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import pandas as pd
from mlxtend.preprocessing import TransactionEncoder
from mlxtend.frequent_patterns import association_rules

dataset = [['TFIOS', '5 feet apart', 'Walk to remember'],
['TFIOS', 'Walk to remember'],
['Divergent', 'Harry Potter', 'Walk to remember'],
['TFIOS', '5 feet apart'],
['Divergent', 'Harry Potter']]
te = TransactionEncoder()
te_array = te.fit(dataset).transform(dataset)
df = pd.DataFrame(te_array, columns=te.columns_)

from mlxtend.frequent_patterns import fpgrowth
frequent_itemsets_fp=fpgrowth(df, min_support=0.2, use_colnames=True)
rules_fp = association_rules(frequent_itemsets_fp, metric="confidence", min_threshold=0.8)
print(df)
print("\n")
print(rules_fp)
print("\n")
print(frequent_itemsets_fp)

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5 feet apart Divergent Harry Potter TFIOS Walk to remember
0          True      False      False      True      True
1          False      False      False      True      True
2          False      True       True      False      True
3          True       False      False      True      False
4          False      True       True      False      False

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          antecedents      consequents antecedent support \
0          (5 feet apart)      (TFIOS)              0.4
1 (5 feet apart, Walk to remember)      (TFIOS)              0.2
2          (Divergent) (Harry Potter)              0.4
3          (Harry Potter) (Divergent)              0.4
4 (Divergent, Walk to remember) (Harry Potter)              0.2
5 (Harry Potter, Walk to remember) (Divergent)              0.2

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consequent support support confidence lift leverage conviction
0          0.6      0.4          1.0 1.666667      0.16      inf
1          0.6      0.2          1.0 1.666667      0.08      inf
2          0.4      0.4          1.0 2.500000      0.24      inf
3          0.4      0.4          1.0 2.500000      0.24      inf
4          0.4      0.2          1.0 2.500000      0.12      inf
5          0.4      0.2          1.0 2.500000      0.12      inf

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support      itemsets
0          0.6      (Walk to remember)
1          0.6      (TFIOS)
2          0.4      (5 feet apart)
3          0.4      (Harry Potter)
4          0.4      (Divergent)
5          0.4      (TFIOS, Walk to remember)
6          0.4      (TFIOS, 5 feet apart)
7          0.2      (Walk to remember, 5 feet apart)
8          0.2      (TFIOS, Walk to remember, 5 feet apart)
9          0.2      (Walk to remember, Harry Potter)
10         0.4      (Divergent, Harry Potter)
11         0.2      (Divergent, Walk to remember)
12         0.2      (Divergent, Walk to remember, Harry Potter)

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