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CS 7312 Assignment 3

1. The following database has 5 transactions. Let min sup = 60 percent (3/5) and min conf = 80 (4/5) percent.

$$\begin{bmatrix} \{m, o, n, k, e, y\} \\ \{d, o, n, k, e, y\} \\ \{m, a, k, e\} \\ \{m, u, c, k, y\} \\ \{c, o, k, i, e\} \end{bmatrix}$$

- (40 points). Run the Apriori algorithm and list Ci (candidate itemset) and Li (frequent itemset) for each iteration i. For Ci, please show the result after applying self-joining and pruning.

- List all the strong association rules in the format of {item 1, item 2} ⇒ {item 3}.

$C_1 \Rightarrow L_1 \Rightarrow C_2 \Rightarrow L_2 \Rightarrow C_3 \Rightarrow L_3$:

set	sup
m	3
o	3
n	2
k	5
e	4
y	3
d	1
a	1
u	1
c	2
i	1

$\Rightarrow$

set	sup
m	3
o	3
k	5
e	4
y	3

$\Rightarrow$

set	sup
mo	1
mk	3
me	2
my	2
ok	3
oe	3
oy	2
ke	4
ky	3
ey	2

$\Rightarrow$

set	sup
mk	3
ok	3
oe	3
ke	4
ky	3

$\Rightarrow$

set	sup
mko	1
mke	2
mky	2
oke	3
oky	2
oey	2
key	2
kmo	1

$\Rightarrow$

set	sup
oke	3

Strong association rules:
o ⇒ k, e : 60% sup, 100% conf
o, e ⇒ k : 60% sup, 100% conf
o, k ⇒ e : 60% sup, 100% conf

2. For a given dataset with min sup = 8 (absolute support), the closed patterns are {a,b,c,d} with support of 9, {a,b,c} with support of 11, and {a, b,d} with support of 13.

- (10 points). List all the max-patterns.

- (30 points). List all the frequent patterns together with their absolute support values.

Pattern	Max?	Frequent?	Absolute Support Value
abcd	Yes	Yes	9
abc	No	Yes	11
abd	No	Yes	13
bcd	No	Yes	9
acd	No	Yes	9
ab	No	Yes	13
ac	No	Yes	11
ad	No	Yes	13
bc	No	Yes	11
bd	No	Yes	13
cd	No	Yes	9