGIN

OPEN event_cursor;

LOOP

FETCH event_cursor INTO v_e_id, v_e_name, v_event_date, v_budget, v_description, v_exp_id, v_manager_id;

EXIT WHEN event_cursor%NOTFOUND;

DBMS_OUTPUT.PUT_LINE('Event ID: ' || v_e_id);

DBMS_OUTPUT.PUT_LINE('Event Name: ' || v_e_name);

DBMS_OUTPUT.PUT_LINE('Event Date: ' || v_event_date);

DBMS_OUTPUT.PUT_LINE('Budget: ' || v_budget);

DBMS_OUTPUT.PUT_LINE('Description: ' || v_description);

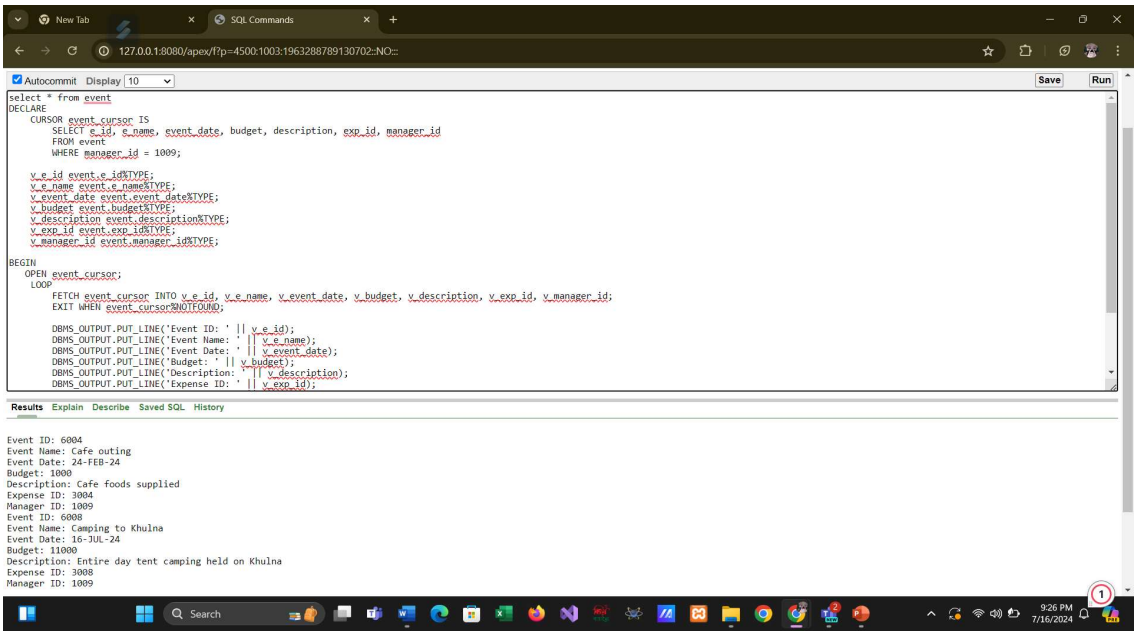
DBMS_OUTPUT.PUT_LINE('Expense ID: ' || v_exp_id);

DBMS_OUTPUT.PUT_LINE('Manager ID: ' || v_manager_id);

END LOOP;

CLOSE event_cursor;

