Step 1: Importing Required Libraries

```
In [1]: dataset=[['M','O','N','K','E','Y'],['D','O','N','K','E','Y'],['M','A','K','E'],['M','U','C','K','E','Y'],['C','O','O','K','I','E'
```

```
In [6]: !pip install apyori
        import numpy as np
        import matplotlib.pyplot as plt
        import pandas as pd
        from apyori import apriori
        import numpy as np
        import pandas as pd
        from mlxtend.frequent_patterns import apriori, association_rules
        from mlxtend.preprocessing import TransactionEncoder

        Requirement already satisfied: apyori in c:\users\ravi\anaconda3\lib\site-packages (1.1.2)
```

```
In [3]: dataset
```

```
Out[3]: [['M', 'O', 'N', 'K', 'E', 'Y'],
         ['D', 'O', 'N', 'K', 'E', 'Y'],
         ['M', 'A', 'K', 'E'],
         ['M', 'U', 'C', 'K', 'E', 'Y'],
         ['C', 'O', 'O', 'K', 'I', 'E']]
```

Step 2: Exploring Data and Building the Model

```
In [3]: dataset
```

```
Out[3]: [['M', 'O', 'N', 'K', 'E', 'Y'],
         ['D', 'O', 'N', 'K', 'E', 'Y'],
         ['M', 'A', 'K', 'E'],
         ['M', 'U', 'C', 'K', 'E', 'Y'],
         ['C', 'O', 'O', 'K', 'I', 'E']]
```

```
In [4]: te=TransactionEncoder()
        te_ary = te.fit(dataset).transform(dataset)
```

```
In [5]: df = pd.DataFrame(te_ary,columns=te.columns_)
        df
```

Out[5]:

	A	C	D	E	I	K	M	N	O	U	Y
0	False	False	False	True	False	True	True	True	True	False	True
1	False	False	True	True	False	True	False	True	True	False	True
2	True	False	False	True	False	True	True	False	False	False	False
3	False	True	False	True	False	True	True	False	False	True	True
4	False	True	False	True	True	True	False	False	True	False	False

Step 3: Display Results

```
In [8]: frequent_itemsets = apriori(df,min_support=0.6,use_colnames=True)
        frequent_itemsets
```

Out[8]:

	support	itemsets
0	1.0	(E)
1	1.0	(K)
2	0.6	(M)
3	0.6	(O)
4	0.6	(Y)
5	1.0	(E, K)
6	0.6	(E, M)
7	0.6	(E, O)
8	0.6	(Y, E)
9	0.6	(K, M)
10	0.6	(O, K)
11	0.6	(Y, K)
12	0.6	(E, K, M)
13	0.6	(E, O, K)
14	0.6	(Y, K, E)

```
In [9]: res = association_rules(frequent_itemsets,metric="confidence",min_threshold=0.8)
        res
```

Out[9]:

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
0	(E)	(K)	1.0	1.0	1.0	1.0	1.0	0.0	inf	0.0
1	(K)	(E)	1.0	1.0	1.0	1.0	1.0	0.0	inf	0.0
2	(M)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
3	(O)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
4	(Y)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
5	(M)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
6	(O)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
7	(Y)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
8	(E, M)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
9	(K, M)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
10	(M)	(E, K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
11	(E, O)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
12	(O, K)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
13	(O)	(E, K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
14	(Y, K)	(E)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
15	(Y, E)	(K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0
16	(Y)	(E, K)	0.6	1.0	0.6	1.0	1.0	0.0	inf	0.0

```
In [10]: res1=res[['antecedents','consequents','support','confidence','lift']]
         res1
```

Out[10]:

	antecedents	consequents	support	confidence	lift
0	(E)	(K)	1.0	1.0	1.0
1	(K)	(E)	1.0	1.0	1.0
2	(M)	(E)	0.6	1.0	1.0
3	(O)	(E)	0.6	1.0	1.0
4	(Y)	(E)	0.6	1.0	1.0
5	(M)	(K)	0.6	1.0	1.0
6	(O)	(K)	0.6	1.0	1.0
7	(Y)	(K)	0.6	1.0	1.0
8	(E, M)	(K)	0.6	1.0	1.0
9	(K, M)	(E)	0.6	1.0	1.0
10	(M)	(E, K)	0.6	1.0	1.0
11	(E, O)	(K)	0.6	1.0	1.0
12	(O, K)	(E)	0.6	1.0	1.0
13	(O)	(E, K)	0.6	1.0	1.0
14	(Y, K)	(E)	0.6	1.0	1.0
15	(Y, E)	(K)	0.6	1.0	1.0
16	(Y)	(E, K)	0.6	1.0	1.0

```
In [11]: res2=res1[res1['confidence'] >=1]
         res2
```

Out[11]:

	antecedents	consequents	support	confidence	lift
0	(E)	(K)	1.0	1.0	1.0
1	(K)	(E)	1.0	1.0	1.0
2	(M)	(E)	0.6	1.0	1.0
3	(O)	(E)	0.6	1.0	1.0
4	(Y)	(E)	0.6	1.0	1.0
5	(M)	(K)	0.6	1.0	1.0
6	(O)	(K)	0.6	1.0	1.0
7	(Y)	(K)	0.6	1.0	1.0
8	(E, M)	(K)	0.6	1.0	1.0
9	(K, M)	(E)	0.6	1.0	1.0
10	(M)	(E, K)	0.6	1.0	1.0
11	(E, O)	(K)	0.6	1.0	1.0
12	(O, K)	(E)	0.6	1.0	1.0
13	(O)	(E, K)	0.6	1.0	1.0
14	(Y, K)	(E)	0.6	1.0	1.0
15	(Y, E)	(K)	0.6	1.0	1.0
16	(Y)	(E, K)	0.6	1.0	1.0