

# apriori\_tarefa\_5

December 6, 2020

```
[1]: !pip install apyori
```

Requirement already satisfied: apyori in /home/pbraga/.local/lib/python3.8/site-packages (1.1.2)

```
[2]: import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
from apyori import apriori
import pandas as pd
import random
```

```
[3]: df=pd.read_csv('store_data.csv',header=None)
df.head()
```

```
[3]:
```

	0	1	2	3	4	\
0	shrimp	almonds	avocado	vegetables mix	green grapes	
1	burgers	meatballs	eggs	NaN	NaN	
2	chutney	NaN	NaN	NaN	NaN	
3	turkey	avocado	NaN	NaN	NaN	
4	mineral water	milk	energy bar	whole wheat rice	green tea	

  

	5	6	7	8	9	\
0	whole weat flour	yams	cottage cheese	energy drink	tomato juice	
1	NaN	NaN	NaN	NaN	NaN	
2	NaN	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	NaN	
4	NaN	NaN	NaN	NaN	NaN	

  

	10	11	12	13	14	15	\
0	low fat yogurt	green tea	honey	salad	mineral water	salmon	
1	NaN	NaN	NaN	NaN	NaN	NaN	
2	NaN	NaN	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	NaN	NaN	
4	NaN	NaN	NaN	NaN	NaN	NaN	

  

	16	17	18	19
0	antioxydant juice	frozen smoothie	spinach	olive oil

1	NaN	NaN	NaN	NaN
2	NaN	NaN	NaN	NaN
3	NaN	NaN	NaN	NaN
4	NaN	NaN	NaN	NaN

```
[4]: len(df)
```

```
[4]: 7501
```

```
[5]: #gerar a lista de listas trans
trans=[]
for i in range(len(df)):
    trans.append([x for x in list(df.iloc[i]) if str(x) != 'nan'])
```

```
[6]: #rodar apriori
results=list(apriori(trans,min_support=0.002))
```

```
[7]: #mostrar resultados (controla as combinações mostradas 1,2,3...)
quant=4
for r in results:
    if len(r[0])==quant:
        print(r)
```

```
RelationRecord(items=frozenset({'eggs', 'burgers', 'chocolate', 'spaghetti'}),
support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'burgers', 'chocolate', 'spaghetti'}),
confidence=0.0026663111585121984, lift=1.0),
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confidence=0.016273393002441006, lift=2.260494831690926),
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lift=2.318558358061325), OrderedStatistic(items_base=frozenset({'spaghetti'}),
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confidence=0.015313935681470138, lift=2.801703208456281),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.15625,
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lift=2.801703208456281), OrderedStatistic(items_base=frozenset({'burgers',
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confidence=0.06639004149377593, lift=3.018131522695838),
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items_add=frozenset({'burgers', 'chocolate'}), confidence=0.08988764044943819,
lift=5.267556179775281), OrderedStatistic(items_base=frozenset({'french fries',

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'burgers', 'chocolate'}), items_add=frozenset({'milk'}),
confidence=0.4444444444444444, lift=3.4298125285779606),
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lift=2.283322552414292), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.38095238095238093, lift=2.3250803983106665),
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items_add=frozenset({'burgers'}), confidence=0.2909090909090909,
lift=3.336558242980261)])
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confidence=0.013018714401952805, lift=2.3250803983106665),
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confidence=0.012251148545176109, lift=2.5526629232601667),
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confidence=0.09937888198757763, lift=2.889306177476046),
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lift=4.529589371980676), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.38095238095238093, lift=2.3250803983106665),
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lift=3.058511722731905)])
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items_add=frozenset({'burgers', 'chocolate', 'spaghetti', 'milk'}),
confidence=0.0029329422743634183, lift=1.0),
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confidence=0.03363914373088685, lift=3.077161184455881),
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'chocolate', 'spaghetti'}), confidence=0.02263374485596708,
lift=3.536994170096022), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'burgers', 'chocolate', 'milk'}),
confidence=0.016845329249617153, lift=3.081873529301909),
OrderedStatistic(items_base=frozenset({'burgers', 'chocolate'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.17187500000000003,
lift=4.8467457706766925), OrderedStatistic(items_base=frozenset({'burgers',
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items_add=frozenset({'chocolate', 'milk'}), confidence=0.13664596273291926,
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items_add=frozenset({'spaghetti'}), confidence=0.5365853658536586,
lift=3.081873529301909), OrderedStatistic(items_base=frozenset({'burgers',
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confidence=0.2682926829268293, lift=3.077161184455881)])
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fries'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),

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items_add=frozenset({'eggs', 'green tea', 'burgers', 'french fries'}),
confidence=0.0021330489268097585, lift=1.0),
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lift=3.4624661012059312), OrderedStatistic(items_base=frozenset({'eggs'}),
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lift=2.0803605477552436), OrderedStatistic(items_base=frozenset({'french fries',
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lift=3.4624661012059312)])
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items_add=frozenset({'eggs', 'burgers', 'spaghetti', 'french fries'}),
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lift=3.2496687054026494), OrderedStatistic(items_base=frozenset({'eggs'}),
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confidence=0.01261127596439169, lift=2.252313833545287),
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items_add=frozenset({'french fries', 'eggs', 'burgers'}),
confidence=0.013016845329249616, lift=1.4358728943338437),
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items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.0787037037037037, lift=2.8519636786544997),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.10303030303030303,
lift=2.8205485512054858), OrderedStatistic(items_base=frozenset({'burgers',
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items_add=frozenset({'eggs', 'burgers'}), confidence=0.08212560386473429,
lift=2.8519636786544997), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.25, lift=1.435872894333844),
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items_add=frozenset({'burgers'}), confidence=0.28333333333333327,
lift=3.2496687054026494)])
RelationRecord(items=frozenset({'eggs', 'burgers', 'mineral water', 'milk'}),
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'burgers', 'mineral water'}), confidence=0.01748971193415638,
lift=2.2235649020018133), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'burgers', 'milk'}),
confidence=0.009507829977628635, lift=1.7829558165548098),

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confidence=0.12686567164179102, lift=2.491150269594436),
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OrderedStatistic(items_base=frozenset({'eggs', 'burgers', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.425,
lift=1.7829558165548098), OrderedStatistic(items_base=frozenset({'eggs',
'burgers', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.28813559322033894, lift=2.2235649020018133),
OrderedStatistic(items_base=frozenset({'burgers', 'mineral water', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.3269230769230769,
lift=1.8191765578635015), OrderedStatistic(items_base=frozenset({'eggs',
'mineral water', 'milk'}), items_add=frozenset({'burgers'}),
confidence=0.17346938775510204, lift=1.989593084940398)])
RelationRecord(items=frozenset({'french fries', 'burgers', 'spaghetti',
'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'burgers', 'spaghetti', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'burgers'}), items_add=frozenset({'french
fries', 'spaghetti', 'milk'}), confidence=0.024464831804281342,
lift=3.823139653414882), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'burgers', 'spaghetti', 'milk'}),
confidence=0.0124804992199688, lift=1.9503380135205408),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'french
fries', 'burgers', 'spaghetti'}), confidence=0.01646090534979424,
lift=2.9398393102096807), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'french fries', 'burgers', 'milk'}),
confidence=0.012251148545176109, lift=2.187996791365857),
OrderedStatistic(items_base=frozenset({'french fries', 'burgers'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.09696969696969697,
lift=2.7344725449988605), OrderedStatistic(items_base=frozenset({'burgers',
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confidence=0.11940298507462685, lift=4.326771937414376),
OrderedStatistic(items_base=frozenset({'burgers', 'spaghetti'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.09937888198757763,
lift=4.187870751622583), OrderedStatistic(items_base=frozenset({'french fries',

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'milk'}), items_add=frozenset({'burgers', 'spaghetti'}),
confidence=0.08988764044943819, lift=4.187870751622583),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti'}),
items_add=frozenset({'burgers', 'milk'}), confidence=0.07729468599033815,
lift=4.326771937414376), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'french fries', 'burgers'}),
confidence=0.060150375939849614, lift=2.7344725449988605),
OrderedStatistic(items_base=frozenset({'french fries', 'burgers', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.38095238095238093,
lift=2.1879967913658573), OrderedStatistic(items_base=frozenset({'french fries',
'burgers', 'spaghetti'}), items_add=frozenset({'milk'}),
confidence=0.38095238095238093, lift=2.9398393102096807),
OrderedStatistic(items_base=frozenset({'burgers', 'spaghetti', 'milk'}),
items_add=frozenset({'french fries'}), confidence=0.3333333333333333,
lift=1.9503380135205408), OrderedStatistic(items_base=frozenset({'french fries',
'spaghetti', 'milk'}), items_add=frozenset({'burgers'}),
confidence=0.3333333333333333, lift=3.8231396534148825))]
RelationRecord(items=frozenset({'ground beef', 'burgers', 'spaghetti', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
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confidence=0.0023996800426609784, lift=1.0),
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beef', 'spaghetti', 'mineral water'}), confidence=0.027522935779816512,
lift=1.6128870412844036), OrderedStatistic(items_base=frozenset({'ground
beef'}), items_add=frozenset({'burgers', 'spaghetti', 'mineral water'}),
confidence=0.024423337856173677, lift=3.7387644338603825),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'ground beef', 'burgers', 'spaghetti'}),
confidence=0.010067114093959731, lift=1.84179080045834),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'burgers', 'mineral water'}),
confidence=0.013782542113323124, lift=2.584571209800919),
OrderedStatistic(items_base=frozenset({'ground beef', 'burgers'}),
items_add=frozenset({'spaghetti', 'mineral water'}), confidence=0.2,
lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'burgers',
