INSTITUTE OF TECHNOLOGY, NIRMA UNIVERSITY

2CS402 DATABASE MANAGEMENT SYSTEMS

INNOVATIVE ASSIGNMENT

RELATIONAL ALGEBRA AND SQL QUERY SIMULATOR

PROJECT FEATURES -

1) Allows creation, deletion, updation and insertion of records in tables
2) Allows conversion of SQL query to Relational Algebra and vice versa
3) Provides for retrieving data from tables using SQL queries
4) Interactive GUI built using Tkinter library of python

PROJECT DEMONSTRATION –

1) Creating table **Department** -

SQL Query –

```
create table department( deptno number(10), dname varchar2(14), loc varchar2(13) );
```

Input Screen-

2) Inserting data into table **Department -**

SQL Queries-

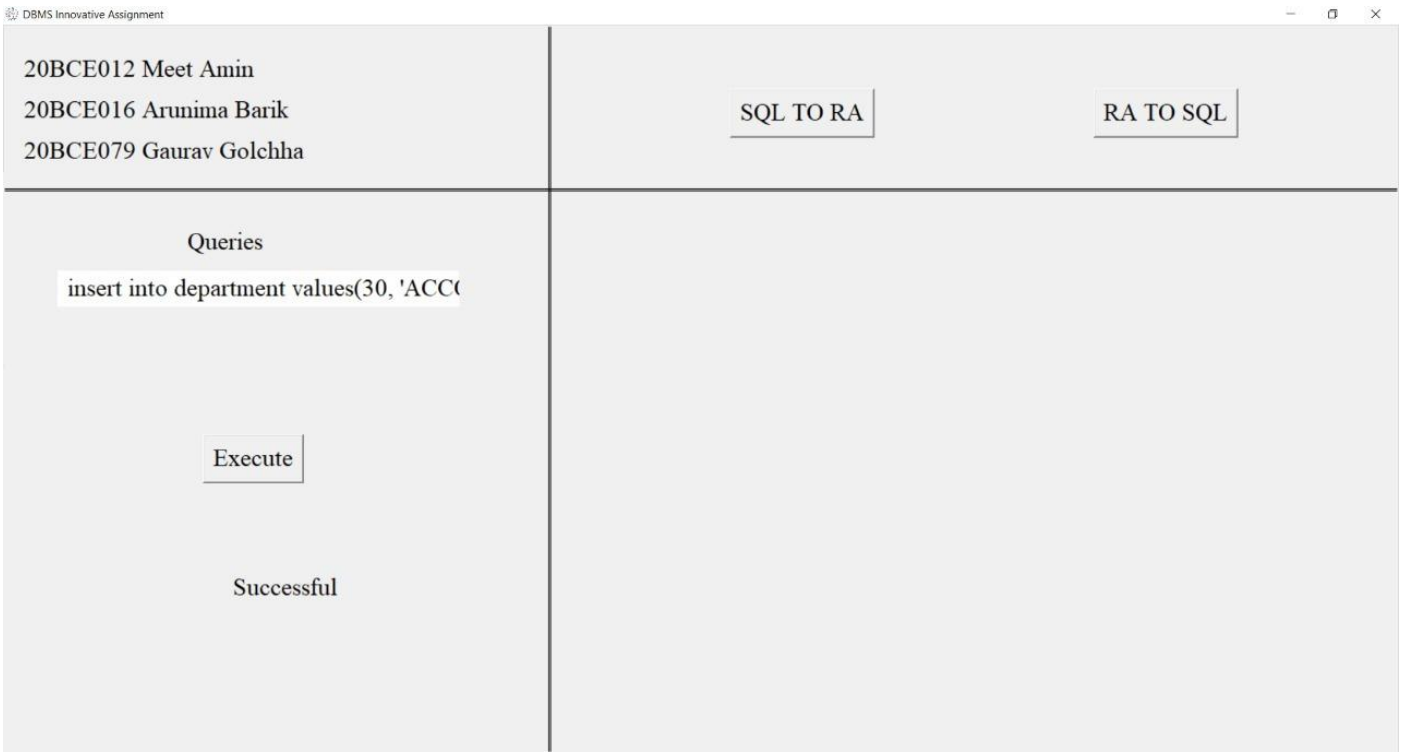
insert into department values(30, 'ACCOUNTING', 'NEW YORK');

insert into department values(60, 'RESEARCH', 'DALLAS');

insert into department values(90, 'SALES', 'CHICAGO');

insert into department values(110, 'MARKETING', 'BOSTON');

