Ans => (2)

MIT2020029

(#) We have to apply FP Growth on Given data -

We need to convert this in Horizontal table -:

Transaction	itemset
T1	A, B, T
T2	A, C
T3	A, S
T4	A, B, C
T5	B, S
T6	A, S
T7	B, S
T8	A, B, S, T
T9	A, B, S

For Frequency

A	7
B	6
C	2
S	6
T	2

After sorting

A	7
B	6
S	6
C	2
T	2

Now frequent Pattern set, according to min support : { A:7, B:6, S:6, C:2, T:2 }

ordered item set

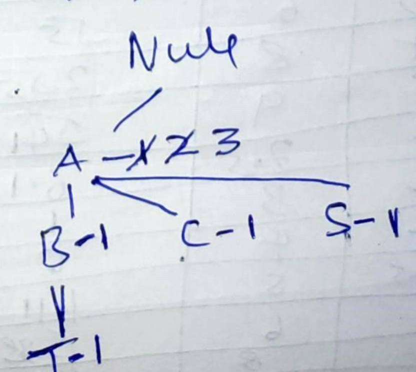
T1	A, B, T
T2	A, C
T3	A, S
T4	A, B, C
T5	B, S
T6	A, S
T7	B, S
T8	A, B, S, T
T9	A, B, S

Now insert itemset in Tree

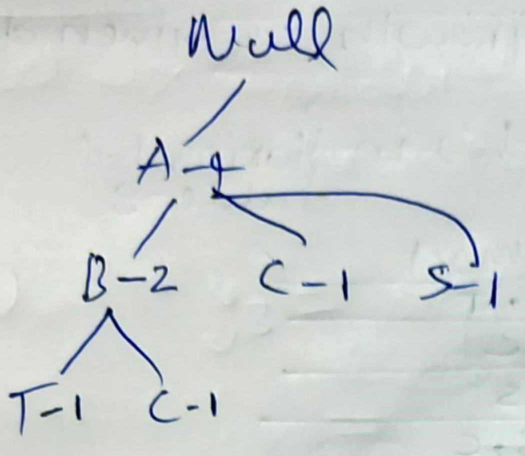
(1) {A, B, T}

(2) {A, C}

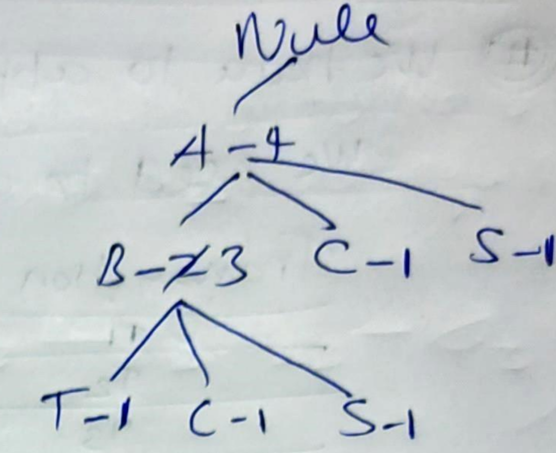
(3) {A, S}



④ {A, B, C}

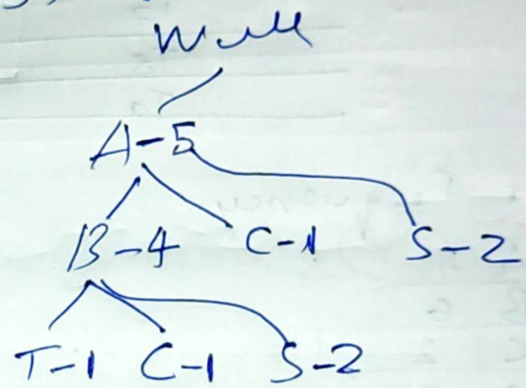


⑤ {B, S}



⑥ {A, S}

⑦ {B, S}



Ques ⇒ 3)

X = [1, 3, 2, 3, 4, 6, 7, 2, 2, 2.5, 7, 7, 7]
Y = [4, 4, 6, 6, 8, 9, 7.5, 3, 4, 5, 6, 8, 7]

min Points = 3
Epsilon = 2.5

X	Y	Distance from (2,4)
1	4	1
3	4	1
2	6	2
3	6	$\sqrt{5}$
4	8	$2\sqrt{5}$
6	9	$\sqrt{41}$
7	7.5	6.1
2	3	1
2	4	0
2.5	5	1.11
7	6	5.38
7	8	6.4
7	7	5.83

(2,4) has the points (1,4), (3,4), (2,6), (3,6) (2,3) (2.5,5) at a distance less than epsilon.
(2,4) has 6 nieghbouring points.