'mineral water'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.09836065573770492, lift=2.5095349615255937),
OrderedStatistic(items_base=frozenset({'burgers', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.11180124223602483, lift=2.7316648795192906),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'burgers', 'spaghetti'}), confidence=0.05863192182410423,
lift=2.731664879519291), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.061224489795918366, lift=2.5095349615255937),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'ground beef', 'burgers'}),

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confidence=0.040178571428571425, lift=3.348660714285714),
OrderedStatistic(items_base=frozenset({'ground beef', 'burgers', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.45,
lift=2.584571209800919), OrderedStatistic(items_base=frozenset({'ground beef',
'burgers', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.43902439024390244, lift=1.8417908004583403),
OrderedStatistic(items_base=frozenset({'burgers', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.36734693877551017,
lift=3.7387644338603825), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'burgers'}),
confidence=0.140625, lift=1.6128870412844036)])
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'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'burgers', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'burgers'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.024464831804281342, lift=1.5551754522365622),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'burgers',
'spaghetti', 'mineral water'}), confidence=0.01646090534979424,
lift=2.519862265894012), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'burgers', 'spaghetti', 'milk'}),
confidence=0.008948545861297539, lift=1.3983967188665174),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'burgers', 'mineral water', 'milk'}),
confidence=0.012251148545176109, lift=1.7672281776416539),
OrderedStatistic(items_base=frozenset({'burgers', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.11940298507462685, lift=1.9992004264392322),
OrderedStatistic(items_base=frozenset({'burgers', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.08743169398907102,
lift=2.4655080323760217), OrderedStatistic(items_base=frozenset({'burgers',
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confidence=0.09937888198757763, lift=2.070669427191166),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'burgers', 'spaghetti'}), confidence=0.04444444444444444,
lift=2.070669427191166), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'burgers', 'mineral water'}),
confidence=0.060150375939849614, lift=2.4655080323760217),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'burgers', 'milk'}), confidence=0.03571428571428571,
lift=1.9992004264392322), OrderedStatistic(items_base=frozenset({'burgers',
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confidence=0.3076923076923077, lift=1.767228177641654),
OrderedStatistic(items_base=frozenset({'burgers', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.3333333333333333,
lift=1.3983967188665174), OrderedStatistic(items_base=frozenset({'burgers',

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'spaghetti', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.32653061224489793, lift=2.519862265894012),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'burgers'}), confidence=0.13559322033898302,
lift=1.555175452236562)])
RelationRecord(items=frozenset({'cake', 'eggs', 'chocolate', 'mineral water'}),
support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cake', 'eggs', 'chocolate', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cake'}), items_add=frozenset({'eggs',
'chocolate', 'mineral water'}), confidence=0.02631578947368421,
lift=1.9544033350703491), OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'cake', 'eggs', 'mineral water'}),
confidence=0.013018714401952805, lift=1.8083958653527406),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'cake',
'chocolate', 'mineral water'}), confidence=0.011869436201780414,
lift=2.1198247845132117), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'cake', 'eggs', 'chocolate'}),
confidence=0.008948545861297539, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'cake', 'chocolate'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.1568627450980392,
lift=3.0801765732471), OrderedStatistic(items_base=frozenset({'cake', 'eggs'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.11188811188811189, lift=2.124741081703107),
OrderedStatistic(items_base=frozenset({'cake', 'mineral water'}),
items_add=frozenset({'eggs', 'chocolate'}), confidence=0.07766990291262135,
lift=2.3397668343276012), OrderedStatistic(items_base=frozenset({'eggs',
'chocolate'}), items_add=frozenset({'cake', 'mineral water'}),
confidence=0.0642570281124498, lift=2.3397668343276012),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'cake', 'eggs'}), confidence=0.040506329113924044,
lift=2.1247410817031067), OrderedStatistic(items_base=frozenset({'eggs',
'mineral water'}), items_add=frozenset({'cake', 'chocolate'}),
confidence=0.0418848167539267, lift=3.0801765732470994),
OrderedStatistic(items_base=frozenset({'cake', 'eggs', 'chocolate'}),
items_add=frozenset({'mineral water'}), confidence=0.5,
lift=2.0975950782997765), OrderedStatistic(items_base=frozenset({'cake',
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confidence=0.38095238095238093, lift=2.1198247845132117),
OrderedStatistic(items_base=frozenset({'cake', 'eggs', 'mineral water'}),
items_add=frozenset({'chocolate'}), confidence=0.2962962962962963,
lift=1.8083958653527406), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.15841584158415842, lift=1.9544033350703491)])
RelationRecord(items=frozenset({'cake', 'french fries', 'chocolate', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),

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items_add=frozenset({'cake', 'french fries', 'chocolate', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cake'}), items_add=frozenset({'french
fries', 'chocolate', 'mineral water'}), confidence=0.02631578947368421,
lift=3.0842927631578947), OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'cake', 'french fries', 'mineral water'}),
confidence=0.013018714401952805, lift=2.034445348521833),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'cake', 'chocolate', 'mineral water'}),
confidence=0.0124804992199688, lift=2.228957729737761),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'cake', 'french fries', 'chocolate'}),
confidence=0.008948545861297539, lift=2.58165548098434),
OrderedStatistic(items_base=frozenset({'cake', 'chocolate'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.1568627450980392, lift=4.650701387274277),
OrderedStatistic(items_base=frozenset({'cake', 'french fries'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.11940298507462685, lift=2.267447572265256),
OrderedStatistic(items_base=frozenset({'cake', 'mineral water'}),
items_add=frozenset({'french fries', 'chocolate'}),
confidence=0.07766990291262135, lift=2.258147061037104),
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items_add=frozenset({'cake', 'mineral water'}), confidence=0.06201550387596899,
lift=2.258147061037104), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.040506329113924044, lift=2.2674475722652554),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'cake', 'chocolate'}), confidence=0.06324110671936758,
lift=4.650701387274277), OrderedStatistic(items_base=frozenset({'cake', 'french
fries', 'chocolate'}), items_add=frozenset({'mineral water'}),
confidence=0.6153846153846154, lift=2.5816554809843404),
OrderedStatistic(items_base=frozenset({'cake', 'chocolate', 'mineral water'}),
items_add=frozenset({'french fries'}), confidence=0.38095238095238093,
lift=2.228957729737761), OrderedStatistic(items_base=frozenset({'cake', 'french
fries', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.3333333333333333, lift=2.0344453485218335),
OrderedStatistic(items_base=frozenset({'french fries', 'chocolate', 'mineral
water'}), items_add=frozenset({'cake'}), confidence=0.25,
lift=3.0842927631578947)])
RelationRecord(items=frozenset({'cake', 'spaghetti', 'chocolate', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cake', 'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cake'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.02631578947368421, lift=1.6587793011941616),

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OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'cake', 'spaghetti', 'mineral water'}),
confidence=0.013018714401952805, lift=1.8425165420575091),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'cake', 'spaghetti'}),
confidence=0.008948545861297539, lift=1.72110365398956),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cake', 'chocolate', 'mineral water'}),
confidence=0.012251148545176109, lift=2.187996791365857),
OrderedStatistic(items_base=frozenset({'cake', 'chocolate'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1568627450980392, lift=2.6264005602240896),
OrderedStatistic(items_base=frozenset({'cake', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.07766990291262135,
lift=1.9816392576448052), OrderedStatistic(items_base=frozenset({'cake',
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confidence=0.11764705882352941, lift=2.234102755026061),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'cake', 'spaghetti'}), confidence=0.040506329113924044,
lift=2.234102755026061), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.054421768707482984, lift=1.9816392576448052),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cake', 'chocolate'}), confidence=0.03571428571428571,
lift=2.6264005602240896), OrderedStatistic(items_base=frozenset({'cake',
'chocolate', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.38095238095238093, lift=2.1879967913658573),
OrderedStatistic(items_base=frozenset({'cake', 'chocolate', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.4102564102564102,
lift=1.72110365398956), OrderedStatistic(items_base=frozenset({'cake',
'spaghetti', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.3018867924528302, lift=1.8425165420575094),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'cake'}), confidence=0.134453781512605,
lift=1.6587793011941614)])
RelationRecord(items=frozenset({'cake', 'eggs', 'mineral water', 'milk'}),
support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cake', 'eggs', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cake'}), items_add=frozenset({'eggs',
'mineral water', 'milk'}), confidence=0.02631578947368421,
lift=2.0142320085929106), OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'cake', 'mineral water', 'milk'}),
confidence=0.011869436201780414, lift=1.85484668644906),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'cake',
'eggs', 'mineral water'}), confidence=0.01646090534979424,
lift=2.2865416857186407), OrderedStatistic(items_base=frozenset({'mineral

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water'}), items_add=frozenset({'cake', 'eggs', 'milk'}),
confidence=0.008948545861297539, lift=2.1652594356642854),
OrderedStatistic(items_base=frozenset({'cake', 'eggs'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.11188811188811189,