Input Screen-



3) Creating table **Employees** -

SQL Query –

CREATE TABLE employees(employee_id NUMBER(6),first_name VARCHAR2(20),last_name VARCHAR2(25),email VARCHAR2(25),phone_number VARCHAR2(20),hire_date DATE,job_id VARCHAR2(40),salary NUMBER(8,2),commission_pct NUMBER(2,2),manager_id NUMBER(6),department_id NUMBER(4));

Input Screen –

4) Inserting data into table **Employees -**

SQL Queries –

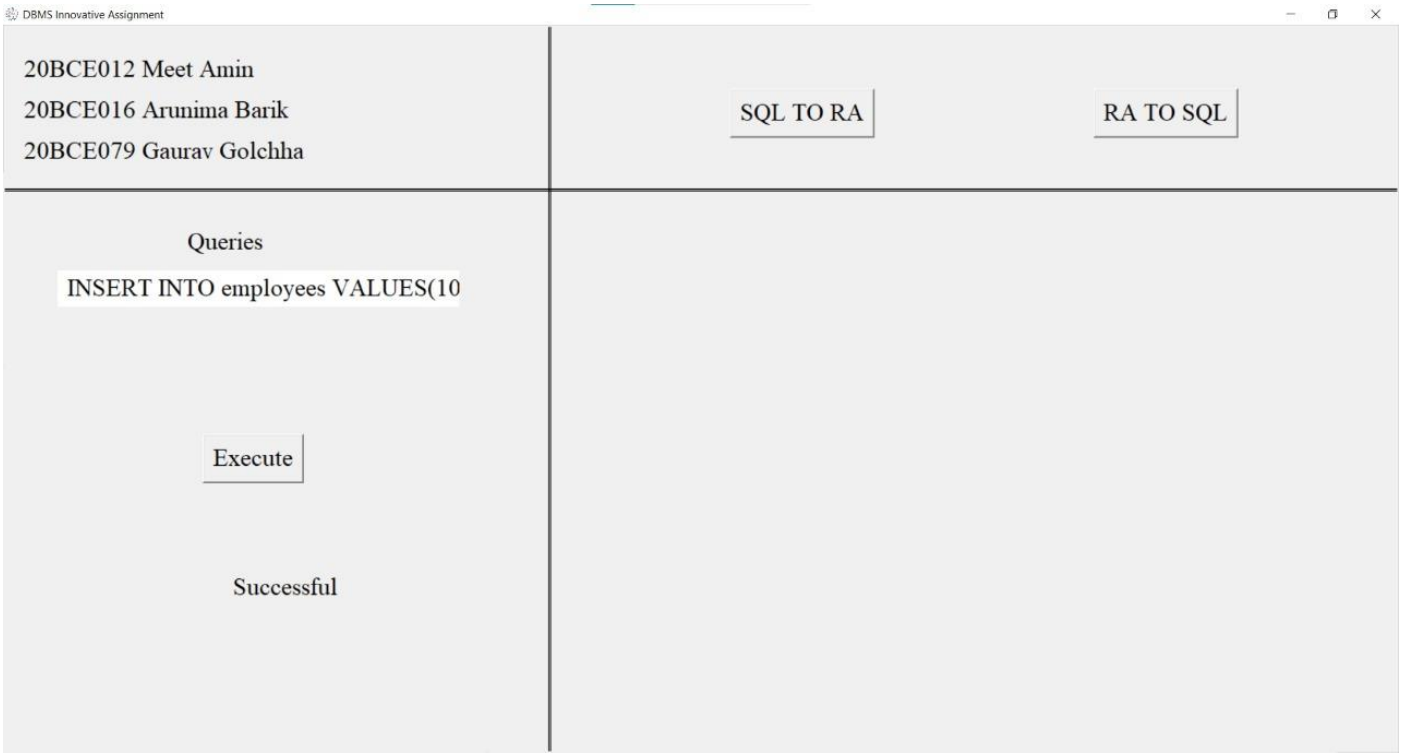
INSERT INTO employees VALUES(106, 'Valli', 'Pataballa', 'VPATABAL','590.423.4560', TO_DATE('2001-09-20','YYYY-MM-DD'), 'FINANCE ACCOUNTANT', 4800.00, 0.00, 103, 60);

