

### Task 3

#### Real time application of joins

An SQL Join is used to combine data form different tables in a database that share a common column. Joins are used in many real time applications. One such field is social media platforms.

In social media platforms, table containing user information and their interest can be combined to provide relevant and customised feeds.

Based on the likes and comment given by the user joins can be used to suggest similar posts later.

Joins can be used to analyse the friends list of a user through which the platform can give suggestions for people with same interest and suggest mutual friends.

By frequently tracking the user preferences joins can be used to give personalized ads to customers.

#### Types of Normalization with examples

##### 1NF

Each column/row must contain single valued attribute

Std.Id	Std Name	Subject
1	Riya	Python
1 m	Riya	C
3	Joy	C

## 2NF

Table should be in 1NF and must not have partial dependency

Table 1

Std.Id	Sub.Id	Score	Teacher
1	XXX	50	A
2	YYY	45	B
3	ZZZ	20	C

In Table1, teacher attribute shows partial dependency. It can be represented in 2NF as below

Std.Id	Sub.Id	Score
1	XXX	50
2	YYY	45
3	ZZZ	20

Sub.Id	Teacher
XXX	A
YYY	B
ZZZ	C

## 3NF

Table should be in 2NF and must not have transitive dependency

Table 1

Std.Id	Sub.Id	Score	Exam	Total Score
1	XXX	45	Internals	50
2	YYY	85	Finals	100
3	ZZZ	60	Practical	80

In Table 1 the attribute total score shows transitive dependency with exam. 3NF is as below

Std.Id	Sub.Id	Score
1	XXX	45
2	YYY	85
3	ZZZ	60

Exam	Total Score
Internals	50
Finals	100
Practical	80

### BCNF (Boyce Codd Normal Form)

Table must be in 3NF and primary key must be dependent on a super key

Std.Id	Subject	Teacher
1	Python	A
1	C	C
2	Java	D
3	Python	B

Subject is a prime attribute that depends on non prime attribute teacher. In BCNF,

Std.Id	Tchr.Id
1	101

1	102
2	103
3	104

Tchr.id	Teacher	Subject
101	A	Python
102	C	C
103	D	Java
104	B	Python

#### 4NF

Must be in BCNF and should not contain multi valued dependency

Std.Id	Std.Name	Course.Id	Course Name
1	Pooja	101	Python
1	Pooja	104	Java
2	Roopa	102	C
3	Rekha	103	C++

Std.Id	Std.Name
1	Pooja
2	Roopa
3	Rekha

Course.Id	Course.Name
101	Python
102	C
103	C++

104	Java
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## 5NF

Table should be in 4NF and must not have joined dependencies

Std.Name	Std.Course	Stu.Prof
Lakshmi	C++	John
Lakshmi	Java	Hari
Meenu	Python	Madhu
Meenu	C++	Gopika

Std.Course	Std.Prof
C++	John
Java	Hari
Python	Madhu
C++	Gopika

Std.Name	Std.Prof
Lakshmi	John
Lakshmi	Hari
Meenu	Madhu
Meenu	Gopika