lift=2.33131313131312), OrderedStatistic(items_base=frozenset({'cake',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.15999999999999998, lift=3.1417801047120415),
OrderedStatistic(items_base=frozenset({'cake', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.07766990291262135,
lift=2.5220863279115706), OrderedStatistic(items_base=frozenset({'eggs',
'milk'}), items_add=frozenset({'cake', 'mineral water'}),
confidence=0.06926406926406926, lift=2.5220863279115706),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'cake', 'milk'}), confidence=0.0418848167539267,
lift=3.1417801047120415), OrderedStatistic(items_base=frozenset({'mineral
water', 'milk'}), items_add=frozenset({'cake', 'eggs'}),
confidence=0.04444444444444444, lift=2.33131313131312),
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items_add=frozenset({'mineral water'}), confidence=0.5161290322580645,
lift=2.1652594356642854), OrderedStatistic(items_base=frozenset({'cake', 'eggs',
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lift=2.2865416857186407), OrderedStatistic(items_base=frozenset({'cake',
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confidence=0.3333333333333333, lift=1.8548466864490603),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water', 'milk'}),
items_add=frozenset({'cake'}), confidence=0.16326530612244897,
lift=2.0142320085929106)])
RelationRecord(items=frozenset({'cake', 'spaghetti', 'mineral water', 'milk'}),
support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cake', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'cake'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.029605263157894735, lift=1.8819413470115967),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'cake',
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lift=2.6208944793850453), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'cake', 'spaghetti', 'milk'}),
confidence=0.010067114093959731, lift=2.4359168651223206),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cake', 'mineral water', 'milk'}),
confidence=0.013782542113323124, lift=2.1538093415007653),
OrderedStatistic(items_base=frozenset({'cake', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}), confidence=0.18,
lift=3.013794642857143), OrderedStatistic(items_base=frozenset({'cake', 'mineral
water'}), items_add=frozenset({'spaghetti', 'milk'}),
confidence=0.08737864077669902, lift=2.464011971676764),

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OrderedStatistic(items_base=frozenset({'cake', 'spaghetti'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.1323529411764706,
lift=2.757720588235294), OrderedStatistic(items_base=frozenset({'mineral water',
'milk'}), items_add=frozenset({'cake', 'spaghetti'}), confidence=0.05,
lift=2.7577205882352946), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'cake', 'mineral water'}),
confidence=0.06766917293233082, lift=2.4640119716767646),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cake', 'milk'}), confidence=0.040178571428571425,
lift=3.0137946428571425), OrderedStatistic(items_base=frozenset({'cake',
'mineral water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.37499999999999994, lift=2.1538093415007653),
OrderedStatistic(items_base=frozenset({'cake', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5806451612903225,
lift=2.4359168651223206), OrderedStatistic(items_base=frozenset({'cake',
'spaghetti', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.33962264150943394, lift=2.6208944793850453),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'cake'}), confidence=0.15254237288135591,
lift=1.8819413470115967)])
RelationRecord(items=frozenset({'mineral water', 'chocolate', 'chicken',
'milk'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'mineral water', 'chocolate', 'chicken', 'milk'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'chicken'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}), confidence=0.04,
lift=2.85752380952381), OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'chicken', 'mineral water', 'milk'}),
confidence=0.014646053702196907, lift=2.19720097640358),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'chocolate', 'chicken', 'mineral water'}),
confidence=0.018518518518518517, lift=2.436972059779077),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'chicken', 'milk'}),
confidence=0.010067114093959731, lift=2.2209830240821162),
OrderedStatistic(items_base=frozenset({'chocolate', 'chicken'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.16363636363636364,
lift=3.4095454545454547), OrderedStatistic(items_base=frozenset({'chicken',
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confidence=0.16216216216216214, lift=3.079438932603489),
OrderedStatistic(items_base=frozenset({'mineral water', 'chicken'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.10526315789473684,
lift=3.2762611924000873), OrderedStatistic(items_base=frozenset({'chocolate',
'milk'}), items_add=frozenset({'chicken', 'mineral water'}),
confidence=0.07468879668049792, lift=3.276261192400087),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'chicken', 'milk'}), confidence=0.04556962025316456,

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lift=3.079438932603489), OrderedStatistic(items_base=frozenset({'mineral water',
'milk'}), items_add=frozenset({'chocolate', 'chicken'}), confidence=0.05,
lift=3.4095454545454547), OrderedStatistic(items_base=frozenset({'chocolate',
'chicken', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.5294117647058824, lift=2.2209830240821162),
OrderedStatistic(items_base=frozenset({'mineral water', 'chocolate',
'chicken'}), items_add=frozenset({'milk'}), confidence=0.3157894736842105,
lift=2.436972059779077), OrderedStatistic(items_base=frozenset({'mineral water',
'chicken', 'milk'}), items_add=frozenset({'chocolate'}), confidence=0.36,
lift=2.19720097640358), OrderedStatistic(items_base=frozenset({'chocolate',
'mineral water', 'milk'}), items_add=frozenset({'chicken'}),
confidence=0.17142857142857143, lift=2.85752380952381)])
RelationRecord(items=frozenset({'mineral water', 'spaghetti', 'chocolate',
'chicken'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'mineral water', 'spaghetti', 'chocolate', 'chicken'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'chicken'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.03777777777777778, lift=2.381269841269841),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'chicken', 'mineral water'}),
confidence=0.013832384052074856, lift=1.9953213995117982),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti', 'chicken'}),
confidence=0.009507829977628635, lift=2.2286947706935125),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'chicken', 'mineral water'}),
confidence=0.013016845329249616, lift=1.7129711721877432),
OrderedStatistic(items_base=frozenset({'chocolate', 'chicken'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.15454545454545454, lift=2.587601461038961),
OrderedStatistic(items_base=frozenset({'mineral water', 'chicken'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.09941520467836255,
lift=2.5364403071169983), OrderedStatistic(items_base=frozenset({'spaghetti',
'chicken'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.13178294573643412, lift=2.5025414581493477),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'spaghetti', 'chicken'}), confidence=0.0430379746835443,
lift=2.5025414581493473), OrderedStatistic(items_base=frozenset({'chocolate',
'spaghetti'}), items_add=frozenset({'chicken', 'mineral water'}),
confidence=0.057823129251700675, lift=2.5364403071169983),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'chocolate', 'chicken'}), confidence=0.03794642857142857,
lift=2.5876014610389606), OrderedStatistic(items_base=frozenset({'mineral
water', 'chocolate', 'chicken'}), items_add=frozenset({'spaghetti'}),
confidence=0.2982456140350877, lift=1.7129711721877434),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'chicken'}),

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items_add=frozenset({'mineral water'}), confidence=0.53125,
lift=2.2286947706935125), OrderedStatistic(items_base=frozenset({'mineral
water', 'spaghetti', 'chicken'}), items_add=frozenset({'chocolate'}),
confidence=0.3269230769230769, lift=1.9953213995117982),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'chicken'}), confidence=0.14285714285714285,
lift=2.381269841269841)])
RelationRecord(items=frozenset({'mineral water', 'spaghetti', 'chicken',
'milk'}), support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'mineral water', 'spaghetti', 'chicken', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'chicken'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.044444444444444446, lift=2.825235404896422),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'spaghetti', 'chicken', 'mineral water'}),
confidence=0.0205761316872428, lift=2.968106995884774),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'spaghetti', 'chicken', 'milk'}),
confidence=0.011185682326621925, lift=2.0464342227314893),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chicken', 'mineral water', 'milk'}),
confidence=0.015313935681470138, lift=2.29739663093415),
OrderedStatistic(items_base=frozenset({'chicken', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.18018018018018017, lift=3.0168114543114544),
OrderedStatistic(items_base=frozenset({'mineral water', 'chicken'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.11695906432748537,
lift=3.2981576748889765), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.15503875968992248, lift=3.230404823428079),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'spaghetti', 'chicken'}), confidence=0.05555555555555556,
lift=3.2304048234280796), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'chicken', 'mineral water'}),
confidence=0.07518796992481203, lift=3.2981576748889765),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'chicken', 'milk'}), confidence=0.044642857142857144,
lift=3.0168114543114544), OrderedStatistic(items_base=frozenset({'mineral
water', 'chicken', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.39999999999999997, lift=2.29739663093415),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chicken', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.48780487804878053,
lift=2.0464342227314893), OrderedStatistic(items_base=frozenset({'mineral
water', 'spaghetti', 'chicken'}), items_add=frozenset({'milk'}),
confidence=0.38461538461538464, lift=2.968106995884774),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),

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items_add=frozenset({'chicken'}), confidence=0.1694915254237288,
lift=2.825235404896422)])
RelationRecord(items=frozenset({'cooking oil', 'eggs', 'chocolate', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cooking oil', 'eggs', 'chocolate', 'mineral water'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'cooking oil', 'eggs', 'mineral water'}),
confidence=0.014646053702196907, lift=2.2887510170870624),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'eggs', 'chocolate', 'mineral water'}),
confidence=0.04699738903394256, lift=3.490370446966368),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'cooking
oil', 'chocolate', 'mineral water'}), confidence=0.013353115727002967,
lift=2.3293423504244015), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'cooking oil', 'eggs', 'chocolate'}),