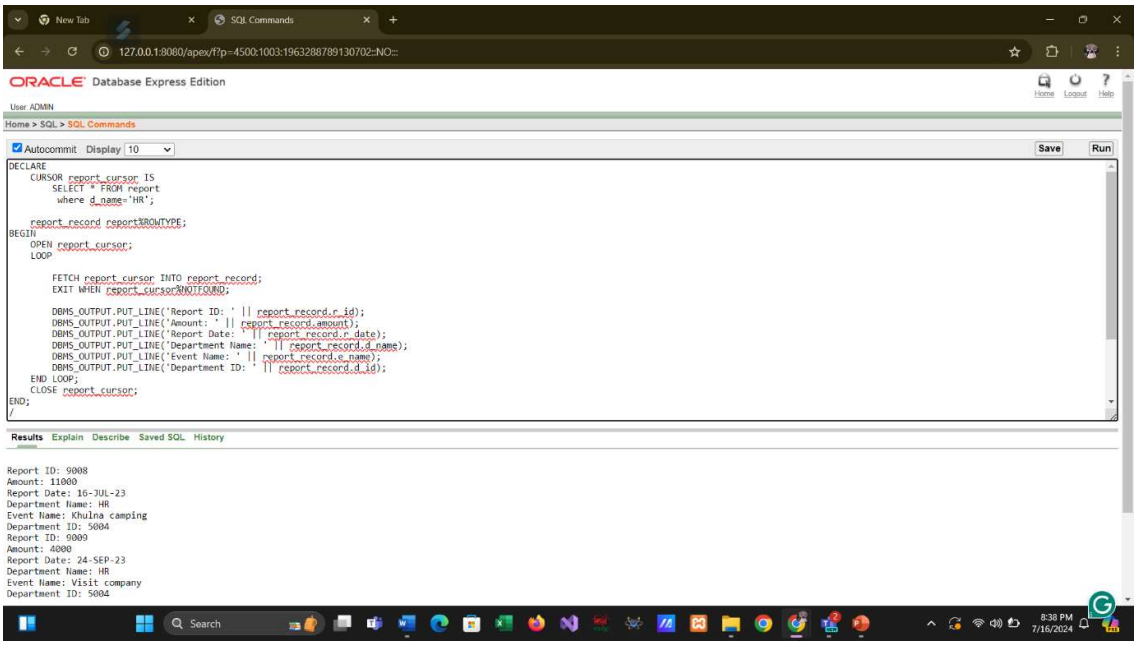
END;



Cursor-based Record:

Q.25 Create a cursor-based record that stores HR department's all reports.

```
DECLARE
CURSOR report_cursor IS
SELECT * FROM report
where d_name='HR';

report_record report%ROWTYPE;
BEGIN
OPEN report_cursor;
LOOP

FETCH report_cursor INTO report_record;
EXIT WHEN report_cursor%NOTFOUND;

DBMS_OUTPUT.PUT_LINE('Report ID: ' || report_record.r_id);
DBMS_OUTPUT.PUT_LINE('Amount: ' || report_record.amount);
DBMS_OUTPUT.PUT_LINE('Report Date: ' || report_record.r_date);
DBMS_OUTPUT.PUT_LINE('Department Name: ' || report_record.d_name);
DBMS_OUTPUT.PUT_LINE('Event Name: ' || report_record.e_name);
DBMS_OUTPUT.PUT_LINE('Department ID: ' || report_record.d_id);
END LOOP;
CLOSE report_cursor;
END;
```



Q.26 Create a cursor-based record to store proposal details by each department.

```
DECLARE

CURSOR proposal_cursor IS
SELECT * FROM proposal
WHERE d_id = 5002;

proposal_record proposal%ROWTYPE;
BEGIN

OPEN proposal_cursor;
LOOP

FETCH proposal_cursor INTO proposal_record;
EXIT WHEN proposal_cursor%NOTFOUND;

DBMS_OUTPUT.PUT_LINE('Proposal ID: ' || proposal_record.p_id);
DBMS_OUTPUT.PUT_LINE('Description: ' || proposal_record.description);
DBMS_OUTPUT.PUT_LINE('Proposal Date: ' || proposal_record.p_date);
DBMS_OUTPUT.PUT_LINE('Proposal Budget: ' || proposal_record.p_budget);
```

DBMS_OUTPUT.PUT_LINE('Status: ' || proposal_record.status);

