Jaypee Institute of Information Technology

Database Systems & Web (15B11CI312)

Tutorial 9(Relational Algebra & PLSQL)

Relational Algebra

1. **Company Database**

EMPLOYEE	FNAME	MINIT	LNAME	SSN	BDATE	ADDRESS	SEX	SALARY	SUPERSSN	DNO
	John	B	Smith	123456789	1965-01-09	731 Fondren, Houston, TX	M	30000	333445555	5
	Franklin	T	Wong	333445555	1955-12-08	638 Voss, Houston, TX	M	40000	888665555	5
	Alicia	J	Zelaya	999887777	1968-07-19	3321 Castle, Spring, TX	F	25000	987654321	4
	Jennifer	S	Wallace	987654321	1941-06-20	291 Berry, Bellaire, TX	F	43000	888665555	4
	Ramesh	K	Narayan	666884444	1962-09-15	975 Fire Oak, Humble, TX	M	38000	333445555	5
	Joyce	A	English	453453453	1972-07-31	5631 Rice, Houston, TX	F	25000	333445555	5
	Ahmad	V	Jabbar	987987987	1969-03-29	980 Dallas, Houston, TX	M	25000	987654321	4
	James	E	Borg	888665555	1937-11-10	450 Stone, Houston, TX	M	55000	null	1

DEPT_LOCATIONS	DNUMBER	DLOCATION
	1	Houston
	4	Stafford
	5	Bellaire
	5	Sugarland
	5	Houston

DEPARTMENT	DNAME	DNUMBER	MGRSSN	MGRSTARTDATE
	Research	5	333445555	1988-05-22
	Administration	4	987654321	1995-01-01
	Headquarters	1	888665555	1981-06-19

WORKS_ON	ESSN	PNO	HOURS
	123456789	1	32.5
	123456789	2	7.5
	666884444	3	40.0
	453453453	1	20.0
	453453453	2	20.0
	333445555	2	10.0
	333445555	3	10.0
	333445555	10	10.0
	333445555	20	10.0
	999887777	30	30.0
	999887777	10	10.0
	987987987	10	35.0
	987987987	30	5.0
	987654321	30	20.0
	987654321	20	15.0
	888665555	20	null

PROJECT	PNAME	PNUMBER	PLOCATION	DNUM
	ProductX	1	Bellaire	5
	ProductY	2	Sugarland	5
	ProductZ	3	Houston	5
	Computerization	10	Stafford	4
	Reorganization	20	Houston	1
	Newbenefits	30	Stafford	4

DEPENDENT	ESSN	DEPENDENT_NAME	SEX	BDATE	RELATIONSHIP
	333445555	Alice	F	1986-04-05	DAUGHTER
	333445555	Theodore	M	1983-10-25	SON
	333445555	Joy	F	1958-05-03	SPOUSE
	987654321	Abner	M	1942-02-28	SPOUSE
	123456789	Michael	M	1988-01-04	SON
	123456789	Alice	F	1988-12-30	DAUGHTER
	123456789	Elizabeth	F	1967-05-05	SPOUSE

Q1: Retrieve the name and address of all employees who work for the 'Research' department.

Q2: For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthrate

Q3: Find the names of employees who work on all the projects controlled by department number 5.

Q4: Make a list of project numbers for projects that involve an employee whose last name is 'Smith', either as a worker or as a manager of the department that controls the project.

Q5: List the names of all employees with two or more dependents.

Q6: Retrieve the names of employees who have no dependents.

Q7: List the names of managers who have at least one dependent.

2. Consider the following schema

PLAYER(<u>PlayerCode</u>, PlayerName, Instrument, Age, OrchestraCode)

ORCHESTRA(<u>OrchestraCode</u>, OrchestraName, Town, Conductor)

EVENT(<u>Event#</u>, EventDate, Venue, OrchestraCode)

Answer the following queries using <u>relational algebra</u>

1. Get the names and instruments for all players.

2. Get the full details of the events held at the venue 'Ulster Hall'

3. Get the names of players who play the violin and are aged below 40.

4. Get a list of player names with the town their orchestra is based in.

5. Get a list of venues and event dates where the conductor is 'P Mancini'.

6. Get a list of player names and orchestra names with venues and event dates that the 'Omagh Brass Ensemble' is playing

7. Get the names of conductors who are also players

8. Get a list of player names and conductors