confidence=0.010067114093959731, lift=2.2209830240821162),
OrderedStatistic(items_base=frozenset({'cooking oil', 'chocolate'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.1764705882352941,
lift=3.465198644902987), OrderedStatistic(items_base=frozenset({'eggs',
'chocolate'}), items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.07228915662650602, lift=3.5909997606319317),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'cooking oil', 'eggs'}), confidence=0.04556962025316456,
lift=3.8842922899884926), OrderedStatistic(items_base=frozenset({'cooking oil',
'eggs'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.20454545454545453, lift=3.884292289988492),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water'}),
items_add=frozenset({'eggs', 'chocolate'}), confidence=0.11920529801324503,
lift=3.5909997606319317), OrderedStatistic(items_base=frozenset({'eggs',
'mineral water'}), items_add=frozenset({'cooking oil', 'chocolate'}),
confidence=0.04712041884816753, lift=3.465198644902987),
OrderedStatistic(items_base=frozenset({'cooking oil', 'eggs', 'chocolate'}),
items_add=frozenset({'mineral water'}), confidence=0.5294117647058824,
lift=2.2209830240821162), OrderedStatistic(items_base=frozenset({'cooking oil',
'chocolate', 'mineral water'}), items_add=frozenset({'eggs'}),
confidence=0.4186046511627907, lift=2.3293423504244015),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'mineral water'}),
items_add=frozenset({'cooking oil'}), confidence=0.1782178217821782,
lift=3.4903704469663674), OrderedStatistic(items_base=frozenset({'cooking oil',
'eggs', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.37499999999999994, lift=2.288751017087062)])
RelationRecord(items=frozenset({'cooking oil', 'spaghetti', 'chocolate',
'mineral water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cooking oil', 'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0023996800426609784, lift=1.0),

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OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'cooking oil', 'spaghetti', 'mineral water'}),
confidence=0.014646053702196907, lift=1.927369277547),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.04699738903394256, lift=2.962415253307589),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'cooking oil', 'spaghetti'}),
confidence=0.010067114093959731, lift=2.288285539963392),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cooking oil', 'chocolate', 'mineral water'}),
confidence=0.013782542113323124, lift=2.4042522881869015),
OrderedStatistic(items_base=frozenset({'cooking oil', 'chocolate'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1764705882352941, lift=2.9547006302521006),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'cooking oil', 'spaghetti'}),
confidence=0.04556962025316456, lift=2.87241782789065),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.061224489795918366, lift=3.041356940127044),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.11920529801324503,
lift=3.041356940127044), OrderedStatistic(items_base=frozenset({'cooking oil',
'spaghetti'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.15126050420168066, lift=2.87241782789065),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cooking oil', 'chocolate'}),
confidence=0.040178571428571425, lift=2.9547006302521006),
OrderedStatistic(items_base=frozenset({'cooking oil', 'chocolate', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.4186046511627907,
lift=2.4042522881869015), OrderedStatistic(items_base=frozenset({'cooking oil',
'chocolate', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.5454545454545454, lift=2.2882855399633923),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'cooking oil'}), confidence=0.15126050420168066,
lift=2.962415253307589), OrderedStatistic(items_base=frozenset({'cooking oil',
'spaghetti', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.3157894736842105, lift=1.927369277547)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'chocolate', 'milk'}),
support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'chocolate', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'eggs', 'french fries', 'milk'}),
confidence=0.016273393002441006, lift=2.260494831690926),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french

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fries', 'chocolate', 'milk'})), confidence=0.014836795252225518,
lift=2.0234691124898836), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'eggs', 'chocolate', 'milk'}),
confidence=0.015600624024960999, lift=1.6959460987135138),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'french fries', 'chocolate'}), confidence=0.0205761316872428,
lift=2.4498660918414004), OrderedStatistic(items_base=frozenset({'eggs',
'chocolate'}), items_add=frozenset({'french fries', 'milk'}),
confidence=0.08032128514056225, lift=3.384775055277289),
OrderedStatistic(items_base=frozenset({'french fries', 'chocolate'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.07751937984496124,
lift=2.5171985637101915), OrderedStatistic(items_base=frozenset({'chocolate',
'milk'}), items_add=frozenset({'eggs', 'french fries'}),
confidence=0.08298755186721993, lift=2.2801817822564714),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.07326007326007326,
lift=2.2801817822564714), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.08658008658008658, lift=2.5171985637101915),
OrderedStatistic(items_base=frozenset({'french fries', 'milk'}),
items_add=frozenset({'eggs', 'chocolate'}), confidence=0.11235955056179775,
lift=3.384775055277289), OrderedStatistic(items_base=frozenset({'french fries',
'eggs', 'chocolate'}), items_add=frozenset({'milk'}),
confidence=0.31746031746031744, lift=2.4498660918414004),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'milk'}),
items_add=frozenset({'french fries'}), confidence=0.2898550724637681,
lift=1.695946098713514), OrderedStatistic(items_base=frozenset({'french fries',
'chocolate', 'milk'}), items_add=frozenset({'eggs'}),
confidence=0.36363636363636365, lift=2.023469112489884),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.3703703703703704,
lift=2.2604948316909264)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'chocolate', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'chocolate', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'eggs', 'french fries', 'mineral water'}),
confidence=0.013018714401952805, lift=1.8779495524816923),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
fries', 'chocolate', 'mineral water'}), confidence=0.011869436201780414,
lift=1.3911350148367951), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'eggs', 'chocolate', 'mineral water'}),
confidence=0.0124804992199688, lift=0.9268933133562967),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'french fries', 'chocolate'}),
confidence=0.008948545861297539, lift=1.0654451191363943),

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OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.0642570281124498, lift=1.9051065923774144),
OrderedStatistic(items_base=frozenset({'french fries', 'chocolate'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.06201550387596899,
lift=1.2177442266325744), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.040506329113924044, lift=1.112959614225437),
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confidence=0.05860805860805861, lift=1.112959614225437),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'french fries', 'chocolate'}),
confidence=0.0418848167539267, lift=1.2177442266325744),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'eggs', 'chocolate'}), confidence=0.06324110671936758,
lift=1.9051065923774146), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.25396825396825395, lift=1.0654451191363943),
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items_add=frozenset({'french fries'}), confidence=0.15841584158415842,
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lift=1.3911350148367951), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.3076923076923077, lift=1.8779495524816925)])
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confidence=0.013018714401952805, lift=2.712593798029111),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
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lift=2.171527828037924), OrderedStatistic(items_base=frozenset({'french
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confidence=0.0124804992199688, lift=2.228957729737761),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'eggs', 'french fries', 'chocolate'}),
confidence=0.02244039270687237, lift=2.6718315189563433),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'french fries', 'pancakes'}),
confidence=0.0642570281124498, lift=3.1919997872283834),
OrderedStatistic(items_base=frozenset({'french fries', 'chocolate'}),
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'pancakes'}), items_add=frozenset({'eggs', 'french fries'}),
confidence=0.10738255033557045, lift=2.9504634068392455),
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items_add=frozenset({'chocolate', 'pancakes'}), confidence=0.05860805860805861,
lift=2.9504634068392455), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.09815950920245398, lift=2.8538545679364624),
OrderedStatistic(items_base=frozenset({'french fries', 'pancakes'}),
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lift=3.191999787228384), OrderedStatistic(items_base=frozenset({'french fries',
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OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'pancakes'}),
items_add=frozenset({'french fries'}), confidence=0.38095238095238093,
lift=2.228957729737761), OrderedStatistic(items_base=frozenset({'french fries',
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items_add=frozenset({'chocolate'}), confidence=0.4444444444444444,
lift=2.712593798029111)])
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items_add=frozenset({'french fries', 'spaghetti'}),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.08527131782945738,
lift=2.3343801278786853), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.07482993197278912, lift=2.0560414642047298),
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items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.08058608058608059,
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confidence=0.08029197080291971, lift=2.3343801278786853),
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lift=3.2016374677453774), OrderedStatistic(items_base=frozenset({'french fries',
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OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'spaghetti'}),
items_add=frozenset({'french fries'}), confidence=0.2784810126582279,
lift=1.6293963150931103), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.36666666666666664, lift=2.0403313550939663),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'spaghetti'}),
items_add=frozenset({'chocolate'}), confidence=0.36666666666666664,
lift=2.2378898833740166)])
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confidence=0.01261127596439169, lift=1.576619683481701),
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items_add=frozenset({'eggs', 'chocolate', 'milk'}),
confidence=0.023776223776223775, lift=2.5847167325428195),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
