**Assignment 1**

**Association Rule Mining**

In this assignment, you have to preprocess and mine rules from the dataset provided to you . The purpose of the assignment is to gain some experience with the association rule mining paradigm in terms of data preparation, problem formulation and evaluation of the results. After the assignment you should be able to find rules (using appropriate parameter setting), determine which of the resulting rules are interesting and figure out how the interesting rules could be useful.

**1) Data Preprocessing**

Convert the dataset into a form **suitable** for Association Rule Mining.

2) **Association Rule Mining**

Your task is to find patterns in the data using Apriori and FP Growth algorithms. You have to implement the algorithms from scratch. No libraries can be used.Turn on the GPU from the runtime settings before performing experimentation. Experiment with different parameters to extract strong rules (e.g., rules with high lift and confidence which at the same time have relatively good support). For each algorithm:

a) Use confidence as a measure to find association rules. Rank the top 3 association rules. Explain the rules and why you consider it interesting and useful. You may add comments in your code file for this.

b) Use lift as a measure to find association rules. Rank the top 3 association rules. Explain the rules and why you consider it interesting and useful. You may add comments in your code file for this.

c) Use leverage as a measure to find association rules. Rank the top 3 association rules. Explain the rules and why you consider it interesting and useful.You may add comments in your code file for this.

d) Use conviction as a measure to find association rules. Rank the top 3 association rules. Explain the rules and why you consider it interesting and useful.You may add comments in your code file for this.