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**Cloud Computing for Data Analysis**

**Exercise 06 : Association Rule Mining**

Consider the data set shown in Table 6.1.

(a) Compute the support for itemsets *{e}*, *{b, d}*, and *{b, d, e}* by treating

each transaction ID as a market basket.

(b) Use the results in part (a) to compute the confidence for the association

rules *{b, d} −→ {e}* and *{e} −→ {b, d}*. Is confidence a symmetric

measure?

**Table 6.1.** Example of market basket transactions.

Customer ID

Transaction ID

Items Bought

1

1

{a, d, e}

1

24

{a, b, c,e}

2

12

{a, b, d,e}

2

31

{a, c, d,e}

3

15

{b, c, e}

3

22

{b, d, e}

4

29

{c, d}

4

40

{a, b, c}

5

33

{a, d, e}

5

38

{a, b, e}

Answers:

a)

{e}= support which is equal to 8/10 = 0.8 (number of times the transaction {e} occurred in the table by total transactions.)

{b, d} = support is 2/10 = 0.2 (number of times the transaction {b,d} occurred

in the table by total transactions.)

{b,d,e}=support = 2/10 = 0.2 (number of times transaction {b,d,e} occurred in

the table by total transactions.

b)

{b,d}->{e}= confidence is equal to 0.2/0.2 = 1= 100%

confidence{{b,d}->{e}]=support{b,d,e}/support{b,d}

{e}->{b,d}=confidence is equal to 0.2/0.8 = 0.25 = 25%

confidence {{e}->{b,d}}=support{b,d,e}/support{e}

Therefore, the confidence is not symmetric.