# ASSIGNMENT - DAY 8 (Databases)

## Relational Algebra :

Consider the relational database as given below and give an expression in the relational algebra to express each of the following queries:

Flights(flno, from, to, distance, departs)

Aircraft(aid, aname, range)

Certified(eid, aid)

Employees(eid, ename, salary).

1. Pilots are those employees who are certified on at least one aircraft.
2. An aircraft can be used for any flight provided it has sufficient range.
3. Pilots can pilot any flight provided they are certified on an aircraft with sufficient range.
4. Find flno of flights that can be piloted by every pilot whose salary is over $100,000. (Using Division Operator.)
5. Find eid's of pilots who are certified on some Boeing.
6. Find names of pilots who can operate planes with a range greater than 3,000 miles, but are not certified on any Boeing.
7. Find aid's of aircraft that can fly non-stop from LA to NY. Assume you don't already know the distance.

## Normalization:

A departmental store organized a event, in which a many customers participate. A customer can participate in many events and may be win or loose the event. The customers are divided into many categories like Gold, VIP , Silver etc. The discount is given to a customer on the basis of customer category. Following is the sample data of departmental store.

a. Identify the Functional Dependencies.
b. Normalized the database upto BCNF.
c. Provide the resultant table structure after each Normal Form.

| CUSTOMERID | EVENTNUMBER | WINNING | CUSTOMERGRADE | DISCOUNTRATE |
|---|---|---|---|---|
| C01 | E001,E005,E010 | Y,N,Y | Gold | 10% |
| C02 | E002,E005 | N,Y | VIP | 20% |
| C03 | E003,E007 | Y,Y | Gold | 10% |
| CO4 | E004 | N | Silver | 5% |