ASSIGNMENT NO: 01

Name: Siddhesh Sardar Patil

Roll No: TYCOC218

Batch: C-4

Subject: DMW

Code:

```python
import pandas as pd

from mlxtend.preprocessing import TransactionEncoder

from mlxtend.frequent_patterns import apriori, association_rules

data = [

    ['Milk', 'Bread', 'Butter'],

    ['Beer', 'Bread', 'Diaper'],

    ['Milk', 'Diaper', 'Bread', 'Beer'],

    ['Milk', 'Bread'],

    ['Beer', 'Diaper', 'Bread']

]

te = TransactionEncoder()

te_ary = te.fit(data).transform(data)

df_encoded = pd.DataFrame(te_ary, columns=te.columns_)

frequent_itemsets = apriori(df_encoded, min_support=0.2, use_colnames=True)

print("Frequent Itemsets:")

print(frequent_itemsets)

rules = association_rules(frequent_itemsets, metric="confidence", min_threshold=0.7)

print("\nAssociation Rules:")

print(rules)
```

Output:

Frequent Itemsets:

	support	itemsets
0	0.6	(Beer)
1	1.0	(Bread)
2	0.2	(Butter)
3	0.6	(Diaper)
4	0.6	(Milk)
5	0.6	(Bread, Beer)
6	0.6	(Diaper, Beer)
7	0.2	(Milk, Beer)
8	0.2	(Bread, Butter)
9	0.6	(Bread, Diaper)
10	0.6	(Milk, Bread)
11	0.2	(Milk, Butter)
12	0.2	(Milk, Diaper)
13	0.6	(Bread, Diaper, Beer)
14	0.2	(Milk, Bread, Beer)
15	0.2	(Milk, Diaper, Beer)
16	0.2	(Milk, Bread, Butter)
17	0.2	(Milk, Bread, Diaper)
18	0.2	(Milk, Bread, Diaper, Beer)

Association Rules:

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
0	(Beer)	(Bread)	0.6	1.0	0.6	1.0	1.000000	0.00	inf	0.0
1	(Diaper)	(Beer)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
2	(Beer)	(Diaper)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
3	(Butter)	(Bread)	0.2	1.0	0.2	1.0	1.000000	0.00	inf	0.0
4	(Diaper)	(Bread)	0.6	1.0	0.6	1.0	1.000000	0.00	inf	0.0

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction	zhangs_metric
5	(Milk)	(Bread)	0.6	1.0	0.6	1.0	1.000000	0.00	inf	0.0
6	(Butter)	(Milk)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
7	(Bread, Diaper)	(Beer)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
8	(Bread, Beer)	(Diaper)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
9	(Diaper, Beer)	(Bread)	0.6	1.0	0.6	1.0	1.000000	0.00	inf	0.0
10	(Diaper)	(Bread, Beer)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
11	(Beer)	(Bread, Diaper)	0.6	0.6	0.6	1.0	1.666667	0.24	inf	1.0
12	(Milk, Beer)	(Bread)	0.2	1.0	0.2	1.0	1.000000	0.00	inf	0.0
13	(Milk, Diaper)	(Beer)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
14	(Milk, Beer)	(Diaper)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
15	(Milk, Butter)	(Bread)	0.2	1.0	0.2	1.0	1.000000	0.00	inf	0.0
16	(Bread, Butter)	(Milk)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
17	(Butter)	(Milk, Bread)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
18	(Milk, Diaper)	(Bread)	0.2	1.0	0.2	1.0	1.000000	0.00	inf	0.0
19	(Milk, Diaper, Bread)	(Beer)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
20	(Milk, Bread, Beer)	(Diaper)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
21	(Milk, Diaper, Beer)	(Bread)	0.2	1.0	0.2	1.0	1.000000	0.00	inf	0.0
22	(Milk, Diaper)	(Bread, Beer)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5
23	(Milk, Beer)	(Bread, Diaper)	0.2	0.6	0.2	1.0	1.666667	0.08	inf	0.5