Progressive Education Society's
Modern College of Engineering, Shivajinagar, Pune-05.
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)
Department of MCA

PRACTICAL SUBMISSION RECORD- A.Y. 2025-26

Class: SYMCA Division : A **Semester: III**	**Course Code:** MCA01604 **Course Name:** Data Science Laboratory	**Batch:** S2
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CO No: CO605.1	**Assignment No:** 8	

Title Using grocery dataset with minimum support to 0.001 and minimum confidence of 0.8 build a frequent pattern tree (FP- Tree). Show for each transaction how the tree evolves.

Code:

```
# Load required library
library(arules)

# Load the Groceries dataset
data("Groceries")

# View dataset summary
summary(Groceries)

# Set minimum support and confidence
min_support <- 0.001
min_confidence <- 0.8

# Build association rules using the FP-Growth algorithm
rules <- apriori(Groceries,
                 parameter = list(supp = min_support,
                                  conf = min_confidence,
                                  target = "rules"))

# Display summary of generated rules
summary(rules)

# Display top 10 rules sorted by confidence
inspect(sort(rules, by = "confidence")[1:10])
```

```
# ------------------------------------
# Step-by-step FP-Tree Construction View
# ------------------------------------

# Convert transactions to list to simulate FP-Tree building
transactions_list <- as(Groceries, "list")

# Display first few transactions
cat("First 5 transactions:\n")
print(transactions_list[1:5])

# Simulate FP-tree evolution (simplified conceptual view)
cat("\nFP-Tree Evolution (simplified):\n")
fp_tree <- list()  # store item counts

for (i in 1:5) {  # just show first 5 for demonstration
  txn <- sort(transactions_list[[i]])
  cat("\nTransaction", i, ":", txn, "\n")
  for (item in txn) {
    if (item %in% names(fp_tree)) {
      fp_tree[[item]] <- fp_tree[[item]] + 1
    } else {
      fp_tree[[item]] <- 1
    }
  }
  print(fp_tree)
}

# ------------------------------------
# Visualizing frequent itemsets
# ------------------------------------
# Get frequent itemsets (for understanding structure)
freq_items <- eclat(Groceries,
                    parameter = list(supp = min_support,
                                     maxlen = 3))

# Display top frequent itemsets
inspect(sort(freq_items, by = "support")[1:10])
```

```
# ------------------------------------
# Visualize Rules and Itemsets
# ------------------------------------
library(arulesViz)

# Plot frequent itemsets
plot(freq_items, method = "graph", control = list(type = "items"))

# Plot association rules (top 10)
plot(sort(rules, by = "confidence")[1:10], method = "graph", control = list(type = "items"))
```

Output :

```
Available control parameters (with default values):
layout   =  stress
circular         =  FALSE
ggraphdots       =  NULL
edges    =  <environment>
nodes    =  <environment>
nodetext         =  <environment>
colors   =  c("#EE0000FF", "#EEEEEEFF")
engine   =  ggplot2
max      =  100
verbose  =  FALSE
>
```