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**Course:** DASC 501 **Assignment 2A - Affinity Analysis (single LHS)**

Discussion (Interpretation)

**Part 1.**

The output for Part 1:

The rules:

1. cheese -> apples: Support = 0.22 Confidence = 0.56 Lift = 1.31

acceptable & interesting

2. bread -> cheese: Support = 0.05 Confidence = 0.18 Lift = 0.46

3. milk -> bread: Support = 0.13 Confidence = 0.25 Lift = 0.89

4. bananas -> milk: Support = 0.27 Confidence = 0.47 Lift = 0.91

5. apples -> bananas: Support = 0.27 Confidence = 0.63 Lift = 1.10

acceptable & interesting

(acceptable: confidence > 50% & interesting: positively associated)

The definition for the terms “acceptable” and “interesting” was obtained from the slides of assignment description.

These 5 rules were just obtained randomly by logic. Numpy arrays were employed in the initial step. Calculating support, confidence and lift was not difficult for 5 rules.

It is difficult to choose one rule among two both acceptable and interesting ones, but I recommend the rule #1 because its lift is proportionally much greater than the confidence of rule #4, if to compare both.

**Part 2.**

The output for Part 2 is stored in Rules.txt after running the code and choosing part 2 as an input. The chosen ones among them (only acceptable and interesting rules):

4. bread -> bananas:

Support = 0.16 Confidence = 0.57 Lift = 1.00 acceptable & interesting

11. cheese -> apples:

Support = 0.22 Confidence = 0.56 Lift = 1.31 acceptable & interesting

15. apples -> cheese:

Support = 0.22 Confidence = 0.51 Lift = 1.31 acceptable & interesting

16. apples -> bananas:

Support = 0.27 Confidence = 0.63 Lift = 1.10 acceptable & interesting

(acceptable: confidence > 50% & interesting: positively associated)

The 20 rules with single LHS were obtained as a list of tuples in a double loop, which creates the combination. Numpy arrays were employed in the initial step. The support, confidence and lift were computed in multiple loops, requiring the frequencies of single elements calculated beforehand and saved as a dictionary.

As seen in the output, there are only 4 acceptable and interesting rules, which I recommend.