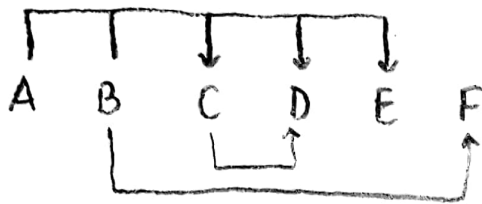


# Homework #8 Reprt

Cem Gülec, - 150117828

1)



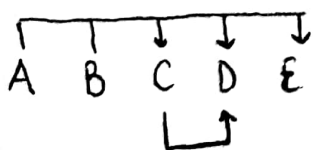
① Here, most base determinants needs to be found.

C, D, E and F are determined by some functional dependency, therefore they are not considered to be a key.

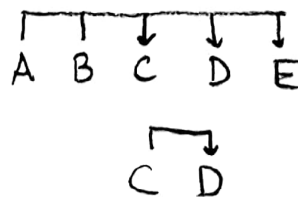
A + B construct Composite primary key (A, B)

- ②
- First of all, it is in 1NF because it has no multivalued attributes
  - It is not in 2NF because B has partial dependency.
  - If it is not in 2NF it is also not in 3NF. But, to further explain, it has transitive dependency on C, therefore it is not in 3NF.
  - Finally, normal form of this relation is **1NF** (first normal form)

③ 1NF → 2NF



2NF → 3NF



2) In the given structure representing a retail chain process happening, "Schedule" table is an associative entity which holds 2 ID attributes and 1 Date information attribute, which obviously is not an efficient table. (between Department and Employee)

Instead of creating/storing a table for it, having a relation defined (many to many) would brought efficiency to whole structure.

3)

a)

STUDENT ( StudentID, StudentName, CampusAddress, GPA)

REGISTRATION ( StudentID, CourseID, Grade)

- ① Student.StudentID : for joining and uniqueness purposes
- ② Registration ( StudentID + CourseID ) : for joining and uniqueness / composite primary key purposes  
↑  
composite key
- ③ Student.GPA : qualifying record retrieval or ordering purposes
- ④ Student.StudentName : ordering purposes.

b)

- ① Create Unique Clustered Index ixUniCluStuID.  
on Student(StudentID);
- ② Create Unique Clustered Index ixUniCluStuCID  
on Registration(StudentID, CourseID);
- ③ Create Index ixNonCluGPA on Student(GPA);
- ④ Create Index ixNonCluStuName on Student(StudentName);

4.a)

- i) Query 1: Since there is already an index created for SID it is used. Below data pages accessed are shown:

150, 160, 110, 120, 170, 130, 140

- ii) Query 2: Since there is no index created for Age, table scan will be used. Only data pages are accessed.

110, 120, 130, 140

- iii) Query 3: Since there is already index created for SID, index is used.

150, 170, 130

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4.b)

- i) Query 1: Since there is no index created for SID yet, table scan will be used. Only data pages are accessed.

100, 110, 120, 130

- ii) Query 2: Since only Age data is required, index page access is enough. Index pages already consisting of Age info

350, 360, 220, 230

- iii) Query 3: Index is used.

350, 360, 230, 120