# #Support: Support is the basic probability of an event to occur. If we have an event to buy product A, Support(A) is the number of transactions which includes A divided by total number of transactions.

#

# Confidence: The confidence of an event is the conditional probability of the occurrence; the chances of A happening given B has already happened.

#

# Lift: This is the ratio of confidence to expected confidence.The probability of all of the items in a rule occurring together (otherwise known as the support) divided by the product of the probabilities of the items on the left and right side occurring as if there was no association between them.

#

# The lift value tells us how much better a rule is at predicting something than randomly guessing. The higher the lift, the stronger the association.

# market basket analysis

library(arules)

library(arulesViz)

# access inbuild data Groceries

data("Groceries")

str(Groceries)

View(Groceries)

# is the data is not in transaction format, make it in transaction with the use of read.transaction(file.choose())

# item frequency histogram

itemFrequencyPlot(Groceries,topN=10,type="absolute",main="IFP")

# make rules

rules=apriori(Groceries,parameter = list(support= 0.001,confidence=0.8))

inspect(rules[1:5])

rules= sort(rules,by="confidence",decreasing = T)

inspect(rules[1:5])

rules=apriori(Groceries,parameter = list(support= 0.001,confidence=0.9),appearance = list(default="lhs",rhs="whole milk"), control = list(verbose=F))

rules=sort(rules, decreasing = TRUE, by="confidence")

inspect(rules[1:10])

inspect(rules)

# check the redundant(duplicate) rules and remove it

# TRUE- redundant

# FALSE- not redundant

redundant\_rules=is.redundant(rules)

redundant\_rules

summary(redundant\_rules)

gr\_rules= rules[!redundant\_rules]

gr\_rules

inspect(gr\_rules[1:5])

# install igraph package for interactive plot

install.packages("igraph",dependencies = TRUE,repos = "http://cran.rstudio.com/")

plot(gr\_rules[1:10], method="graph", engine = "interactive")

# parallel coordinates plot

plot(rules[1:20],method = "paracoord",control = list(reorder = TRUE))