For grocery stores, there are several ways that coupon campaigns could be streamlined to increase store traffic and sales. Currently, many stores use a standard “spray and pray” technique of flooding several pages of coupons into local newspapers. For any given potential customer, many of these coupons would not be applicable to their interests. Furthermore, coupons that would interest them stand a good chance of going unnoticed, being lost in the myriad of non-applicable ads. A personalized coupon experience for the customer is the alternative to the previously mentioned tactic, and we will investigate how such an individually tailored coupon set could be implemented.

Stakeholders such as those in the marketing and accounting departments would be interested in such a solution, as a personalized coupon set could immediately reduce printing costs and show an increase in coupon-driven sales within the expiration period of said coupons. With the purchasing data we have to work with, only customer ids, dates of purchases and items bought will be investigated. Although potentially useful, demographic and financial data of individual customers will not be considered. A dataset containing this information has been gleaned from Kaggle and is readily available in a .csv file.

Associations between purchased items can be derived from our dataset and important questions that affect how a personalized coupon set would be automatically generated. Specifically,

- What items has the customer bought in the past?
- What items were purchased repeatedly?
- What previously unpurchased items would the customer be more likely to buy, given their purchasing history?
- Given a set of pre-made coupons, to which customers should those coupons be sent?

A preliminary approach to answering these questions would be to arrange purchases by customer id and sort out which items are most highly correlated with one another. This could then be further developed to predict what items are most likely to be purchased, given previous recent purchases. The end result will be a list of items for each customer for which coupons would be most applicable--and thus most likely to generate sales.