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lift=3.050937888793186), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.0682730923694779, lift=2.89331336646019),
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items_add=frozenset({'eggs', 'milk'}), confidence=0.09883720930232558,
lift=3.2094281687304944), OrderedStatistic(items_base=frozenset({'chocolate',
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lift=3.2461115495252395), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.07359307359307359, lift=3.209428168730494),
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items_add=frozenset({'eggs', 'chocolate'}), confidence=0.09604519774011298,
lift=2.8933133664601907), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.3953488372093023, lift=3.050937888793186),

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items_add=frozenset({'frozen vegetables'}), confidence=0.24637681159420288,
lift=2.5847167325428195), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.2833333333333327, lift=1.576619683481701),
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lift=1.8864856868111546)])
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OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'eggs', 'frozen vegetables', 'mineral water'}),
confidence=0.01871440195280716, lift=2.0643636624706843),
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confidence=0.017062314540059347, lift=1.7532112515751392),
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items_add=frozenset({'frozen vegetables', 'mineral water'}),
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items_add=frozenset({'eggs', 'chocolate'}), confidence=0.08582089552238806,
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confidence=0.5348837209302326, lift=2.243938920971854),
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items_add=frozenset({'frozen vegetables'}), confidence=0.2277227722722773,
lift=2.3890189018901893), OrderedStatistic(items_base=frozenset({'chocolate',
'frozen vegetables', 'mineral water'}), items_add=frozenset({'eggs'}),

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confidence=0.3150684931506849, lift=1.753211251575139),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'chocolate'}), confidence=0.3382352941176471,
lift=2.064363662470684)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'chocolate', 'mineral
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confidence=0.024410089503661515, lift=2.4092115969337504),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'ground
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lift=2.0358073387855544), OrderedStatistic(items_base=frozenset({'ground
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confidence=0.0407055630936228, lift=3.023093354111531),
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confidence=0.01677852348993289, lift=2.5684837693466656),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.12048192771084339, lift=2.9437620187590756),
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items_add=frozenset({'eggs', 'mineral water'}), confidence=0.17341040462427748,
lift=3.4051084949913752), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.07853403141361257, lift=3.405108494991375),
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lift=2.9437620187590756), OrderedStatistic(items_base=frozenset({'ground beef',
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items_add=frozenset({'ground beef'}), confidence=0.29702970297029707,
lift=3.023093354111531), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.3658536585365854, lift=2.0358073387855544),
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lift=2.4092115969337504)])
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lift=1.8548466864490603), OrderedStatistic(items_base=frozenset({'ground
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items_add=frozenset({'eggs', 'ground beef', 'chocolate'}),
confidence=0.01761102603369066, lift=2.6959246179329313),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.09236947791164658, lift=2.3566784143376225),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.13294797687861273,
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lift=2.3566784143376225), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.46938775510204084, lift=2.6959246179329313),
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items_add=frozenset({'ground beef'}), confidence=0.29113924050632917,
lift=2.963141713755733), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.33333333333333337, lift=1.8548466864490605),
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lift=2.0951750604180073)])
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confidence=0.025223759153783564, lift=1.930647116454393),
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items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.022997032640949554, lift=1.6428642079977391),
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lift=2.3686081571120075), OrderedStatistic(items_base=frozenset({'mineral
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confidence=0.017337807606263984, lift=1.8847955776026977),
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items_add=frozenset({'mineral water', 'milk'}), confidence=0.12449799196787148,
lift=2.594053993752789), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.1286307053941909, lift=2.5258086941409053),
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items_add=frozenset({'eggs', 'milk'}), confidence=0.07848101265822785,
lift=2.5484245712093814), OrderedStatistic(items_base=frozenset({'eggs',
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lift=2.5258086941409053), OrderedStatistic(items_base=frozenset({'mineral
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lift=1.8847955776026977), OrderedStatistic(items_base=frozenset({'eggs',
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items_add=frozenset({'eggs'}), confidence=0.29523809523809524,
lift=1.6428642079977391), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.3163265306122449, lift=1.930647116454393)])
RelationRecord(items=frozenset({'eggs', 'chocolate', 'spaghetti', 'milk'}),
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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'chocolate', 'spaghetti', 'milk'}),
confidence=0.0029329422743634183, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'eggs', 'spaghetti', 'milk'}),
confidence=0.01790073230268511, lift=2.0040804925737463),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'chocolate', 'spaghetti', 'milk'}),
confidence=0.016320474777448073, lift=1.4929253817760733),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
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lift=2.149059748919102), OrderedStatistic(items_base=frozenset({'spaghetti'}),

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items_add=frozenset({'eggs', 'chocolate', 'milk'}),
confidence=0.016845329249617153, lift=1.8312581840779458),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.08835341365461848,
lift=2.4914998339221546), OrderedStatistic(items_base=frozenset({'chocolate',
'milk'}), items_add=frozenset({'eggs', 'spaghetti'}),
confidence=0.09128630705394192, lift=2.4990459460278043),
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items_add=frozenset({'eggs', 'milk'}), confidence=0.07482993197278912,
lift=2.429867184969226), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.09523809523809525, lift=2.429867184969226),
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items_add=frozenset({'chocolate', 'milk'}), confidence=0.08029197080291971,
lift=2.4990459460278043), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.08270676691729323, lift=2.4914998339221546),
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items_add=frozenset({'spaghetti'}), confidence=0.31884057971014496,
lift=1.8312581840779458), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.2784810126582279, lift=2.1490597489191026),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.2682926829268293,
lift=1.492925381776073), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.3283582089552239, lift=2.0040804925737463)])
RelationRecord(items=frozenset({'olive oil', 'eggs', 'chocolate', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
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confidence=0.0023996800426609784, lift=1.0),
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confidence=0.014646053702196907, lift=2.4968192913677045),
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water', 'chocolate', 'olive oil'}), confidence=0.013353115727002967,
lift=1.6155116301330525), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'chocolate', 'olive oil'}),
confidence=0.010067114093959731, lift=2.517114093959731),
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items_add=frozenset({'eggs', 'chocolate', 'mineral water'}),
confidence=0.03643724696356275, lift=2.7060969254820217),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.07228915662650602, lift=2.619521564518945),
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items_add=frozenset({'eggs', 'olive oil'}), confidence=0.04556962025316456,

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lift=3.797974683544304), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.14634146341463414, lift=2.8735793640658915),
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items_add=frozenset({'chocolate', 'olive oil'}), confidence=0.04712041884816753,
lift=2.8735793640658915), OrderedStatistic(items_base=frozenset({'eggs', 'olive
oil'}), items_add=frozenset({'chocolate', 'mineral water'}), confidence=0.2,
lift=3.797974683544304), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.08695652173913043, lift=2.619521564518945),
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items_add=frozenset({'olive oil'}), confidence=0.1782178217821782,
lift=2.7060969254820217), OrderedStatistic(items_base=frozenset({'eggs',
'chocolate', 'olive oil'}), items_add=frozenset({'mineral water'}),
confidence=0.5999999999999999, lift=2.517114093959731),
OrderedStatistic(items_base=frozenset({'olive oil', 'chocolate', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.29032258064516125,
lift=1.6155116301330523), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.40909090909090906, lift=2.4968192913677045)])
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water'}), support=0.0022663644847353685,
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confidence=0.0022663644847353685, lift=1.0),
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items_add=frozenset({'eggs', 'pancakes', 'mineral water'}),
confidence=0.013832384052074856, lift=1.758588352112093),
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items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.01261127596439169, lift=1.3513883001271723),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'chocolate', 'pancakes'}),
confidence=0.009507829977628635, lift=1.6980531586236283),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'eggs', 'chocolate', 'mineral water'}),
confidence=0.023842917251051893, lift=1.7707497257439628),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.0682730923694779, lift=2.0241757544010026),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'eggs', 'pancakes'}), confidence=0.0430379746835443,
