Mlearn310 HW2

(8) Apriori

Transaction ID	Item (1) milk	Item (2) Bread	Item (3) Butter	Item (4) Beer
1	1	1	0	0
2	0	1	1	0
3	0	0	0	1
4	1	1	1	0
5	0	1	0	0
6	1	0	0	0
7	0	1	1	1
8	1	1	1	1
9	0	1	0	1
10	1	1	0	0
11	1	0	0	0
12	0	0	0	1
13	1	1	1	0
14	1	0	1	0
15	1	1	1	1

min support = 0.26

min confidence = 0.5

Support = $\frac{26}{100} \times \frac{15}{10}$

= 3.9

~ 4

Transaction set = { {1,2,3,4}, {1,2,3,4,5}, {2,3,4}, {2,3,5}, {1,2,4}, {1,3,4}, {2,3,4,5}, {1,3,4,5}, {3,4,5}, {1,2,3,5} }

4/10

Item	Support
1	6
2	7
3	9
4	8
5	6

Frequent Item ⇒ Support ≥ 4

All items are frequent

Minimum support = 4/15

(8.2) Apriori

mlearn310 Hw2

Item	Support
milk	9
bread	10
butter	7
beer	6

Item	Support
milk, bread	6
milk, butter	5
milk, beer	2
bread, butter	6
bread, beer	4
butter, beer.	3

→ Pruned.

Item	Support
milk, bread, butter	4
Milk, bread, beer	3 → pruned.
[illegible]	

Association Rules	Support	Confidence
{milk} ⇒ {Bread}	6.	6/9 = 2/3
{milk} ⇒ {Butter}	5	5/9 =
{bread} ⇒ {Butter}	6	16/110
{Bread} ⇒ {Bread}.	4	4/6
{milk, Bread} ⇒ {Butter}	4	4/6
{milk, Butter} ⇒ {Bread}	4	4/5

mlear310_hw2_8

Load data

```
superMarket = read.transactions('/Users/ravirajmulasa/Documents/Certificate_in_MachineLearning/Advanced_
```

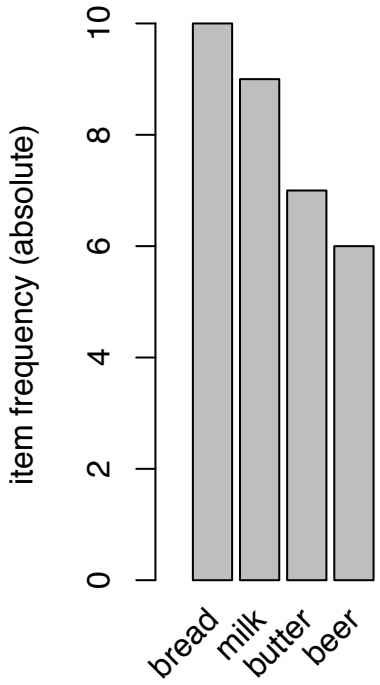
```
## Warning in readLines(file, encoding = encoding): incomplete final line
## found on '/Users/ravirajmulasa/Documents/Certificate_in_MachineLearning/
## Advanced_Machine_Learning/Homework/HW2/market_basket.txt'
```

```
superMarket
```

```
## transactions in sparse format with
##  15 transactions (rows) and
##  4 items (columns)
```

Item Frequency plot

You can also embed plots, for example:



Association Rules

You can also embed plots, for example:

```
## Apriori
##
```

```
## Parameter specification:
##  confidence minval smax arem  aval originalSupport maxtime support minlen
##         0.5    0.1    1 none FALSE            TRUE       5    0.26      1
##  maxlen target   ext
##      10  rules FALSE
##
## Algorithmic control:
##  filter tree heap memopt load sort verbose
##     0.1 TRUE TRUE  FALSE TRUE    2    TRUE
##
## Absolute minimum support count: 3
##
## set item appearances ...[0 item(s)] done [0.00s].
## set transactions ...[4 item(s), 15 transaction(s)] done [0.00s].
## sorting and recoding items ... [4 item(s)] done [0.00s].
## creating transaction tree ... done [0.00s].
## checking subsets of size 1 2 3 done [0.00s].
## writing ... [12 rule(s)] done [0.00s].
## creating S4 object  ... done [0.00s].
```

```
##      lhs                rhs      support   confidence lift
## [1]  {}              => {milk}   0.6000000 0.6000000  1.000000
## [2]  {}              => {bread}  0.6666667 0.6666667  1.000000
## [3]  {beer}          => {bread}  0.2666667 0.6666667  1.000000
## [4]  {butter}        => {milk}   0.3333333 0.7142857  1.190476
## [5]  {milk}          => {butter} 0.3333333 0.5555556  1.190476
## [6]  {butter}        => {bread}  0.4000000 0.8571429  1.285714
## [7]  {bread}         => {butter} 0.4000000 0.6000000  1.285714
## [8]  {milk}          => {bread}  0.4000000 0.6666667  1.000000
## [9]  {bread}         => {milk}   0.4000000 0.6000000  1.000000
## [10] {butter,milk}   => {bread}  0.2666667 0.8000000  1.200000
## [11] {bread,butter}  => {milk}   0.2666667 0.6666667  1.111111
## [12] {bread,milk}    => {butter} 0.2666667 0.6666667  1.428571
```