Lab -08

# Association Rule Mining

In this Lab, you have to preprocess and mine rules from the dataset provided to you **Data.csv (description file also give as Attribute.pdf)**. Sample code file given and an example code done for you. The purpose of this Lab 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 Lab 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.

# Data Preprocessing

Association Rule Mining can be applied only on a binarized dataset. Convert the dataset into form **suitable** for Association Rule Mining. You can use the processing and if you wish you can make some changes in it to.

# Association Rule Mining

You task is to find pattern in the data using association rule mining. 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).

* 1. Use confidence as interestingness measure of an association rule. Rank the top 10 association rules for at-least the three different combinations of support and confidence. Explain the rules and why you consider it interesting and useful. Furthermore, also give recommendations based on the discovered rules that might help the user.
  2. Use interest as an interestingness measure of an association rule. Rank the top 10 association rules for at least three combinations of support and interest. Explain the rules and why you consider it interesting and useful. Furthermore, also give recommendations based on the discovered rules that might help the user.
  3. Try to formulate some questions that you want to ask of your rule learning extraction systems. Select the attributes that will be required to answer your questions. Run Association rule mining to extract interesting patterns. Show at-least 10 rules. Explain the rules and why you consider it interesting and useful. Explain what insight you got regarding your questions.
  4. **(Optional)** Try some evaluation measures other than confidence and lift. Show 10 strong rules. Explain the rules and why you consider it interesting and useful. The details of other evaluation measures can be found at <https://mhahsler.github.io/arules/docs/measures> ).

**Note**: The top 10 most interesting rules are most likely not the top 10 in the result set of the Apriori algorithm. They are rules that, in addition to having high support, lift, and confidence, also give some non-trivial, useful information based on the underlying business objectives.