INSERT INTO employees VALUES(114, 'Den', 'Raphaely', 'DRAPHEAL','515.127.4561',TO_DATE('1990-09-01','YYYY-MM-DD'), 'SALES CLERK',11000.00, 0.00, 100, 30);

INSERT INTO employees VALUES(119, 'Karen', 'Colmenares','KCOLMENA', '515.127.4566', TO_DATE('1987-07-06','YYYY-MM-DD'),'CLERK', 2500.00, NULL, 114, 30);

INSERT INTO employees VALUES(206, 'William', 'Gietz', 'WGIETZ','515.123.8181', TO_DATE('2005-07-06','YYYY-MM-DD'), 'ACCOUNTANT',8300.00, NULL, 205, 110);

Input Screen-

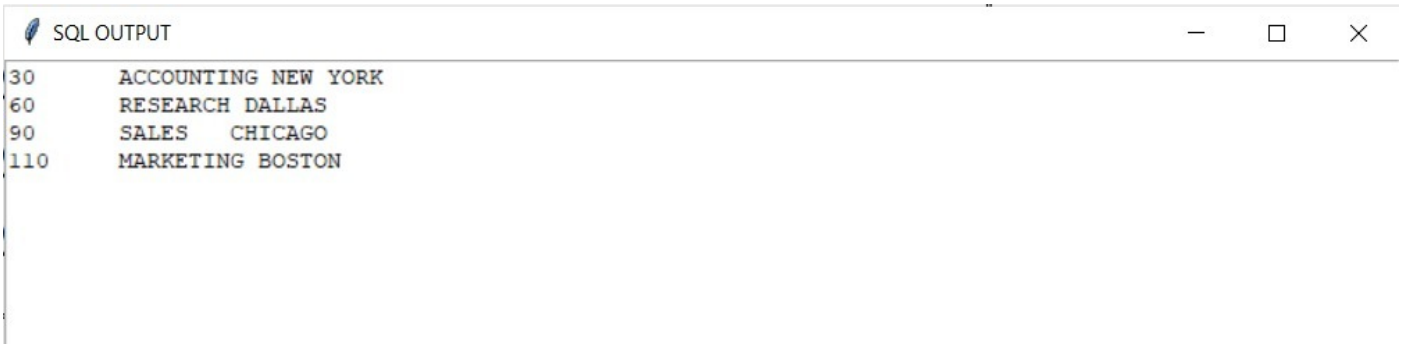


5) Visualizing tables just created –

Department-

select * from department;

