```
basket_data = pd.read_csv('market-basket.csv')
basket = pd.DataFrame(basket_data)
```

```
basket
```

	Item(s)	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	...	Item 23	Item 24	Item 25	Item 26	Item 27	Item 28	Item 29	Item 30	I
0	4	citrus fruit	semi-finished bread	margarine	ready soups	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
1	3	tropical fruit	yogurt	coffee	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
2	1	whole milk	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
3	4	pip fruit	yogurt	cream cheese	meat spreads	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
4	4	other vegetables	whole milk	condensed milk	long life bakery product	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
9830	17	sausage	chicken	beef	hamburger meat	citrus fruit	grapes	root vegetables	whole milk	butter	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
9831	1	cooking chocolate	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
9832	10	chicken	citrus fruit	other vegetables	butter	yogurt	frozen dessert	domestic eggs	rolls/buns	rum	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
9833	4	semi-finished bread	bottled water	soda	bottled beer	NaN	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
9834	5	chicken	tropical fruit	other vegetables	vinegar	shopping bags	NaN	NaN	NaN	NaN	...	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	

9835 rows × 33 columns

```
print(len(association_results))
```

```
12
```

```
print(association_results)
```

```
[RelationRecord(items=frozenset({'citrus fruit', '8'}), support=0.015, ordered_statistics=[OrderedStatistic(items_bas
e=frozenset({'8'}), items_add=frozenset({'citrus fruit'}), confidence=0.2884615384615385, lift=3.036437246963563)]),
RelationRecord(items=frozenset({'berries', 'whipped/sour cream'}), support=0.017, ordered_statistics=[OrderedStatisti
c(items_base=frozenset({'berries'}), items_add=frozenset({'whipped/sour cream'}), confidence=0.3617021276595745, lift
=4.88786658999425), OrderedStatistic(items_base=frozenset({'whipped/sour cream'}), items_add=frozenset({'berries'}),
confidence=0.22972972972972977, lift=4.887866589994251)]), RelationRecord(items=frozenset({'butter', 'root vegetable
s'}), support=0.017, ordered_statistics=[OrderedStatistic(items_base=frozenset({'butter'}), items_add=frozenset({'roo
t vegetables'}), confidence=0.3695652173913044, lift=3.3596837944664033)]), RelationRecord(items=frozenset({'nan', 'c
itrus fruit', '8'}), support=0.015, ordered_statistics=[OrderedStatistic(items_base=frozenset({'8'}), items_add=froze
nset({'nan', 'citrus fruit'}), confidence=0.2884615384615385, lift=3.036437246963563), OrderedStatistic(items_base=fr
ozenset({'nan', '8'}), items_add=frozenset({'citrus fruit'}), confidence=0.2884615384615385, lift=3.03643724696356
3)]), RelationRecord(items=frozenset({'nan', 'berries', 'whipped/sour cream'}), support=0.017, ordered_statistics=[Or
deredStatistic(items_base=frozenset({'berries'}), items_add=frozenset({'nan', 'whipped/sour cream'}), confidence=0.36
17021276595745, lift=4.88786658999425), OrderedStatistic(items_base=frozenset({'whipped/sour cream'}), items_add=froz
enset({'nan', 'berries'}), confidence=0.22972972972972977, lift=4.887866589994251), OrderedStatistic(items_base=froze
nset({'nan', 'berries'}), items_add=frozenset({'whipped/sour cream'}), confidence=0.3617021276595745, lift=4.88786658
999425), OrderedStatistic(items_base=frozenset({'nan', 'whipped/sour cream'}), items_add=frozenset({'berries'}), conf
idence=0.22972972972972977, lift=4.887866589994251)]), RelationRecord(items=frozenset({'nan', 'butter', 'root vegetab
les'}), support=0.017, ordered_statistics=[OrderedStatistic(items_base=frozenset({'butter'}), items_add=frozenset({'n
an', 'root vegetables'}), confidence=0.3695652173913044, lift=3.3596837944664033), OrderedStatistic(items_base=frozen
set({'nan', 'butter'}), items_add=frozenset({'root vegetables'}), confidence=0.3695652173913044, lift=3.3596837944664
033)]), RelationRecord(items=frozenset({'whole milk', 'yogurt', 'curd'}), support=0.016, ordered_statistics=[OrderedS
tatistic(items_base=frozenset({'curd'}), items_add=frozenset({'whole milk', 'yogurt'}), confidence=0.2133333333333333
5, lift=3.8095238095238098), OrderedStatistic(items_base=frozenset({'whole milk', 'curd'}), items_add=frozenset({'yog
urt'}), confidence=0.48484848484848486, lift=3.81770460510618), OrderedStatistic(items_base=frozenset({'whole milk',
'yogurt'}), items_add=frozenset({'curd'}), confidence=0.2857142857142857, lift=3.8095238095238093)]), RelationRecord
(items=frozenset({'fruit/vegetable juice', 'whole milk', 'yogurt'}), support=0.015, ordered_statistics=[OrderedStatis
tic(items_base=frozenset({'fruit/vegetable juice'}), items_add=frozenset({'whole milk', 'yogurt'}), confidence=0.2238
8059701492535, lift=3.9978678038379525), OrderedStatistic(items_base=frozenset({'fruit/vegetable juice', 'whole mil
k'}), items_add=frozenset({'yogurt'}), confidence=0.5172413793103448, lift=4.072766766223187), OrderedStatistic(items
_base=frozenset({'whole milk', 'yogurt'}), items_add=frozenset({'fruit/vegetable juice'}), confidence=0.2678571428571
4285, lift=3.997867803837953)]), RelationRecord(items=frozenset({'tropical fruit', 'whole milk', 'yogurt'}), support=
0.015, ordered_statistics=[OrderedStatistic(items_base=frozenset({'tropical fruit', 'whole milk'}), items_add=frozens
et({'yogurt'}), confidence=0.40540540540540543, lift=3.1921685464992553)]), RelationRecord(items=frozenset({'nan', 'w
```