lift=1.9805389454065383), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.11409395973154361, lift=2.2403633297023786),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
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lift=2.2403633297023786), OrderedStatistic(items_base=frozenset({'eggs',

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'pancakes'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.10429447852760734, lift=1.9805389454065383),
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items_add=frozenset({'eggs', 'chocolate'}), confidence=0.06719367588932805,
lift=2.0241757544010026), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.1683168316831683, lift=1.7707497257439628),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'pancakes'}),
items_add=frozenset({'mineral water'}), confidence=0.4047619047619047,
lift=1.6980531586236283), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.24285714285714283, lift=1.3513883001271723),
OrderedStatistic(items_base=frozenset({'eggs', 'pancakes', 'mineral water'}),
items_add=frozenset({'chocolate'}), confidence=0.28813559322033894,
lift=1.7585883521120929)])
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'spaghetti'}), support=0.004532728969470737,
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items_add=frozenset({'eggs', 'chocolate', 'mineral water', 'spaghetti'}),
confidence=0.004532728969470737, lift=1.0),
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items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.027664768104149712, lift=1.9393778088712803),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.02522255192878338, lift=1.5898685883849086),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'chocolate', 'spaghetti'}),
confidence=0.01901565995525727, lift=1.8055248775238582),
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items_add=frozenset({'eggs', 'chocolate', 'mineral water'}),
confidence=0.026033690658499233, lift=1.9334526101921063),
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items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1365461847389558, lift=2.2862342226047043),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.0860759493670886,
lift=2.356407650374203), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.11564625850340135, lift=2.270844463439826),
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items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.08900523560209424,
lift=2.270844463439826), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.12408759124087591, lift=2.356407650374203),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'chocolate'}), confidence=0.07589285714285714,
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'chocolate', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.3366336633663366, lift=1.9334526101921063),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.43037974683544306,
lift=1.8055248775238582), OrderedStatistic(items_base=frozenset({'spaghetti',
'chocolate', 'mineral water'}), items_add=frozenset({'eggs'}),
confidence=0.2857142857142857, lift=1.5898685883849086),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'mineral water'}),
items_add=frozenset({'chocolate'}), confidence=0.3177570093457944,
lift=1.9393778088712803)])
RelationRecord(items=frozenset({'eggs', 'chocolate', 'pancakes', 'spaghetti'}),
support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'chocolate', 'pancakes', 'spaghetti'}),
confidence=0.0025329956005865884, lift=1.0),
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items_add=frozenset({'eggs', 'pancakes', 'spaghetti'}),
confidence=0.015459723352318957, lift=2.31926769731489),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'chocolate', 'pancakes', 'spaghetti'}),
confidence=0.014094955489614243, lift=2.0730639436783616),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'eggs', 'chocolate', 'spaghetti'}),
confidence=0.02664796633941094, lift=2.530207538125588),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'chocolate', 'pancakes'}),
confidence=0.01454823889739663, lift=2.5982461897469555),
OrderedStatistic(items_base=frozenset({'eggs', 'chocolate'}),
items_add=frozenset({'pancakes', 'spaghetti'}), confidence=0.07630522088353413,
lift=3.028388687023225), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.12751677852348992, lift=3.4908881595061967),
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items_add=frozenset({'eggs', 'pancakes'}), confidence=0.06462585034013606,
lift=2.9739785484746046), OrderedStatistic(items_base=frozenset({'eggs',
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lift=3.4908881595061967), OrderedStatistic(items_base=frozenset({'pancakes',
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items_add=frozenset({'spaghetti'}), confidence=0.4523809523809524,
lift=2.5982461897469555), OrderedStatistic(items_base=frozenset({'eggs',
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OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes', 'spaghetti'}),

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items_add=frozenset({'eggs'}), confidence=0.37254901960784315,
lift=2.0730639436783616), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes', 'spaghetti'}), items_add=frozenset({'chocolate'}),
confidence=0.37999999999999995, lift=2.31926769731489)])
RelationRecord(items=frozenset({'french fries', 'chocolate', 'frozen
vegetables', 'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'chocolate', 'frozen vegetables', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'french fries', 'frozen vegetables', 'milk'}),
confidence=0.013018714401952805, lift=2.271008761140651),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'milk'}),
confidence=0.0124804992199688, lift=1.5602704108164325),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'french fries', 'chocolate', 'milk'}),
confidence=0.022377622377622374, lift=3.0519008264462806),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'french
fries', 'chocolate', 'frozen vegetables'}), confidence=0.01646090534979424,
lift=2.9398393102096807), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.06201550387596899, lift=2.628125958043183),
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items_add=frozenset({'french fries', 'milk'}), confidence=0.09302325581395349,
lift=3.92004180820486), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.09039548022598869, lift=2.628125958043183),
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lift=2.9398393102096807), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.2909090909090909, lift=3.051900826446281),
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lift=1.5602704108164325), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.37209302325581395, lift=2.271008761140651)])
RelationRecord(items=frozenset({'french fries', 'chocolate', 'mineral water',
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items_add=frozenset({'french fries', 'mineral water', 'milk'}),
confidence=0.016273393002441006, lift=1.9688180792146772),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.015600624024960999, lift=1.1144788648688806),
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fries', 'chocolate', 'mineral water'}), confidence=0.0205761316872428,
lift=2.4115869341563787), OrderedStatistic(items_base=frozenset({'mineral
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confidence=0.011185682326621925, lift=1.5255236933089282),
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items_add=frozenset({'mineral water', 'milk'}), confidence=0.07751937984496124,
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lift=2.13369364244062), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.11235955056179775, lift=2.13369364244062),
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items_add=frozenset({'chocolate', 'milk'}), confidence=0.07905138339920947,
lift=2.46043330654552), OrderedStatistic(items_base=frozenset({'mineral water',
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confidence=0.05555555555555556, lift=1.6152024117140398),
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items_add=frozenset({'mineral water'}), confidence=0.36363636363636365,
lift=1.5255236933089282), OrderedStatistic(items_base=frozenset({'french fries',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3125, lift=2.4115869341563787),
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items_add=frozenset({'french fries'}), confidence=0.19047619047619047,
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confidence=0.3225806451612903, lift=1.9688180792146774)])
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confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'french fries', 'pancakes', 'mineral water'}),
confidence=0.013018714401952805, lift=1.992926055694857),
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items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.0124804992199688, lift=1.3373746378426565),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'french fries', 'chocolate', 'pancakes'}),
confidence=0.008948545861297539, lift=1.6371473781851913),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'french fries', 'chocolate', 'mineral water'}),
confidence=0.02244039270687237, lift=2.630084151472651),
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confidence=0.06201550387596899, lift=1.8386493856665747),
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items_add=frozenset({'french fries', 'pancakes'}),
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confidence=0.3902439024390244, lift=1.6371473781851913),
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lift=1.3373746378426565), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.01708706265256306, lift=1.686448117853625),
OrderedStatistic(items_base=frozenset({'french fries'}),
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confidence=0.01174496644295302, lift=1.4683165548098434),
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confidence=0.016079632465543645, lift=1.8845831738131702),
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items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.08139534883720931, lift=1.362827034883721),
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items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.053164556962025315, lift=1.926508897450009),
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lift=2.1177300959909653), OrderedStatistic(items_base=frozenset({'french fries',
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lift=1.4683165548098434), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.1764705882352941, lift=1.0325318895108746),
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lift=1.6864481178536253)])
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confidence=0.027137042062415198, lift=3.392582541836273),
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'frozen vegetables'}), items_add=frozenset({'ground beef', 'milk'}),
confidence=0.11627906976744187, lift=5.286116983791403),
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items_add=frozenset({'frozen vegetables', 'milk'}),
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lift=4.561264822134387), OrderedStatistic(items_base=frozenset({'ground beef',
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OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