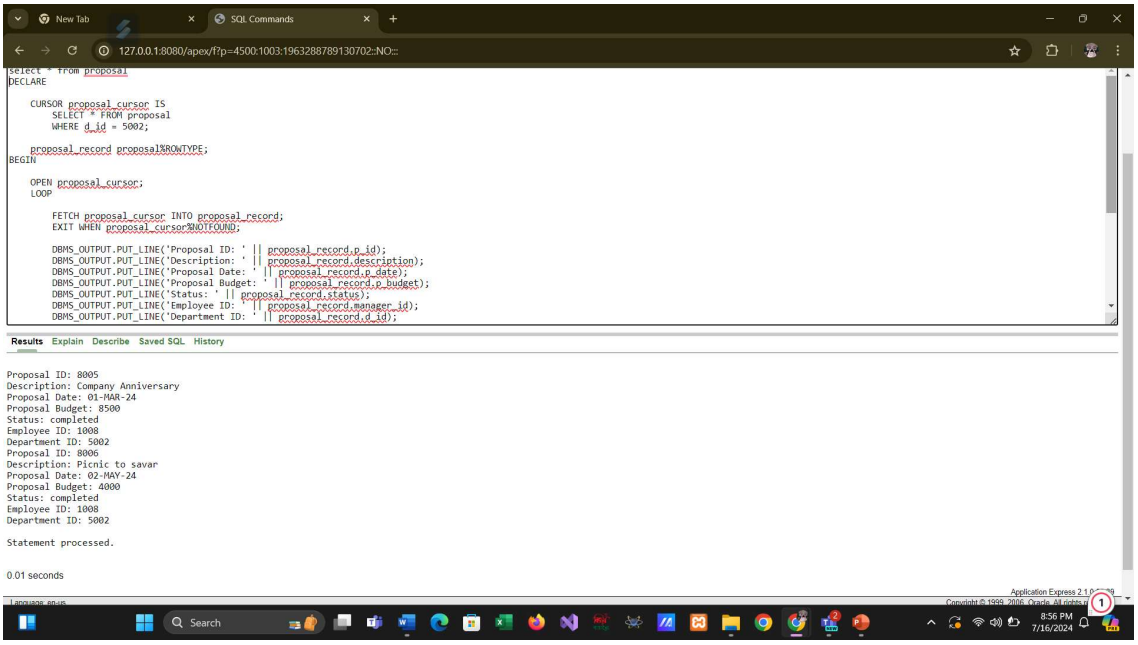
DBMS_OUTPUT.PUT_LINE('Employee ID: ' || proposal_record.manager_id);

DBMS_OUTPUT.PUT_LINE('Department ID: ' || proposal_record.d_id);

END LOOP;

CLOSE proposal_cursor;

END;



Row-level Trigger:

Q.27 Write a row-level trigger log_event_update that logs any updates made to the events table.

Query:

CREATE OR REPLACE TRIGGER log_event_update

BEFORE UPDATE ON event

FOR EACH ROW

WHEN (NEW.e_id > 0)

BEGIN

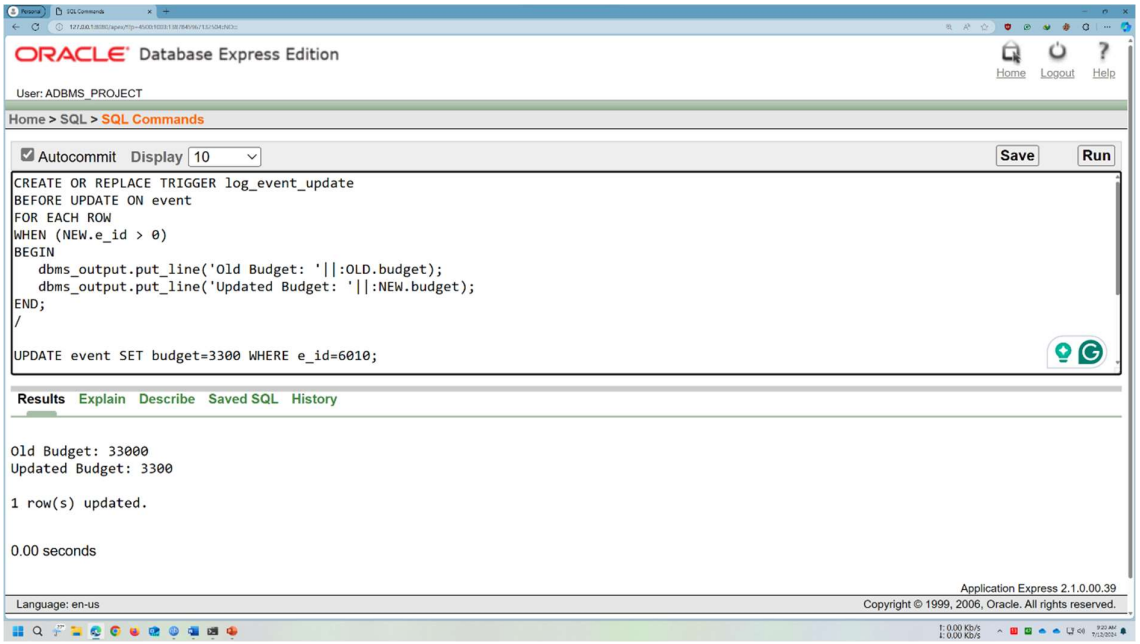
dbms_output.put_line('Old Budget: '||:OLD.budget);

