

Assignment 1

Consider the following tables and give the answer of the following queries:

Person (driver-id, name, address)
Car (license, year, model)
Accident (report-number, location, date)
Owns (driver-id, license)
Participated (report-number, driver-id, license, damage-amount)
Employee (person-name, street, city)
Works (person-name, company-name, salary)
Company (company-name, city)
Manages (person-name, manager-name)

Write down the relational algebraic expressions and corresponding SQL queries for the following queries:

- Find the names of all employees who work for State Bank of India.
- Find the names and cities of residence of all employees who work for State Bank of India.
- Find the names, street address, and cities of residence of all employees who work for State Bank of India and earn more than RS 10,000 per annum.
- Find the names of all employees in this database who live in the same city as the company for which they work.
- Find the names of all employees who live in the same city and on the same street as do their managers.
- Find the names of all employees in this database who do not work for State Bank of India.
- Find the names of all employees who earn more than every employee of Bandhan Bank.
- Assume the companies may be located in several cities. Find all companies located in every city in which Bandhan Bank is located.

Assignment 2

■ Find if a given functional dependency is implied from a set of Functional Dependencies:

- For: $A \rightarrow BC$, $CD \rightarrow E$, $E \rightarrow C$, $D \rightarrow AEH$, $ABH \rightarrow BD$, $DH \rightarrow BC$
 - Check: $BCD \rightarrow H$
 - Check: $AED \rightarrow C$
- For: $AB \rightarrow CD$, $AF \rightarrow D$, $DE \rightarrow F$, $C \rightarrow G$, $F \rightarrow E$, $G \rightarrow A$
 - Check: $CF \rightarrow DF$
 - Check: $BG \rightarrow E$
 - Check: $AF \rightarrow G$
 - Check: $AB \rightarrow EF$
- For: $A \rightarrow BC$, $B \rightarrow E$, $CD \rightarrow EF$
 - Check: $AD \rightarrow F$

■ **Find Candidate Key using Functional Dependencies:**

1. Relational Schema $R(ABCDE)$. Functional dependencies: $AB \rightarrow C$, $DE \rightarrow B$, $CD \rightarrow E$
2. Relational Schema $R(ABCDE)$. Functional dependencies: $AB \rightarrow C$, $C \rightarrow D$, $B \rightarrow EA$