Assignment 4
273 Business Intelligence for Analytical Decisions

This assignment must be completed individually. Submit Word file to online drop box. Write your name in the Word file.

Question 1. George, the new manager of supermarket Ralph is trying to understand association rule with your help. He provides the following information. In April 2005, 80 transactions contain eggs; 40 transactions contain milk and 15 transactions contain sugar. Moreover, 10 transactions contain all three items (egg, milk and sugar) altogether; 20 transactions contain egg and milk together; 15 transactions contain egg and sugar together and 10 transactions contain milk and sugar together. (Note: these transactions may overlap, e.g. the 15 transactions with both egg and sugar are among the 80 transactions with egg.) George got a rule as follows: egg → milk with support 20%. Now he asks you to show him the support, confidence and lift for the rule {egg, milk} → sugar. (Note: You may not need all the numbers provided here. This question is used to test your understanding about the concept of support, confidence and lift. You should be able to get the answer with a few simple calculations).

Question 2.

Take the bank-data-final.arff file posted online, and perform association rule analysis using WEKA to answer the following questions. Change options for Apriori to obtain a longer list of rules as follows: change minMetric to 0.8 and change numRules to 100. Run Apriori. Copy resulting rules to MS Word so you can search for rules about pep and interpret those rules.

1). What types of customers have a higher chance of buying a personal equity plan (pep=YES)? What types of customers have a lower chance of buying a personal equity plan?

2). Please examine the results and identify two interesting rules and explain why you think they are interesting.

Below is the description of the attributes in the data.

age	age of customer in years
sex	MALE / FEMALE
region	inner_city/rural/suburban/town
income	income of customer
married	is the customer married (YES/NO)
children	number of children
car	does the customer own a car (YES/NO)
save_acct	does the customer have a saving account (YES/NO)
current_acct	does the customer have a current account (YES/NO)
mortgage	does the customer have a mortgage (YES/NO)
pep	did the customer buy a PEP (Personal Equity Plan) after the last mailing (YES/NO)