dbms_output.put_line('Updated Budget: '||:NEW.budget);

END;

/

UPDATE event SET budget=3300 WHERE e_id=6010;



Q.28 Write a row-level trigger sponsor_added that logs any new sponsor added to the sponsor's table.

Query:

CREATE OR REPLACE TRIGGER sponsor_added

AFTER INSERT ON sponsor

FOR EACH ROW

WHEN (NEW.sp_id > 0)

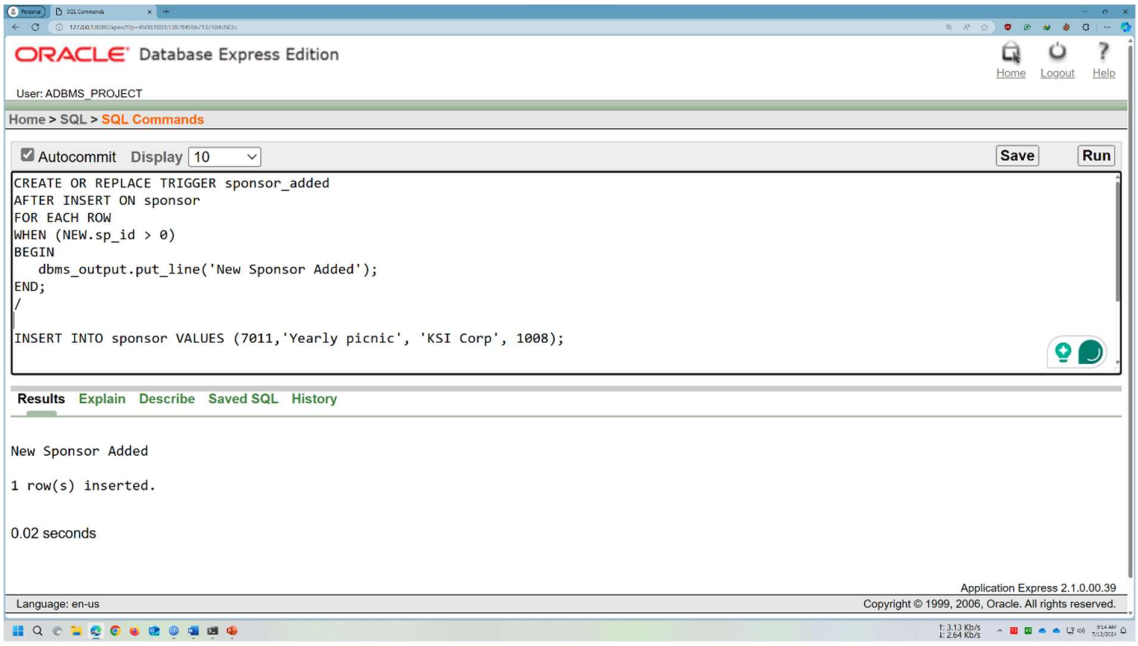
BEGIN

dbms_output.put_line('New Sponsor Added');

END;

/

INSERT INTO sponsor VALUES (7011,'Yearly picnic', 'KSI Corp', 1008);

