In [6]:
```
import pandas as pd
import numpy as np
import matplotlib as mpl
import matplotlib.pyplot as plt
import seaborn as sb
import math
%matplotlib inline

from mlxtend.preprocessing import TransactionEncoder
from mlxtend.frequent_patterns import apriori
from mlxtend.frequent_patterns import association_rules
```

Part A

Question 1

Group Name: Plum

Member: Eric Grant

Question 2

(a)

(I1, I2, I3, I4, I5, I6 -> I7, I8)

sup(I1, I2, I3, I4, I5, I6, I7, I8) = 2

sup(I1, I2, I3, I4, I5, I6) = 2

conf(XY) = sup(XY) / sup(X) = 2/2 = 100%

(b)

sup(I1, I6) = 2 / 4

conf(I1, I6) = 2 / 3

lift(I1, I6) = 2 / (3 * 3) = 2 / 9

D = 24 (ignore I9, I10, and all of T5 as they do not meet min-support)

conv(I1, I6) = (1 - (3/4 / 24)) / (1 - 2/3) = 2.9

Question 3

C_1

Item	Count

Item	Count
M	3
O	3
N	2
K	5
E	4
Y	3
D	1
A	1
U	1
C	2
I	1

L_1

Item	Count
M	3
O	3
K	5
E	4
Y	3

C_2

Item	Count
M,O	1
M,K	3
M,E	2
M,Y	2
O,K	3
O,E	3
O,Y	2
K,E	4
K,Y	3
E,Y	2

L_2

Item	Count
M,K	3

Item	Count
O,K	3
O,E	3
K,E	4
K,Y	3

C_3

Item	Count
M,K,O	1
M,K,E	2
M,K,Y	2
K,O,E	3
K,O,Y	2
K,E,Y	2

L_3

Item	Count
K,O,E	3

Frequent Item Sets

Item	Count
M	3
O	3
K	5
E	4
Y	3
M,K	3
O,K	3
O,E	3
K,E	4
K,Y	3
K,O,E	3

Part B

Question 4

In [12]:
```
dataset = [
```

```
    ['M','O','N','K','E','Y'],
    ['D','O','N','K','E','Y'],
    ['M','A','K','E'],
    ['M','U','C','K','Y'],
    ['C','O','O','K','I','E']]

te = TransactionEncoder()
te_ary = te.fit(dataset).transform(dataset)
df = pd.DataFrame(te_ary, columns=te.columns_)
fi = apriori(df, min_support=3/5, use_colnames=True)
fi
```

Out[12]:

	support	itemsets
0	0.8	(E)
1	1.0	(K)
2	0.6	(M)
3	0.6	(O)
4	0.6	(Y)
5	0.8	(E, K)
6	0.6	(O, E)
7	0.6	(K, M)
8	0.6	(O, K)
9	0.6	(K, Y)
10	0.6	(O, E, K)