

Employee					Project			
Name	SSN	Salary	DNO	Super- ssn	Pname	Pno	Plocation	DNo
John	1	20000	55	33344	Px	1	Houston	55
Franklin	2	40000	55	88866	Py	2	stanford	55
Alicia	3	60000	44	98765	Pz	3	Berlin	44

Dept - Location		Department		
DNo	D_location	D Name	D no	Mgr_SSN
1	Houston			
44	Stanford			
55	Berlin	Research	55	33344
55	Houston	HR	44	98765
55	Sugarland	Admin	1	88866

ESSN	Dependent name	Sex	Relationship	B_date
1	Alice	F	daughter	2001
1	Joy	F	Son	2002
3	Abner	M	Spouse	2005

2a. Retrieve the name of departments that are located in Houston.

2b. List the names of employees whose dependents were born before 2005. Write this query using cross product.

2c. Find the name of the employee who manages the Research department.

2d. Write a query to retrieve the number of employees for each dept and their average salary.

2e. Compute the projection $\pi_{name, ssn} (\sigma_{salary > 20000} (Employee))$

2f. Compute $\pi_{Super_ssn} (Employee) \cup \pi_{Mgr_ssn} (Department)$

2g. Find all employees those have no dependent.

2b. Compute $\pi_{\text{dept_loc}}(\text{Employee}) \cap \pi_{\text{dept_loc}}(\text{Department})$

21. Write a query to rename the table name (Department -location to D-location) and its attribute to Dept no, Dept location

2j. Compute the natural join of Employee and Department (i.e. $(\text{Employee} \bowtie \text{Department})$.) And show the resultant table.

Mapped to CLO₃ [Apply data modeling and normalization techniques to design database for small to medium size enterprise] [10]

- 3- For the following scenario, first create an entity relationship (EERD) diagram and then convert it into a relational database schema. For Enhance ERD specify the type of specialization like 'o' and 'd' etc.

We want to design a database for Hospital management system for storing the record of patients, doctors, and other details. For each Patient we need to store their patient identification number, Name, date of birth, gender, address, disease, and telephone number. A patient can be Inpatient or outpatient. Inpatient has room number, date of admission and date of discharge other than the basic properties. Outpatient has visit date, and doctor's fee. An appointment can be made between patient and doctor to accommodate patient visit. A patient can have many appointments and a doctor can check multiple patients. An appointment has an id, date and time. A doctor has a doctor's id, name, date of birth, gender, address, and telephone number. A doctor can be a medical officer or a specialist. Medical officer overtime and Specialist has field area (specialization). Each patient has to pay the bill. A bill has bill number, total amount. Bill is paid through the payment. Patients can have multiple payments. A payment has payment number, details, and payment method. Payment can be made through card or cash. None of two payment methods has unique relationship with the entity.