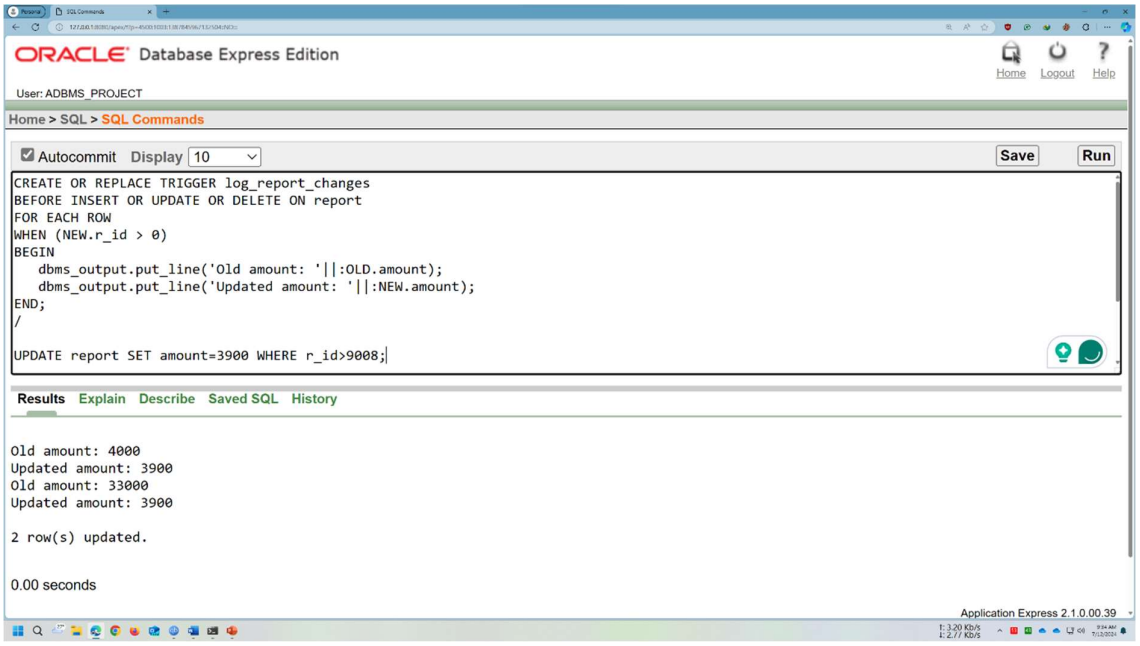


Statement-level Trigger:

Q.29 Write a statement-level trigger log_report_changes that logs whenever any report details are changed.

Query:

```
CREATE OR REPLACE TRIGGER log_report_changes
BEFORE INSERT OR UPDATE OR DELETE ON report
FOR EACH ROW
WHEN (NEW.r_id > 0)
BEGIN
dbms_output.put_line('Old amount: '||:OLD.amount);
dbms_output.put_line('Updated amount: '||:NEW.amount);
END;
/
UPDATE report SET amount=3900 WHERE r_id>9008;
```



Q.30 Write a statement-level trigger log_employee_changes that logs whenever any employee details are changed.

Query:

CREATE OR REPLACE TRIGGER log_employee_changes

BEFORE INSERT OR UPDATE OR DELETE ON employee

FOR EACH ROW

WHEN (NEW.emp_id > 0)