(2,4) is a core Point.

Doing similar calculation for all the other points we get.//

Points	Nieghbourhood Points
(1,4)	(2,3) (2,4) (3,4) (2,6) (2.5,5)
(2,4)	(1,4) (2,3) (3,4) (2,6) (3,6) (2.5,5)
(3,4)	(1,4) (2,4) (2,3) (2,6) (3,6) (2.5,5)
(2,3)	(1,4) (2,4) (3,4) (2.5,5)
(2,6)	(3,6) (2.5,5) (1,4) (2,4) (3,4)
(3,6)	(4,8) (2,6) (2.5,5) (3,4) (2,4)
(4,8)	(6,9) (3,6)
(6,9)	(4,8) (7,8) (7,7) (7,7.5)
(7,8)	(6,9)
7,7.5	(6,9) (7,7) (7,7.5)
7,7	(6,9) (7,8) (7,7.5) (7,6)
7,6	(7,8) (7,7) (7,7.5)

Core Points

{(1,4) (2,4) (3,4) (2,3) (2,6) (3,6) (4,8) (6,9) (7,8) (7,7.5) (7,7) (7,6) ≡ cluster 1

All the points belongs in 1 cluster. There are no noise or outlier points (4,8) is a border point.

All points other than (4,8) are core points.

(CMJ12020029)

ans => 6)

Let us consider the desired output to be 0 when the inputs x_1 and x_2 are equal = 1

$$y_3 = sig(x_1 w_{13} + x_2 w_{23} - \theta_3)$$

$$= \frac{1}{1+e^{-(1*.5 + 1*.4 - 1*.8)}}$$

$$\boxed{= .5256}$$

$$y_4 = sig(x_1 w_{14} + x_2 w_{24} - \theta_4)$$

$$= \frac{1}{1+e^{-(1*.9 + 1*0.4 - 1*0.8)}}$$

$$\boxed{= .8808}$$

Now calculating the output of neuron 5,

$$y_5 = sig(y_3 w_{35} + y_4 w_{45} - \theta_5)$$

$$= \frac{1}{1+e^{-(-.52*1.2 + .8808*1 - 1*.3)}}$$

$$\boxed{= .5097}$$

then error obtained, $i_5 = t_5 - y_5 = 0 - 0.5097$

$$\boxed{= -0.5097.}$$

Where t_5 is target value

To update the wieghts and threshold re...
in all networks.
we propogate the error backwards. //

Calculating error Gradient for neuron (5)

$\equiv \delta_5 = y_5(1-y_5)\, e_5$

$\equiv .5097(1-.5097)(-.5097)$

$\boxed{\equiv -0.1274}$

Change in wieghts :-

$\Delta w_{35} = \alpha \cdot y_3 \cdot \delta_5 - 0.1 * .5250 * (-.1275)$

$\boxed{\equiv -.0067}$

$\Delta w_{45} = \alpha \cdot y_4 \cdot \delta_4 \cdot \delta_5 \equiv \boxed{-0.0112}$

$\boxed{\Delta \theta_5 \equiv -0.0127}$

Gradient for neuron :- 3,4

$\boxed{\delta_3 = 0.0381}$ $\boxed{\delta_4 = -0.0147}$

Determing the wienghts correction :-

$\Delta w_{13} = .1 * 1 * 0.381 \equiv 0.0038$

$\Delta w_{23} \equiv$ //// $\equiv 0.0038$

$\Delta \theta_3 \equiv$ // $\equiv -0.0038$

Δw_{14} $(.1 * -1) * (-0.147) \equiv -0.0015$

$\Delta w_{2,4}$ $(.1 * -1) * (-.0147) \equiv 0.0015$

$\Delta \theta_4 = .1 * (-1) * (-0.0147) = 0.0015$