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confidence=0.14534883720930233, lift=3.5513408075145825),
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confidence=0.14450867052023122, lift=4.044625140194979),
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confidence=0.06329113924050633, lift=3.738164058606598),
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items_add=frozenset({'chocolate', 'mineral water'}),
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confidence=0.36231884057971014, lift=2.211353639697645)])
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confidence=0.01871440195280716, lift=2.1596419853539466),
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OrderedStatistic(items_base=frozenset({'spaghetti'}),
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OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
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confidence=0.13372093023255816, lift=3.411703053314349),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.13294797687861273, lift=4.771496529026192),

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items_add=frozenset({'ground beef', 'frozen vegetables'}),
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items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.1811023622047244,
lift=4.620574213937543), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.5348837209302326, lift=3.0721001460165964),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
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items_add=frozenset({'chocolate', 'frozen vegetables', 'milk'}),
confidence=0.01677852348993289, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.17441860465116282,
lift=3.63420542635659), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.1244813278008299, lift=3.4840837307239743),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
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OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
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lift=3.484083730723974), OrderedStatistic(items_base=frozenset({'mineral water',
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lift=2.9974025974025977), OrderedStatistic(items_base=frozenset({'frozen
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lift=5.286116983791402), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.06639004149377593, lift=3.983933609958506),
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items_add=frozenset({'frozen vegetables', 'milk'}),
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items_add=frozenset({'chocolate', 'frozen vegetables'}),
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lift=3.7318407960198994), OrderedStatistic(items_base=frozenset({'shrimp',
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OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
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lift=2.488846350178662), OrderedStatistic(items_base=frozenset({'chocolate',

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'frozen vegetables', 'spaghetti')), items_add=frozenset({'milk'}),
confidence=0.44067796610169485, lift=3.4007463207086555),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti', 'milk'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.3170731707317073,
lift=3.3263858093126384), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'milk'}), items_add=frozenset({'chocolate'}),
confidence=0.4193548387096774, lift=2.55946350297908))]
RelationRecord(items=frozenset({'olive oil', 'chocolate', 'frozen vegetables',
'mineral water'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'chocolate', 'frozen vegetables', 'mineral
water'}), confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'mineral water', 'frozen vegetables', 'olive oil'}),
confidence=0.01708706265256306, lift=2.6157154480995),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'mineral water', 'chocolate', 'olive oil'}),
confidence=0.02937062937062937, lift=3.553372434017595),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'olive oil'}),
confidence=0.01174496644295302, lift=2.9366331096196867),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'mineral water'}),
confidence=0.04251012145748988, lift=4.368060562364816),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.12209302325581396, lift=4.424250084260196),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.053164556962025315, lift=4.691615785554728),
OrderedStatistic(items_base=frozenset({'chocolate', 'olive oil'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.17073170731707318, lift=4.778576629049873),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'chocolate', 'olive oil'}), confidence=0.07835820895522387,
lift=4.778576629049872), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'olive oil'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.24705882352941175, lift=4.691615785554728),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'chocolate', 'frozen vegetables'}),
confidence=0.10144927536231883, lift=4.424250084260195),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.2876712328767123, lift=4.368060562364816),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'mineral water'}), confidence=0.7,
lift=2.9366331096196867), OrderedStatistic(items_base=frozenset({'olive oil',
'chocolate', 'mineral water'}), items_add=frozenset({'frozen vegetables'}),

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confidence=0.3387096774193548, lift=3.553372434017595),
OrderedStatistic(items_base=frozenset({'olive oil', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.4285714285714286, lift=2.6157154480995004)])
RelationRecord(items=frozenset({'shrimp', 'chocolate', 'frozen vegetables',
'mineral water'}), support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'chocolate', 'frozen vegetables', 'mineral
water'}), confidence=0.003199573390214638, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'shrimp', 'frozen vegetables', 'mineral water'}),
confidence=0.01952807160292921, lift=2.7125937980291113),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'shrimp', 'chocolate', 'mineral water'}),
confidence=0.033566433566433566, lift=4.417224880382775),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'shrimp', 'chocolate', 'frozen vegetables'}),
confidence=0.01342281879194631, lift=2.517114093959732),
OrderedStatistic(items_base=frozenset({'shrimp'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'mineral water'}),
confidence=0.04477611940298507, lift=4.600899611531384),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.13953488372093026, lift=5.913283405597163),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'shrimp', 'frozen vegetables'}),
confidence=0.06075949367088608, lift=3.6460556962025317),
OrderedStatistic(items_base=frozenset({'shrimp', 'chocolate'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.17777777777777778, lift=4.975787728026535),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'shrimp', 'chocolate'}), confidence=0.08955223880597014,
lift=4.975787728026535), OrderedStatistic(items_base=frozenset({'shrimp',
'frozen vegetables'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.192, lift=3.6460556962025317),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'chocolate', 'frozen vegetables'}),
confidence=0.13559322033898305, lift=5.913283405597162),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'shrimp'}),
confidence=0.32876712328767127, lift=4.600899611531385),
OrderedStatistic(items_base=frozenset({'shrimp', 'chocolate', 'frozen
vegetables'}), items_add=frozenset({'mineral water'}), confidence=0.6,
lift=2.5171140939597314), OrderedStatistic(items_base=frozenset({'shrimp',
'chocolate', 'mineral water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.4210526315789474, lift=4.417224880382776),
OrderedStatistic(items_base=frozenset({'shrimp', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'chocolate'}), confidence=0.4444444444444445,

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lift=2.7125937980291113]))
RelationRecord(items=frozenset({'spaghetti', 'chocolate', 'frozen vegetables',
'mineral water'}), support=0.0041327822956939075,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'chocolate', 'frozen vegetables', 'mineral
water'}), confidence=0.0041327822956939075, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.025223759153783564, lift=2.1022601934725613),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.043356643356643354, lift=2.7329258976317794),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti', 'frozen vegetables'}),
confidence=0.017337807606263984, lift=2.204252455162477),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'mineral water'}),
confidence=0.023736600306278714, lift=2.4390169711972143),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1802325581395349, lift=3.0176884343853825),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.07848101265822785, lift=2.8166797892314217),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.10544217687074829, lift=2.951200629505533),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.11567164179104476,
lift=2.951200629505533), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.14832535885167464, lift=2.8166797892314213),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'chocolate', 'frozen vegetables'}),
confidence=0.06919642857142858, lift=3.0176884343853825),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.4246575342465753, lift=2.439016971197214),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables',
'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.5254237288135593, lift=2.2042524551624765),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.26050420168067223, lift=2.7329258976317794),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.34444444444444444, lift=2.1022601934725613))]
RelationRecord(items=frozenset({'spaghetti', 'chocolate', 'frozen vegetables',

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'olive oil'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'chocolate', 'frozen vegetables', 'olive
oil'}), confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'olive oil'}),
confidence=0.013018714401952805, lift=2.271008761140651),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'chocolate', 'spaghetti', 'olive oil'}),
confidence=0.022377622377622374, lift=3.1670668953687815),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chocolate', 'spaghetti', 'frozen vegetables'}),
confidence=0.032388663967611336, lift=4.1177520071364855),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'frozen vegetables', 'olive oil'}),
confidence=0.012251148545176109, lift=3.0631955079121993),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.09302325581395349,
lift=4.056787452677123), OrderedStatistic(items_base=frozenset({'chocolate',
'olive oil'}), items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.13008130081300812, lift=4.668611662193177),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.054421768707482984, lift=4.802561024409763),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'olive oil'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.18823529411764703,
lift=4.802561024409763), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'chocolate', 'olive oil'}),
confidence=0.07655502392344497, lift=4.668611662193177),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'chocolate', 'frozen vegetables'}),
