UNITED INTERNATIONAL UNIVERSITY

Assignment 01

Name of course: Database Management Systems

Submitted To: Nahid Ferdous Aurna
(Lecturer United International University)

Submitted By: Asaduzzaman

ID: 011 193 146

Section: D

Department: Computer science and Engineering (CSE)

Answer to the question no-01

car_model → maf_year ✓

car_model → color ✗

maf_year → color ✗

~~maf_year → car_model~~

maf_year → car_model ✓

color → car_model ✗

car_model, maf_year → color ✗

maf_year, color → car_model ✓

(2) $R(P, Q, R, S, T)$

$F.D = \{Q \to P,\ P \to R,\ QR \to S,\ PR \to QT\}$

$PQRST^+ = \{P, Q, R, S, T\}$

S.K & C.K $\Rightarrow Q^+ = \{Q, P, R, S, T\}$

SK, C.K $\Rightarrow P^+ = \{P, R, Q, T, S\}$

SK $PR^+ = \{P, R, Q, T, S\}$

$R^+ = \{R\}$ ✗

$P^+ = \{P, Q, R, S, T\}$

As there is transitive dependency so it is not in 3NF.

There exists no partial dependency so it is in 2NF Form.

3 (i)

$R = (ABCD)$

$F = \{AB \to C,\ B \to D;\ C \to A\}$

$C.K = \{AB, CB\}$

$R_1 = (BD)$

$F.D = \{B \to D\}$

$C.K = \{B\}$

$R_2 = (ABC)$

$F.D_2 = \{AB \to C,\ C \to A\}$

$R_3 = (AC)$

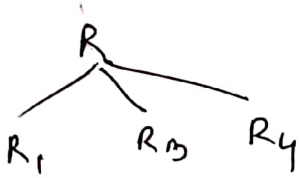
$FD_3 = \{C \to A\}$

$C..K = \{C\}$

$R_4 = (BC)$

$FD = \{\}$

$C.K = \{BC$



3(ii)

$R = (ABCDE)$

$F.D = \{AB \to CE, AC \to D, DE \to CD, C \to D, E \to AB\}$

$C.K = \{E\}$

$R_1 = (CD)$

$F.D = \{C \to D\}$

$C.K = \{C\}$

$R_2 = (ABCE)$

$F.D = \{AB \to CE, E \to AB\}$

$R_3 = (AB, E)$

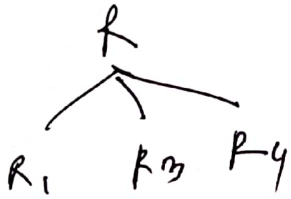
$F.D = \{E \to AB\}$

$C.K = \{E\}$

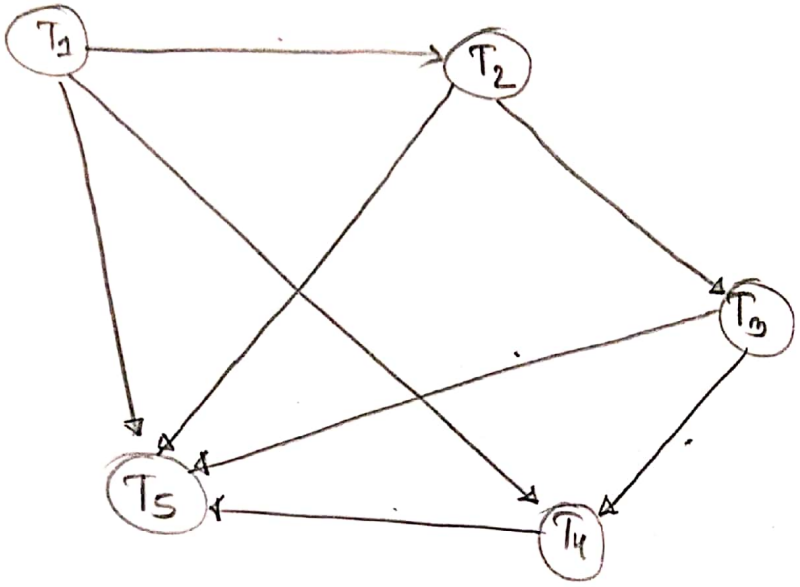
$R_4 = (CE)$

$F.D = \{\}$

$C.K = \{CE\}$



Answer to the question no - 04

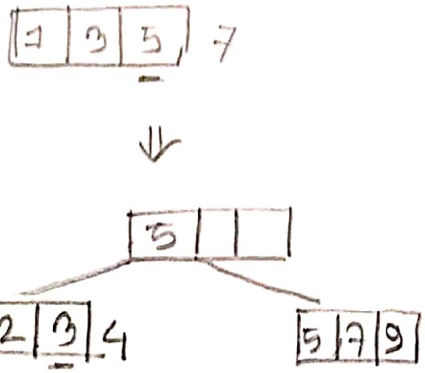


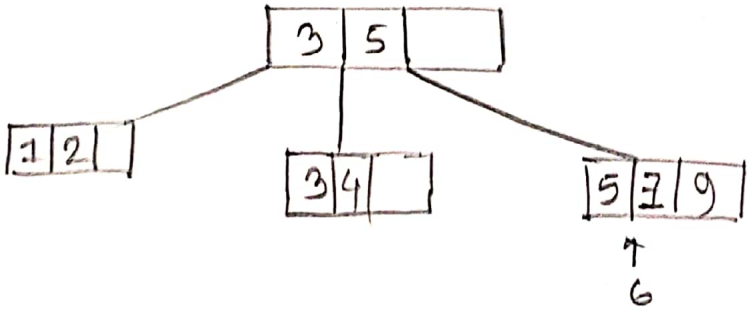
$T_1 \rightarrow T_2 \rightarrow T_3 \rightarrow T_4 \rightarrow T_5$