BEGIN

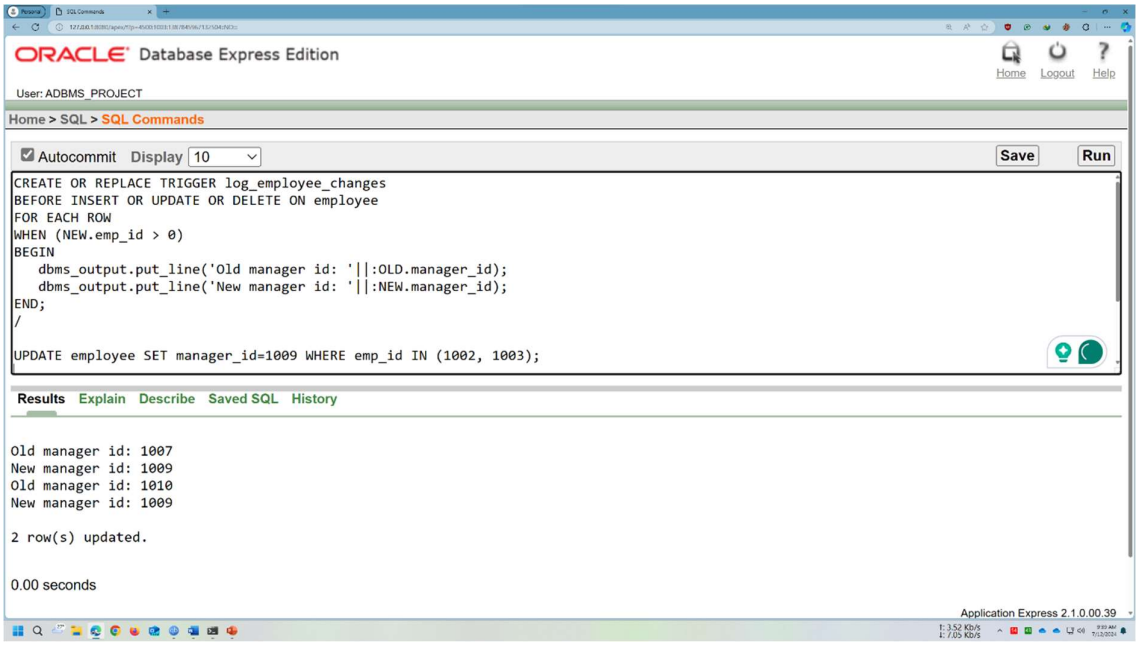
dbms_output.put_line('Old manager id: '||:OLD.manager_id);

dbms_output.put_line('New manager id: '||:NEW.manager_id);

END;

/

UPDATE employee SET manager_id=1009 WHERE emp_id IN (1002, 1003);



Package:

Q.31 Create a package event_mgmt that includes the functions, and procedures defined above.

Package creation:

CREATE OR REPLACE PACKAGE event_mgmt AS

FUNCTION get_event_budget (p_event_id IN NUMBER) RETURN NUMBER;

PROCEDURE update_event_budget (p_event_id IN NUMBER,p_new_budget IN NUMBER);

END event_mgmt;

Package body creation:

CREATE OR REPLACE PACKAGE BODY event_mgmt AS

FUNCTION get_event_budget (p_event_id IN NUMBER) RETURN NUMBER AS

v_budget NUMBER;

BEGIN

SELECT budget INTO v_budget FROM event WHERE e_id = p_event_id;

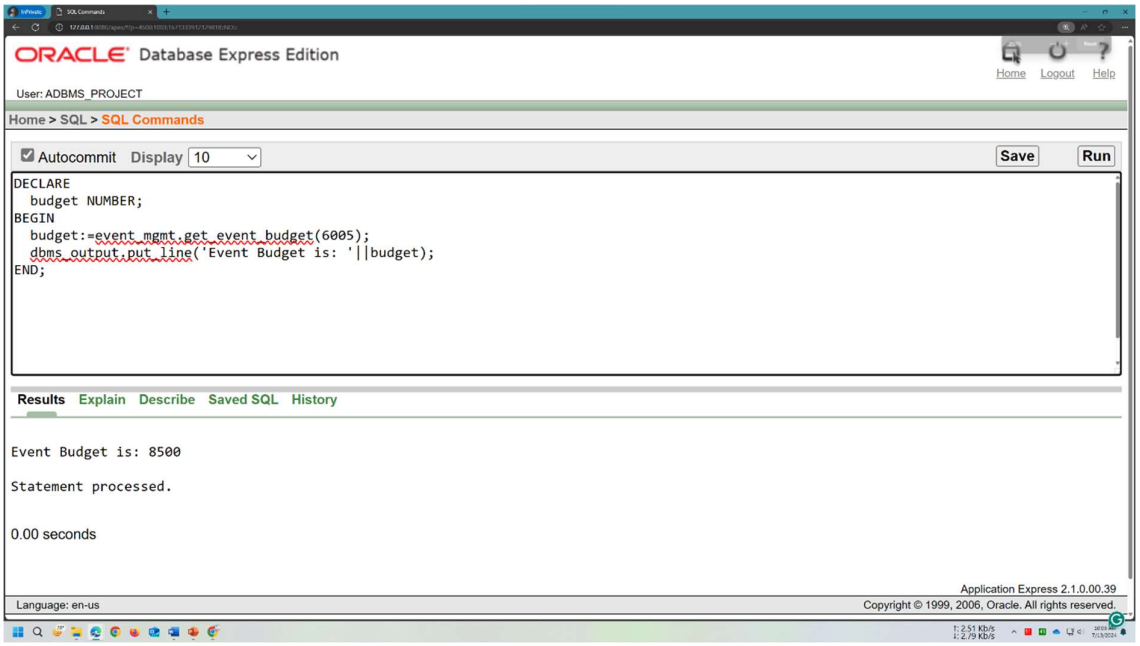
RETURN v_budget;

