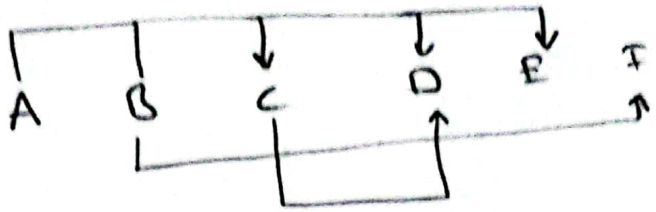
Q3: 1 $AB \rightarrow CDE$

$B \rightarrow F$

$C \rightarrow D$



a.) AB is the primary key of the diagram

b.) 1st Normal form: If a relation contains composite or multivalued attributes or if there is no data in our cell. Therefore 1st normal form is satisfied.

2nd Normal form: no partial fractional dependency

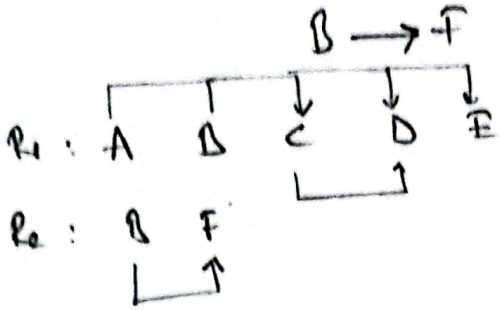
If you have composite primary key → consider else it is okay for 2nd Form

$B \rightarrow F$ partial key

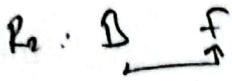
Not 2nd Normal form

= First Normal form

c-) 1NF ⟶ 2 NF



2NF ⟶ 3NF



3NF ✓

Q4.1 Store . ManagerID ——— Department . ManagerID

Employee . EmployeeID ——— Schedule . EmployeeID

There are associative entities as seen above.

We can apply denormalizing processes.

Q5

a.) We can define indexes on StudentName because of ordering,

or GPA because it needs to scan all database

Student . StudentID → to help join

Registration . (StudentID, CourseID) → retrieve all join

b.) Create index [name] on STUDENT(GPA)

Create unique clustered [name] on STUDENT(StudentID

Create index [name] on STUDENT(StudentName)

create clustered index [name] on

REGISTRATION(StudentID, CourseID)

a.)

i-) Page 150, 160, 170, 110, 120, 130, 140 -all pages

ii-) table scan 110, 120, 130, 140

iii-) Page 150, 170, 130

b.)

i-) table scan

ii-) Page 350, 360, 220, 210

iii) Page 350, 360, 210, 120