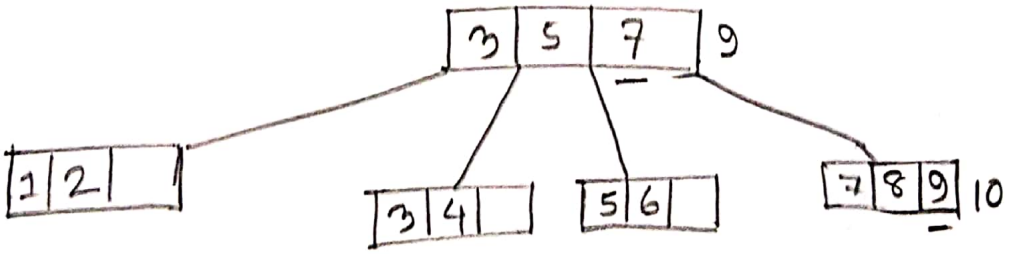
Answer to the question no-05

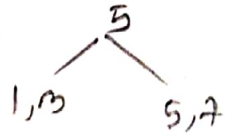
1, 3, 5, 7, 9, 2, 4, 6, 8, 10, 15, 21.

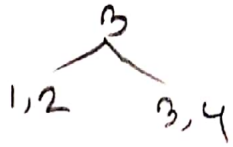
order = 4
Keys = 3
Right bias



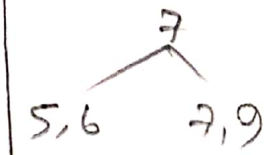


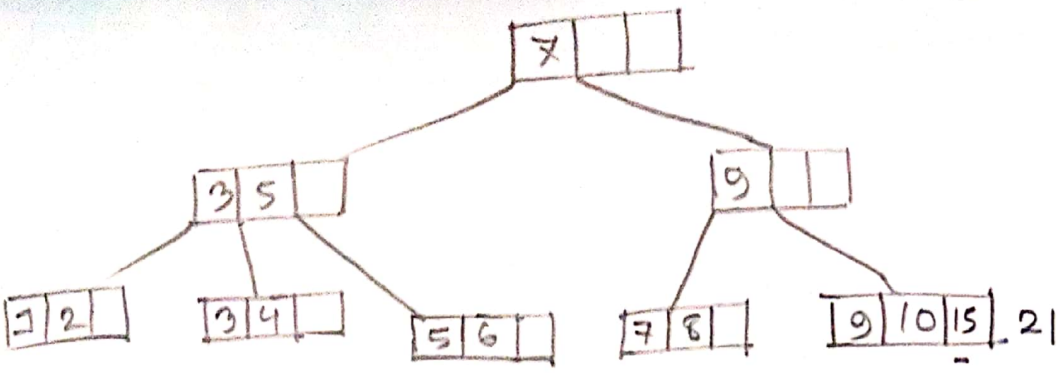


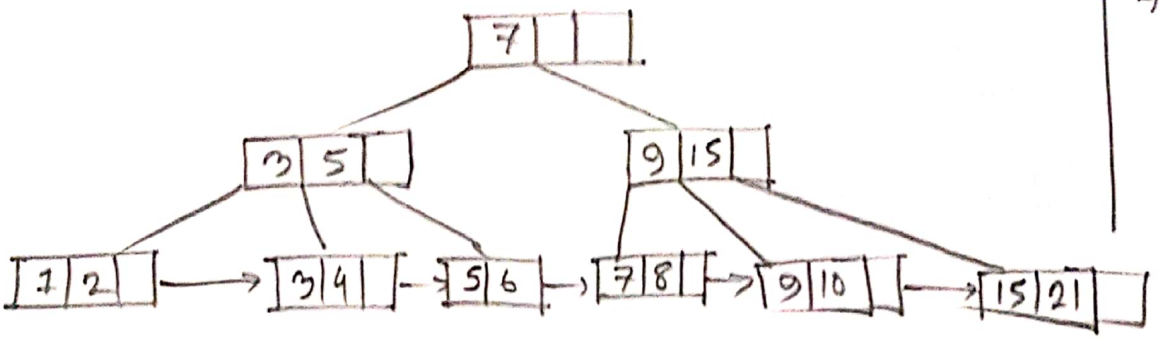


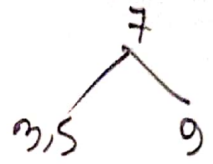


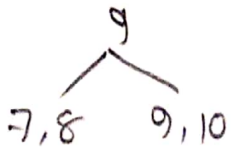
5, 6, 7, 9

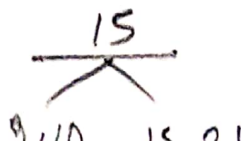



7
3 5
9
1 2
3 4
5 6
7 8
9 10 15 21


7
3 5
9 15
1 2
3 4
5 6
7 8
9 10
15 21


7
3,5
9


9
7,8
9,10


15
9,10
15,21