—----------Import Important Libraries—----------
```
import pandas as pd
from mlxtend.frequent_patterns import apriori, association_rules
from mlxtend.preprocessing import TransactionEncoder
```

—----------Read Datasets—----------
```
data = pd.read_csv('Downloads/book.csv')
data
```

	ChildBks	YouthBks	CookBks	DoItYBks	RefBks	ArtBks	GeogBks	ItalCook	ItalAtlas	ItalArt	Florence
0	0	1	0	1	0	0	1	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	0	1	0	1	0	0	0	0
4	0	0	1	0	0	0	1	0	0	0	0
...	...	...	...	...	...	...	...	...	...	...	...
1995	0	0	1	0	0	1	1	1	0	1	1
1996	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	1	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0

2000 rows × 11 columns

—----------Read first 6 columns—----------
```
data.head(6)
```

	ChildBks	YouthBks	CookBks	DoItYBks	RefBks	ArtBks	GeogBks	ItalCook	ItalAtlas	ItalArt	Florence
0	0	1	0	1	0	0	1	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	0	1	0	1	0	0	0	0
4	0	0	1	0	0	0	1	0	0	0	0
5	1	0	0	0	0	1	0	0	0	0	1

—----------Get dummies—----------
```
df = pd.get_dummies(data)
df
```

	ChildBks	YouthBks	CookBks	DoItYBks	RefBks	ArtBks	GeogBks	ItalCook	ItalAtlas	ItalArt	Florence
0	0	1	0	1	0	0	1	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	0	1	0	1	0	0	0	0
4	0	0	1	0	0	0	1	0	0	0	0
...	...	...	...	...	...	...	...	...	...	...	...
1995	0	0	1	0	0	1	1	1	0	1	1
1996	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	1	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0

2000 rows × 11 columns

—----------Read first 6 columns—----------

df.head(6)

	ChildBks	YouthBks	CookBks	DoItYBks	RefBks	ArtBks	GeogBks	ItalCook	ItalAtlas	ItalArt	Florence
0	0	1	0	1	0	0	1	0	0	0	0
1	1	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0
3	1	1	1	0	1	0	1	0	0	0	0
4	0	0	1	0	0	0	1	0	0	0	0
5	1	0	0	0	0	1	0	0	0	0	1

—----------Define Apriori—----------

data1 = apriori (df, min_support = 0.01, use_colnames = True)

data1

	support	itemsets
0	0.4230	(ChildBks)
1	0.2475	(YouthBks)
2	0.4310	(CookBks)
3	0.2820	(DoItYBks)
4	0.2145	(RefBks)
...	...	...
589	0.0125	(ItalAtlas, CookBks, ItalCook, RefBks, ArtBks,...
590	0.0145	(YouthBks, DoItYBks, ChildBks, GeogBks, CookBk...
591	0.0105	(DoItYBks, ChildBks, GeogBks, CookBks, ItalCoo...
592	0.0100	(ChildBks, GeogBks, CookBks, RefBks, ItalCook,...
593	0.0110	(ItalAtlas, ChildBks, CookBks, ItalCook, RefBk...

594 rows × 2 columns

——————Define Association——————————
data2 = association_rules (data1, metric = 'lift', min_threshold = 0.18)
data2

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
0	(YouthBks)	(ChildBks)	0.2475	0.4230	0.165	0.666667	1.576044	0.060308	1.731000
1	(ChildBks)	(YouthBks)	0.4230	0.2475	0.165	0.390071	1.576044	0.060308	1.233750
2	(CookBks)	(ChildBks)	0.4310	0.4230	0.256	0.593968	1.404179	0.073687	1.421069
3	(ChildBks)	(CookBks)	0.4230	0.4310	0.256	0.605201	1.404179	0.073687	1.441240
4	(DoItYBks)	(ChildBks)	0.2820	0.4230	0.184	0.652482	1.542511	0.064714	1.660347
...	...	...	...	...	...	...	...	...	...
11101	(CookBks)	(ItalAtlas, ChildBks, ItalCook, RefBks, ArtBks...	0.4310	0.0110	0.011	0.025522	2.320186	0.006259	1.014902
11102	(ItalCook)	(ItalAtlas, ChildBks, CookBks, RefBks, ItalArt...	0.1135	0.0115	0.011	0.096916	8.427504	0.009695	1.094583
11103	(RefBks)	(ItalAtlas, ChildBks, CookBks, ItalCook, ItalA...	0.2145	0.0110	0.011	0.051282	4.662005	0.008640	1.042459
11104	(ArtBks)	(ItalAtlas, ChildBks, CookBks, ItalCook, RefBk...	0.2410	0.0110	0.011	0.045643	4.149378	0.008349	1.036300
11105	(ItalArt)	(ItalAtlas, ChildBks, CookBks, ItalCook, RefBk...	0.0485	0.0115	0.011	0.226804	19.722098	0.010442	1.278460

I1106 rows × 9 columns

——————sort values——————————
data2.sort_values('lift', ascending = True)

	antecedents	consequents	antecedent support	consequent support	support	confidence	lift	leverage	conviction
37	(Florence)	(YouthBks)	0.1085	0.2475	0.0255	0.235023	0.949588	-0.001354	0.983690
157	(YouthBks, ChildBks)	(Florence)	0.1650	0.1085	0.0170	0.103030	0.949588	-0.000903	0.993902
160	(Florence)	(YouthBks, ChildBks)	0.1085	0.1650	0.0170	0.156682	0.949588	-0.000903	0.990137
36	(YouthBks)	(Florence)	0.2475	0.1085	0.0255	0.103030	0.949588	-0.001354	0.993902
53	(Florence)	(CookBks)	0.1085	0.4310	0.0475	0.437788	1.015749	0.000737	1.012074
...	...	...	...	...	...	...	...	...	...
11053	(ItalAtlas, ItalCook, ArtBks)	(ItalArt, CookBks, RefBks, ChildBks)	0.0130	0.0150	0.0110	0.846154	56.410256	0.010805	6.402500
11013	(ItalAtlas, ItalCook, ArtBks, ChildBks)	(ItalArt, CookBks, RefBks)	0.0115	0.0165	0.0110	0.956522	57.971014	0.010810	22.620500
11072	(ItalArt, CookBks, RefBks)	(ItalAtlas, ItalCook, ArtBks, ChildBks)	0.0165	0.0115	0.0110	0.666667	57.971014	0.010810	2.965500
10575	(ItalArt, CookBks, RefBks)	(ItalAtlas, ItalCook, ArtBks)	0.0165	0.0130	0.0125	0.757576	58.275058	0.012286	4.071375
10566	(ItalAtlas, ItalCook, ArtBks)	(ItalArt, CookBks, RefBks)	0.0130	0.0165	0.0125	0.961538	58.275058	0.012286	25.571000

11106 rows × 9 columns

——————Plot 1——————————
import seaborn as sns
sns.lmplot('ChildBks','YouthBks', data=data, fit_reg=False, size=6)