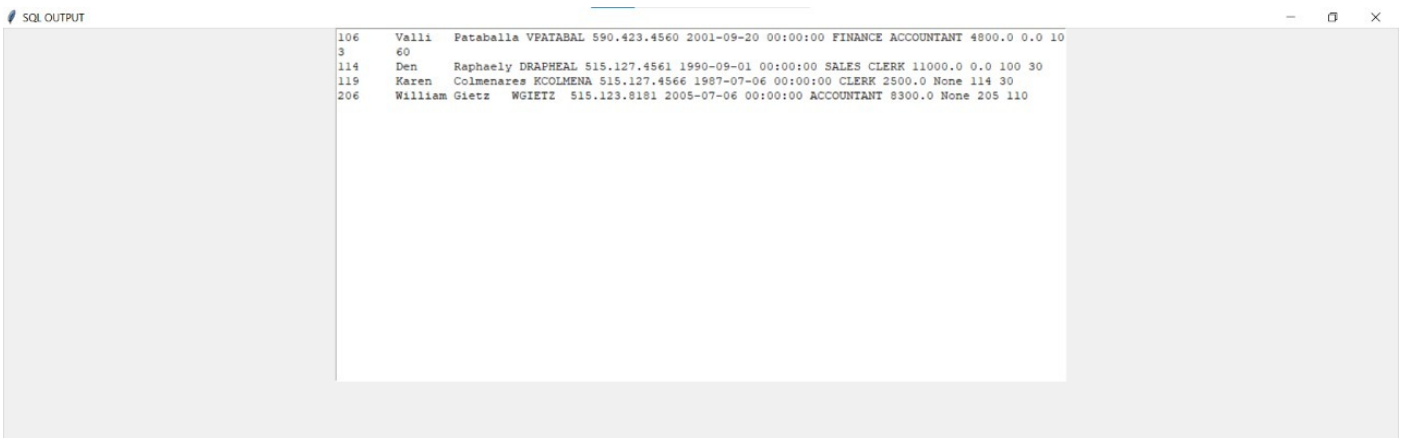
Output –



Employees –

select * from employees;

