**Name: Akond Rahman**

**Unity ID: aarahman**

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**Title: HW#5**

Answer to Q1:

1. d =7, formula: 3d -2(d+1) + 1 = 1932
2. Four
3. Eight
4. support(bread) = 4/5 =0.8, support(milk) = 5/5 =1.0, support(bread,milk) = 4/5 = 0.8
5. 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
6. 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