Name! Kavya Kodishala UNT 10: 11614043.

Data Mining. Homework No.: 51, 1912 and wing (SCE 5380 Section: 002.

a) in il se midies sele (40) pales tell U) PAISE, Because Support of JA,B] = support of dAIB, C) meaning that transaction containing 14, B] also has (4,1) but since there might be another record that only contains (A,C) Support of JA,B] and JA,C] are not equal as dA, C3 world the greater than JA, B)

(i) PRUE we know that the transaction that Contains JA, B) also Contains (as the Support of dA,B] = support of dA,B,C]. This proves that the confidence of the Rule fr, B) ->367 Miles of las , 100 / menters thinks the said

and the plant of definity grade the (iii) FALSE, we know that support of fr, B) = support of JA, B, C] SO a Seperate transaction for JA, B, D) is not possible which meaks. The support of (A,B) equal to support of JA, B, C,D] but as the Support of JA,B) is not equal to JB,C] we can say that there is another. Level! with a transaction JB,C,DJ In Such a

greater than Support (A,B,D) will be

derived for my the health of

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- b)i) Teve, Based on given one the transactions that contain (A,B) also contain (B,C) This means that (A,B,C) on the occur together in a transaction from this cene can buy that ewherever (A,B) occurs in a necords also occurs in it therefore the confidence of the lule (A,B) -> (C) is 100°/.
- (ii) FALSE, As it is given that are the transactions that contains of A,B] also contain if B,C] but we cannot oussume that the vice-versa that is use cannot say that are the transactions that contains of B,C] also contain of A,B] so there can be another vecord which contains the item (BC,D) only making the support of of B,C,D) greater than only making the support of of B,C,D) greater than
- (jii) TRUE; An item is soud to be closed item set it none of its supersets have the some support as the item set the if we convider of A,B,C,D] we know that all transactions what contain AB,C,D]

The same of

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also known contains of B, C) making the not possible. Therefore, the Support of Ja, B, D) us equal to support of (A,B,C,D) so (A,B,D) is not a closed item set 0,4) a) final all frequent itemset using spriori algorithm. Stems Support Support percentage 40 11.00 1800 515 100 K 60/1 315 M 40, 1 N 2/5 14/5 60 20/1 15 1:3/5 601 10

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Again taking au the itements with minimum Support = 60					
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8 stemsets support Percentage					
e, k, 0 e, k, 0 e, k, y 215 40					
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K,0,4,1,1,2 2/5,9,0 1.40					
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Idensets with minimum support = 60					

Flens run support = 60 E, K, 0 Thequest Henry : 10, K, E) OK > E K > OE OK > E KE > O OE > K E > OK The support Henry in the support the according on the becomes 2 ^{k-2} = 2 ² -2=6 The 6 ipossible association but one Rules Support confidence.
E, K, D Frequent "Hemset: $10, K, \in$] OK \rightarrow E K \rightarrow OE OK \rightarrow E K \leftarrow \rightarrow OE OE \rightarrow K KE \rightarrow OK Clot us Say K is the member of items in the frequent itemset: Therefore the aisociation only becomes $2^{k}-2^{*}=2^{3}-2=6$ The 6 ipossible association but the laisociation only becomes $2^{k}-2^{*}=2^{3}-2=6$ Vhe 6 ipossible association but the laisociation of items of items in the laisociation of items
clot us Say k is the number of items in the Inquierst Hemsel of items in onle becomes $2^k-2^i=2^3-2=6$ The 6 upossible association bules one: Pules Supposit confidence.
clot us Say h as the number of interns in the Inequent itemsed of interns in onle becomes $2^k-2^i=2^2-2=6$ The 6 upossible association but one in the supposition on the supposition of the supposition o
The frequent identical Therefore the airsociation on the becomes $2^k - 2^* = 2^3 - 2 = 6$ The 6 ipossible association bules one: Rules Support confidence.
Rules Supposit confidence.
Rules Supposit confidence.
0->KE 313 100
0e-3K 3/4 75 K-30e 313 /100
KE->0 315 60 E->0K 314 75

Since the minimum confidence = 200 h we Can ti blu 3 strong association rule: mileura Ildiahar who proposed ellerong OB -> End world word ' to 'O -> KE une reed or & transaction, buys (x, item) n buys (x, item2) => buys Con items > (5x) 10x] ->4€] Are the final Strong ausociation Rules (95) a) bidif 1 aille bidt pig of arie/ 1) by Cid ascid ascie. bidif a,b,d

b) Du the cardidate 4 itemsets that can be generated from the frequent 3-itemsets using the cardidate generation procedure to Apriori Algorithm. under une meigl ((a) b, (), (a) b, d)) = {a, b, (,d) (da,b,c), (da,b,e) = da,b,c,e) ·[{a,b,d],da,b,e]) = da,b,d,e] (fa,c,d), fa,c,e) = fa,c,d,e), ({a,c,e}, {a,c,+}) = {a,c,e,+} (fa,c,d }, fa,c,f)) = {a,c,d,f} (1 b, c, d), (b, c,e) = { b, c,d,e} (fc,d,e), fc,d,A)) = f(,d,e,f)

da,b,c,d3	a, c, c, t)
da, b, c, d}	1.97.1,d,f3
	•
19, b, d, c).	5 c, d, e, f 3
	and no house

c)

For pounting we inseed to cheek it the 3-item sets that can be obtained from 4-item sets are frequent for da, b, d, d} eve care get - 19,6,6] 1-29,6,6], 29,0,d] of 6,0,d] webich are au frequent item set according to the so reve can Bay that, {a,b, c,d} is frequenttoprequest some form with our con - spender! -> For da, b, c, e] = s da, b, c] [da, b, e], (b, c, e) 19,0,03 are there are frequent item sets according to the question from this are can say that sais, c,e, is frequent as well.

for da, b, d, e} da, b, d), da, b, c), da, de]

au intrequent - from this are lan say that fa, b,d,e) us not frequent and can be prouded. princial.

=> For Ja, c, d, c] is Ja, c, d] 1 da, c, e] , da, d, e]

{c, d, c} cohere da, d, c) us infrequent from

this we can say that Ja, c, d, e) is not

frequent and can be powered.

For da, c, d, t) \ da, c, d) , da, c, t) 1da, d, t),
dc, d, t) all there frequent item bet
according to the question. From this
une can seey that da, c, d, t) is frequent.

For fa,c,e,f3 —, Ja,c,e3, da,c,f3,da,c,f],

dc,e,f3 where dc,e,f3 and Jo,e,f3 one

Infrequent and from this we can say

that Ja,c,e,f3 is not frequent and can be

pound.

from this we can say that Ib, C, d,e) which wis not frequent and can be priviled

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da,b,c,d3 da,b,c,e3 da,c,d,f3

Q7)

a) Support of JA] is equal to Support of JA,B,C) based on the given.

The can say that A only occurs when JA,B,C] is present in the transaction

Hue as the support of A's equal JA, B, C, D3 JA, B, C, E3 JA, B, C, D, E3 is and how I way it that the strain of b) Griven Au the transaction that contain 143 us a Bubbet of transactions that Contain JB] transaction that contain 1A,B3, (A)B,C3,4A,B,D3,1dA,B,E3,1dA,B,C,D3, ZA, B, C, E3, JA, B, D, E3, JA, B, C, D, E3. (k) din f (3, and -1 79-16.3- F tropped at double to for himie Licroin 2th and Loved fodite when are the task put to the