Output-

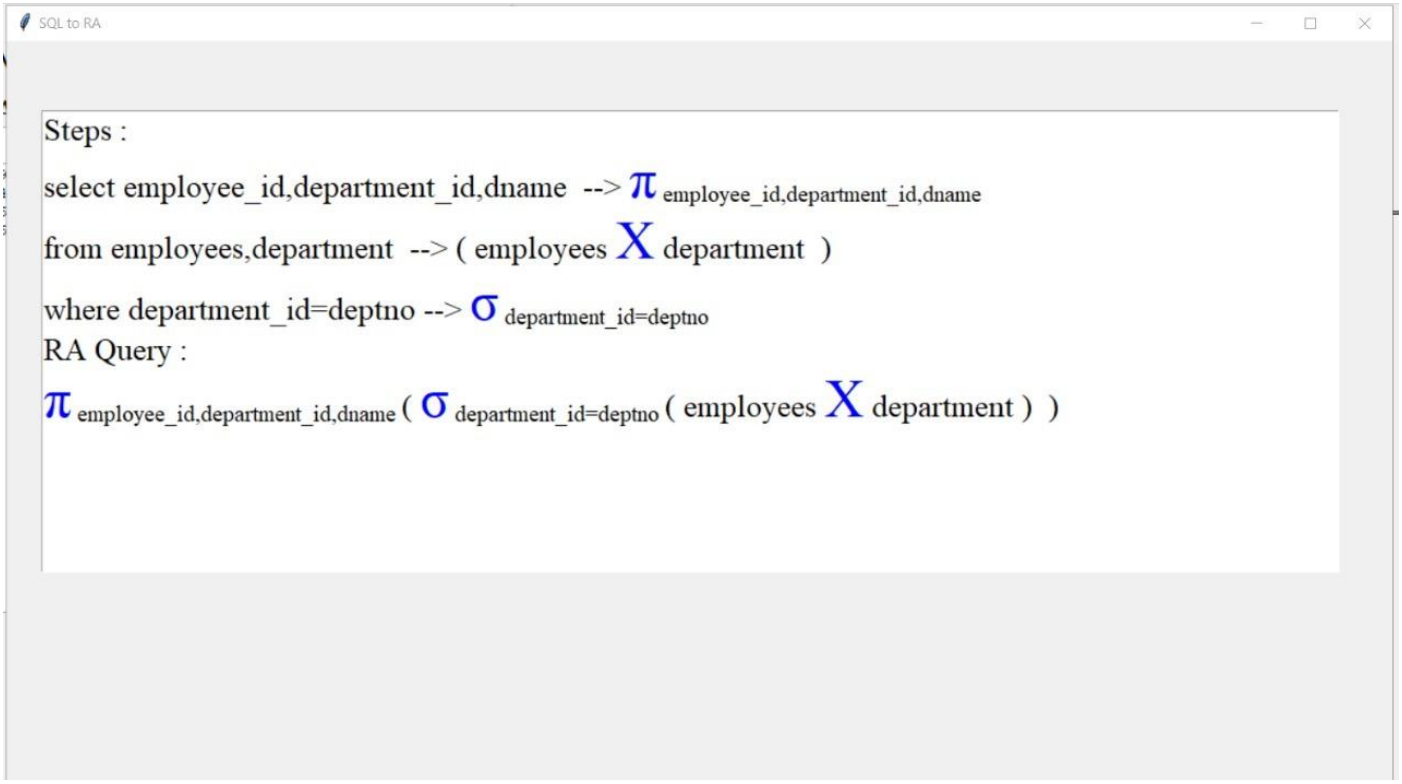


6) Convert an **SQL query** to **Relational Algebra** and retrieve its output –

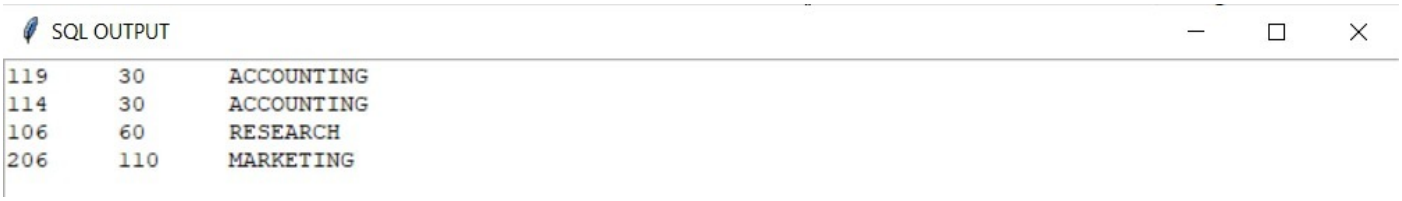
SQL Query-

select employee_id,department_id,dname from employees,department where department_id=deptno;

