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#####
#Analysis of Sales Report of a clothes Manufacturing Outlet . We will find current
#trends,and attributes affecting sales.
#####SECTION 3#####
#To decide the pricing for various upcoming clothes,they wish to find how Style
#Season and Material affect sales of a dress and if the style of the dress is
#more influential than its price .
#####SECTION 3#####
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#Importing the libraries
library(dplyr)
library(readxl)

#####

#Importing the data file from the saved location
d <- read.csv("/Users/apple/Desktop/DressAttributes.csv",
             header=T)
head(d)
#To get information about the structure of the data
str(d)

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#Taking care of missing values
d[d==" "] <- NA
#removing null with NA
d[d=="null"] <- NA

#####
# Creating a subset from the dataframe of only those features which the managment
#wants to analyze i.e. Style, Season and Material
pricing <- na.omit(subset(d,select = c(2,3,6,10)))
head(pricing)
str(pricing)

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#Changing the categorical data into factors
pricing <- mutate_if(pricing,is.character,as.factor)
colSums(is.na(pricing))
str(pricing)

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#####APPLYING THE MODEL#####

# Importing the necessary libraries
library(arules)
library(arulesViz)

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#Applying the Apriori algorithm to our data
rules <- apriori(pricing, parameter = list(supp=.01,conf=.8))
inspect(rules[1:5])
rules <- sort(rules, by = "support", decreasing = T)
inspect(rules[1:5])
rules <- sort(rules, by = "lift", decreasing = T)
inspect(rules[1:5])
#Removing the duplicate rules
redundant_rules <- is.redundant(rules)
redundant_rules
summary(redundant_rules)
rules <- rules[!redundant_rules]
rules
inspect(rules)
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#Visualizing the Result  
#Scatter plot with custom colors  
library(colorspace)  
#plot(rules, method = "graph", control = list(verbose=TRUE))  
sel <- plot(rules, engine = "interactive", jitter=0, col= "blue", legend= "topleft")
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#RESULT: Our result indicates that the Style of the dress is very much influential  
#than its Price
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