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Title: HW#5

Answer to Q1:

a. d =7, formula: $3^d - 2^{(d+1)} + 1 = 1932$
b. Four
c. Eight
d. support(bread) = 4/5 =0.8, support(milk) = 5/5 =1.0, support(bread,milk) = 4/5 = 0.8
e. confidence(bread->milk) = support(bread,milk)/support(bread) = 0.8/0.8 =1.0 ; confidence (milk -> bread) = support(bread,milk)/support(milk) = 0.8/1.0 =0.8
f. confidence(a->b) = support(a, b)/support(a) , and confidence(b->a) = support(a, b)/support(b) , the two quantities confidence (a->b), and confidence(b->a) are only equal when support(a) = support (b)

Answer to Q3
a. Frequent Item set: {E} , {F} , {E, F} and Maximal Item set: {E, F}
b. Frequent Item set: {C} , {E} , {F} , {E, F} and Maximal Item set: {C}, {E, F}
c. Frequent Item set: {C}, {E} , {F} , {J}, {E, F} and Maximal Item set: {C}, {J}, {E, F}

Answer To Q4:
Item set, X = {A, B, D}
h-confidence (X) = S(A, B, D) / max (S(A), S(B), S(D)) = 0.2/max(0.3, 0.3, 0.2) = 0.2/0.3 = 0.66667

Answer to Q2:
a. Step-1: support =2

Item	Support
a	2
b	3
c	3
d	1
e	3

D will be excluded in the next step

a. Step-2: support =2

Item	Support
a, b	1
a, c	2
a, e	1
b, c	2

b, e	3
c, e	2

a, b and a, e will be excluded in the next step

a. Step-3: support =2

Item	Support
a, b, c	1
a, b, e	1
b, c, e	1
a, c, e	1

None of the item sets with three items is included

b. Pruned area marked as red