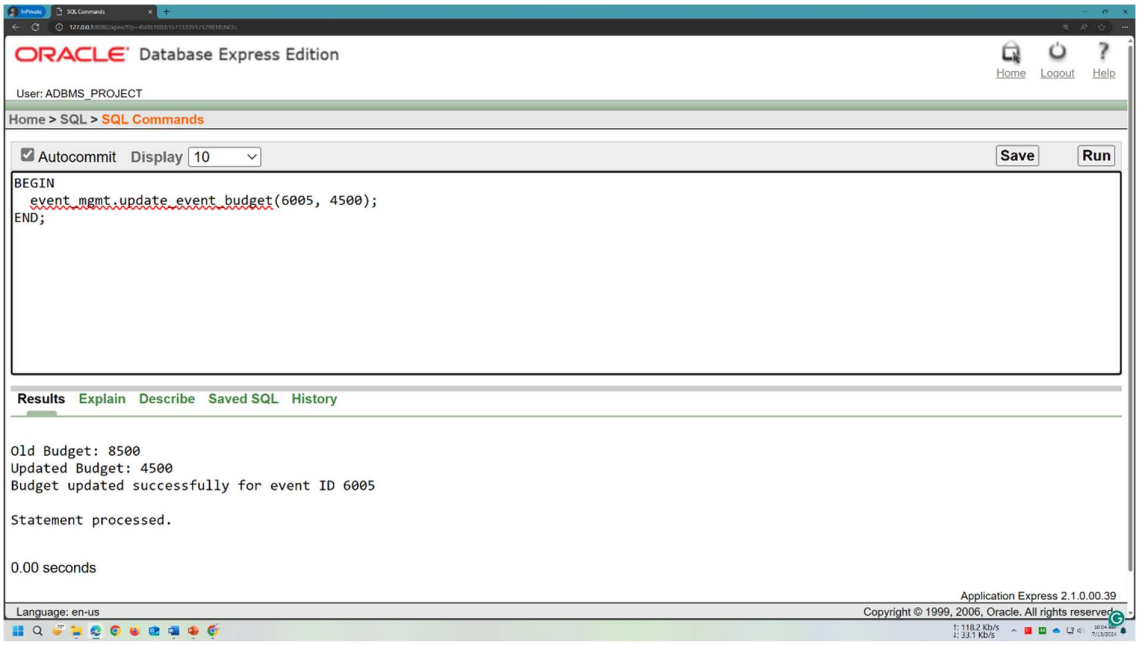
END;

```
PROCEDURE update_event_budget (p_event_id IN NUMBER, p_new_budget IN
NUMBER) AS
BEGIN
UPDATE event SET budget = p_new_budget WHERE e_id = p_event_id;
IF SQL%ROWCOUNT = 0 THEN
RAISE_APPLICATION_ERROR(-20002, 'Event ID not found');
END IF;
COMMIT;
DBMS_OUTPUT.PUT_LINE('Budget updated successfully for event ID ' || p_event_id);
END;
END event_mgmt;
```

Package calling:

```
DECLARE
budget NUMBER;
BEGIN
budget:=event_mgmt.get_event_budget(6005);
dbms_output.put_line('Event Budget is: '||budget);
event_mgmt.update_event_budget(6005, 4500);
END;
```





Conclusion:

For future improvements, the system could benefit from enhanced automation features, such as automated fund approval workflows, and better integration of employee feedback through digital surveys. Additionally, introducing predictive analytics could help in better forecasting event budgets and managing resources more efficiently, further optimizing the process for both the management and employees.