Course code : **CSE2007**
Course title : **Database Management System**
Module : **3**
Topic : **7.2**

Normalization

Objectives

This session will give the knowledge about

- Normalization

Find Dependency

Consider R(A,B,C,D,E)

A	B	C	D	E
X	2	3	4	5
2	X	3	4	5
X	2	3	6	5
X	2	3	6	6

Verify Dependency

Consider R(A,B,C)

A	B	C
1	2	4
3	5	4
3	7	2
1	4	2

$A \rightarrow B \ \& \ BC \rightarrow A$

$C \rightarrow B \ \& \ CA \rightarrow B$

$B \rightarrow C \ \& \ AB \rightarrow C$

$A \rightarrow C \ \& \ BC \rightarrow A$

Verify Dependency

Consider R(A,B,C,D,E)

X	Y	Z
1	4	2
1	5	3
1	6	3
3	2	2

$XY \rightarrow Z \;\&\; Z \rightarrow Y$

$YZ \rightarrow X \;\&\; Y \rightarrow Z$

$YZ \rightarrow X \;\&\; X \rightarrow Z$

$XZ \rightarrow Y \;\&\; Y \rightarrow Z$

Find Closure Set

Find closure set of the following relation

R(A,B,C,D,E,F,G)
A → B
BC → DE
AEG → G
(AC)* = ?

ABCDE

R(A,B,C,D,E)
A → BC
CD → E
B → D
E → A
(B)* = ?

BD

R(A,B,C,D,E,F)
AB → C
BC → AD
D → E
CF → B
(AB)* = ?

ABCDE

R(A,B,C,D,E,F,G,H)
A → BC
CD → E
E → C
D → AEH
ABH → BD
DH → BC
BCD → H?

YES

Find Super key

Consider R(A,B,C)

A	B	C
1	P	X
2	Q	Y
3	Q	X
4	S	Y

$A \rightarrow BC$

$BC \rightarrow A$

Find Super key and Candidate Key

Consider R(A,B,C,D)

$A \rightarrow BCD$

$AB \rightarrow CD$

$ABC \rightarrow D$

$BD \rightarrow AC$

$C \rightarrow AD$

Find Candidate Key

R(A,B,C,D,E,F,G,H)
A → BCD
AB → CD
ABC → D
BD → AC
C → AD Ans: AB

R(A,B,C,D,E,F,G,H)
AB → C
BD → EF
AD → G
A → H Ans: ABD

R(A,B,C,D,E)
BC → ADE
D → B
Ans: BC, CD

R(A,B,C,D,E)
AB → CD
D → A
BC → DE
Ans: AB,BC,BD

R(WXYZ)
Z → W
Y → XZ
WX → Y
Ans: Y, WX, XZ

R(A,B,C,D,E,F,G,H)
CH → G
A → BC
B → CFH
E → A

Find the NF

R(A,B,C,D,E,F)
C → F
E → A
EC → D
A → B

R(A,B,C,D,E,P,G)
AB → CD
DE → P
C → E
P → C
B → G

R(A,B,C,D,E,F,G,H)
CH → G
A → BC
B → CFH
E → A
F → EG

R(A,B,C,D,E,F)
AB → CD
CD → EF
BC → DEF
D → B
CE → F

R(A,B,C,D)
A → B
B → C
C → BD

R(A,B,C,D,E,H)
A → B
BC → D
E → C
D → A

Summary

This session will give the knowledge about

- Normalization