Relational Algebra –



Output-

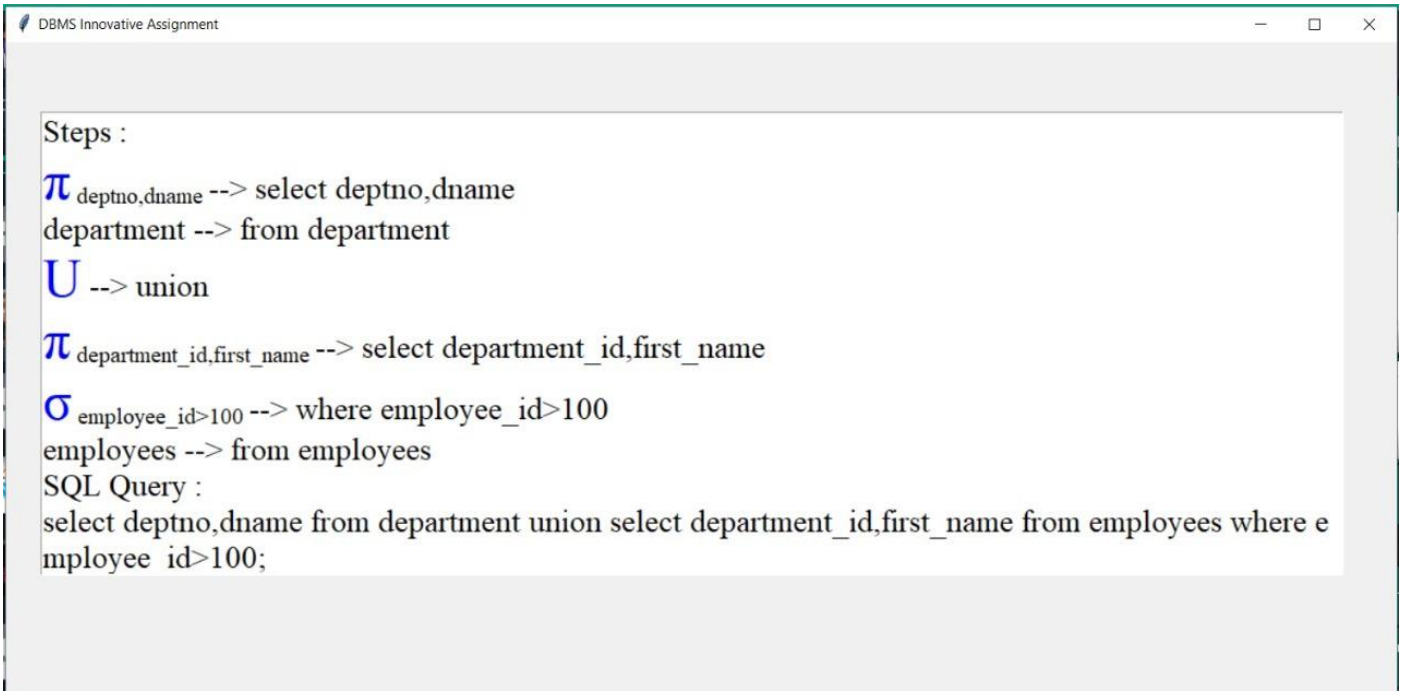


7) Convert **Relational Algebra** to **SQL query** and retrieve its output –

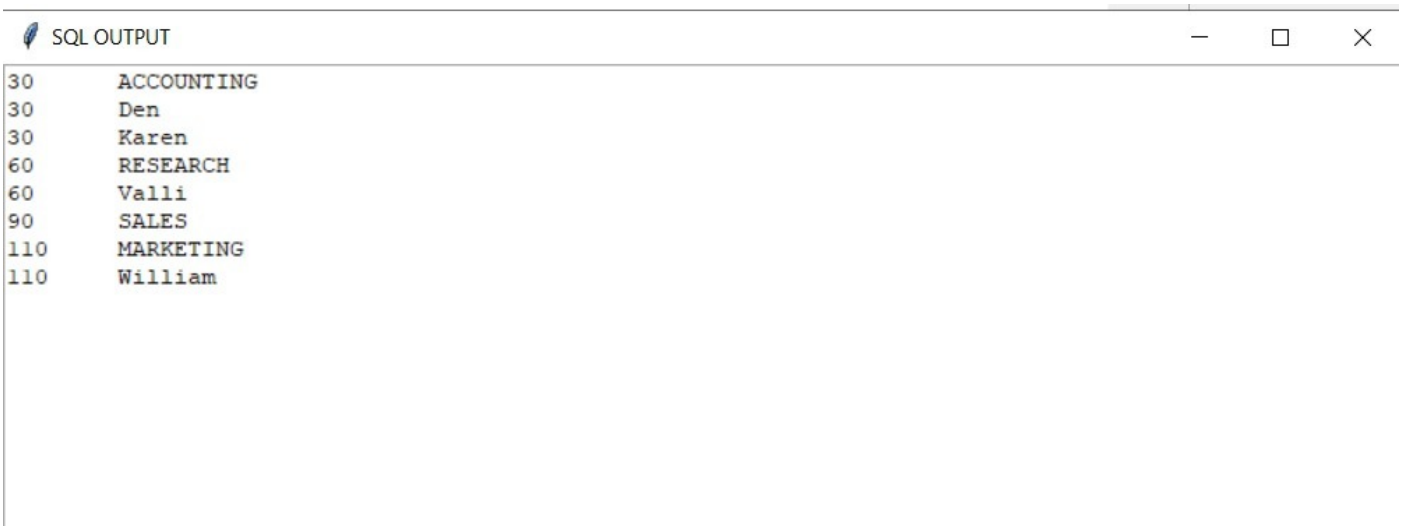
Relational Algebra –

π deptno,dname(department) U π department_id,first_name(σ employee_id > 100(employees))

SQL Query –



Output –



<u>ROLL NUMBERS –</u>

20BCE012 Meet Amin

20BCE016 Arunima Barik

20BCE079 Gaurav Golchha