Market basket analysis is used by companies to identity items that are frequently purchased together.

How Does market Basket Analysis Work?

Market basket analysis Frequently used by restaurants, retail stores, and online shopping plaform to encourage customers to make more purchases in asingle visit. this is a use-case of data science in marketing that increases company sales and drives business growth and commanly utilizes the apriori algorithm

what is the apriori algorithms?

The first component of the Apriori algorithm is support -we use it to popularity of agiven product with the following formula

support(item)=Transaction comprising the item /Total transaction Ahigh support values

Confidence

Confidence tells us the likelihood of different purchase combinati0ons.we calculate that using the following formula:

confidence (Bread-> milk)= Transaction comprising bread and milk./ Transaction comprising bread

Lift

Finally, life refers to the increase in the ration of the sale of milk When you sell bread: Lift= confidence(Bread->Milk)/support(Bread)=0.75/1=1.3 this means that customers are 1.3 times more likely to buy milk if you also sell bread.

step:1 pre-Requisties for performing market Basket Analysis

Download the dataset "groceries_dataset.csv"

Step:2 Reading the Dataset

```
import pandas as pd
from google.colab import drive


df=pd.read_csv('/content/Groceries_dataset.csv.zip')


df['single_transaction'] = df['Member_number'].astype(str)+'_'+df['Date'].astype(str)
df.head()
```

	Member_number	Date	itemDescription	single_transaction
0	1808	21-07-2015	tropical fruit	1808_21-07-2015
1	2552	05-01-2015	whole milk	2552_05-01-2015
2	2300	19-09-2015	pip fruit	2300_19-09-2015
3	1187	12-12-2015	other vegetables	1187_12-12-2015
4	3037	01-02-2015	whole milk	3037_01-02-2015

```
df2 = pd.crosstab(df['single_transaction'],df['itemDescription'])
df2.head()
```

itemDescription	Instant food products	UHT-milk	abrasive cleaner	artif. sweetener	baby cosmetics	bags	baki powd
single_transaction							
1000_15-03-2015	0	0	0	0	0	0	
1000_24-06-2014	0	0	0	0	0	0	
1000_24-07-2015	0	0	0	0	0	0	
1000_25-11-2015	0	0	0	0	0	0	
1000_27-05-2015	0	0	0	0	0	0	

5 rows × 167 columns

```
def encode(item_freq):
  res = 0
  if item_freq > 0:
    res = 1
  return res

basket_input = df2.applymap(encode)


from mlxtend.frequent_patterns import aprioru
from mlxtend.frequent_
```

```
  File "<ipython-input-11-9de43f20cea4>", line 2
    from mlxtend.frequent_
                          ^
SyntaxError: invalid syntax
```

```
rules.sort_values(["support","confidence","lift"],axis = 0, ascending = False).head(8)
```