confidence=0.09302325581395349, lift=4.056787452677123),
OrderedStatistic(items_base=frozenset({'chocolate', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'spaghetti'}), confidence=0.5333333333333332,
lift=3.0631955079121993), OrderedStatistic(items_base=frozenset({'chocolate',
'frozen vegetables', 'spaghetti'}), items_add=frozenset({'olive oil'}),
confidence=0.27118644067796605, lift=4.117752007136485),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'olive oil'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.3018867924528302,
lift=3.167066895368782), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'olive oil'}), items_add=frozenset({'chocolate'}),
confidence=0.37209302325581395, lift=2.271008761140651)])
RelationRecord(items=frozenset({'green tea', 'chocolate', 'pancakes', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'green tea', 'chocolate', 'pancakes', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),

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items_add=frozenset({'green tea', 'pancakes', 'mineral water'}),
confidence=0.013018714401952805, lift=2.271008761140651),
OrderedStatistic(items_base=frozenset({'green tea'}),
items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.016145307769929364, lift=1.7300850511748593),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'green tea', 'chocolate', 'pancakes'}),
confidence=0.008948545861297539, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'pancakes'}), items_add=frozenset({'green
tea', 'chocolate', 'mineral water'}), confidence=0.02244039270687237,
lift=3.2370266479663394), OrderedStatistic(items_base=frozenset({'green tea',
'chocolate'}), items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.0909090909090909, lift=2.6952928494430464),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'green tea', 'pancakes'}), confidence=0.040506329113924044,
lift=2.4702274364515793), OrderedStatistic(items_base=frozenset({'chocolate',
'pancakes'}), items_add=frozenset({'green tea', 'mineral water'}),
confidence=0.10738255033557045, lift=3.4569807299017765),
OrderedStatistic(items_base=frozenset({'green tea', 'mineral water'}),
items_add=frozenset({'chocolate', 'pancakes'}), confidence=0.06866952789699571,
lift=3.456980729901777), OrderedStatistic(items_base=frozenset({'green tea',
'pancakes'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.13008130081300812, lift=2.4702274364515793),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'green tea', 'chocolate'}), confidence=0.06324110671936758,
lift=2.695292849443047), OrderedStatistic(items_base=frozenset({'green tea',
'chocolate', 'mineral water'}), items_add=frozenset({'pancakes'}),
confidence=0.3076923076923077, lift=3.2370266479663394),
OrderedStatistic(items_base=frozenset({'green tea', 'chocolate', 'pancakes'}),
items_add=frozenset({'mineral water'}), confidence=0.5,
lift=2.0975950782997765), OrderedStatistic(items_base=frozenset({'chocolate',
'pancakes', 'mineral water'}), items_add=frozenset({'green tea'}),
confidence=0.22857142857142854, lift=1.7300850511748593),
OrderedStatistic(items_base=frozenset({'green tea', 'pancakes', 'mineral
water'}), items_add=frozenset({'chocolate'}), confidence=0.37209302325581395,
lift=2.271008761140651)])
RelationRecord(items=frozenset({'herb & pepper', 'ground beef', 'chocolate',
'mineral water'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'herb & pepper', 'ground beef', 'chocolate', 'mineral
water'}), confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}), items_add=frozenset({'herb
& pepper', 'ground beef', 'mineral water'}), confidence=0.013832384052074856,
lift=2.07513425549227), OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'herb & pepper', 'chocolate', 'mineral water'}),
confidence=0.023066485753052916, lift=5.767390321121663),
OrderedStatistic(items_base=frozenset({'herb & pepper'}),
items_add=frozenset({'ground beef', 'chocolate', 'mineral water'}),

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confidence=0.045822102425876005, lift=4.191604759713365),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'herb & pepper', 'ground beef', 'chocolate'}),
confidence=0.009507829977628635, lift=2.3772744220730795),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'herb & pepper', 'mineral water'}),
confidence=0.09826589595375722, lift=5.758535043352601),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'chocolate'}),
items_add=frozenset({'ground beef', 'mineral water'}), confidence=0.25,
lift=6.108306188925082), OrderedStatistic(items_base=frozenset({'chocolate',
'mineral water'}), items_add=frozenset({'herb & pepper', 'ground beef'}),
confidence=0.0430379746835443, lift=2.6902320675105478),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'ground beef'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.14166666666666664, lift=2.6902320675105478),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'herb & pepper', 'chocolate'}),
confidence=0.05537459283387622, lift=6.108306188925082),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate'}), confidence=0.1328125,
lift=5.758535043352602), OrderedStatistic(items_base=frozenset({'herb & pepper',
'ground beef', 'chocolate'}), items_add=frozenset({'mineral water'}),
confidence=0.5666666666666665, lift=2.3772744220730795),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate', 'mineral
water'}), items_add=frozenset({'herb & pepper'}), confidence=0.2073170731707317,
lift=4.191604759713365), OrderedStatistic(items_base=frozenset({'herb & pepper',
'chocolate', 'mineral water'}), items_add=frozenset({'ground beef'}),
confidence=0.5666666666666665, lift=5.767390321121663),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'ground beef', 'mineral
water'}), items_add=frozenset({'chocolate'}), confidence=0.33999999999999997,
lift=2.07513425549227)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'mineral water',
'milk'}), support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'chocolate', 'mineral water', 'milk'}),
confidence=0.003332888948140248, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'ground beef', 'mineral water', 'milk'}),
confidence=0.02034174125305126, lift=1.8383542305920182),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.033921302578019, lift=2.423273244168767),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground
beef', 'chocolate', 'mineral water'}), confidence=0.025720164609053502,
lift=2.35276774064037), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'ground beef', 'chocolate', 'milk'}),
confidence=0.013982102908277406, lift=2.2799946503258437),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),

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items_add=frozenset({'mineral water', 'milk'}), confidence=0.14450867052023122,
lift=3.0109987154784847), OrderedStatistic(items_base=frozenset({'chocolate',
'milk'}), items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.10373443983402492, lift=2.5345668833714035),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.06329113924050633,
lift=2.8772535481396244), OrderedStatistic(items_base=frozenset({'ground beef',
'milk'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.15151515151515152, lift=2.877253548139624),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.08143322475570033,
lift=2.5345668833714035), OrderedStatistic(items_base=frozenset({'mineral
water', 'milk'}), items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.06944444444444445, lift=3.0109987154784843),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5434782608695652,
lift=2.2799946503258437), OrderedStatistic(items_base=frozenset({'ground beef',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.30487804878048785, lift=2.35276774064037),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.2380952380952381,
lift=2.423273244168767), OrderedStatistic(items_base=frozenset({'ground beef',
'mineral water', 'milk'}), items_add=frozenset({'chocolate'}),
confidence=0.30120481927710846, lift=1.8383542305920182)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'spaghetti',
'milk'}), support=0.0029329422743634183,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'chocolate', 'spaghetti', 'milk'}),
confidence=0.0029329422743634183, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'ground beef', 'spaghetti', 'milk'}),
confidence=0.01790073230268511, lift=1.8393615479786438),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'chocolate', 'spaghetti', 'milk'}),
confidence=0.02985074626865672, lift=2.7306152165999276),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground
beef', 'chocolate', 'spaghetti'}), confidence=0.02263374485596708,
lift=2.460517683545059), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'chocolate', 'milk'}),
confidence=0.016845329249617153, lift=2.7468872761169187),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.1271676300578035,
lift=3.586031552870616), OrderedStatistic(items_base=frozenset({'chocolate',
'milk'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.09128630705394192, lift=2.329042820447681),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.07482993197278912,
lift=3.401814058956916), OrderedStatistic(items_base=frozenset({'ground beef',

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'milk'}), items_add=frozenset({'chocolate', 'spaghetti'}),
confidence=0.13333333333333333, lift=3.401814058956916),
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items_add=frozenset({'chocolate', 'milk'}), confidence=0.07482993197278912,
lift=2.329042820447681), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.08270676691729323, lift=3.5860315528706157),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.4782608695652174,
lift=2.7468872761169187), OrderedStatistic(items_base=frozenset({'ground beef',
'chocolate', 'spaghetti'}), items_add=frozenset({'milk'}),
confidence=0.31884057971014496, lift=2.460517683545059),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.2682926829268293,
lift=2.7306152165999276), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.3013698630136986, lift=1.8393615479786438)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'pancakes', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'chocolate', 'pancakes', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'ground beef', 'pancakes', 'mineral water'}),
confidence=0.013018714401952805, lift=1.743810298733),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.021709633649932156, lift=2.3263423144020154),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate', 'pancakes'}),
confidence=0.008948545861297539, lift=2.3972515180568874),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'ground beef', 'chocolate', 'mineral water'}),
confidence=0.02244039270687237, lift=2.0527486060274347),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.09248554913294797, lift=2.7420320318033307),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'ground beef', 'pancakes'}),
confidence=0.040506329113924044, lift=2.7875043548949017),
OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.10738255033557045, lift=2.623701987189296),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'chocolate', 'pancakes'}), confidence=0.052117263843648204,
lift=2.623701987189296), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.14678899082568805, lift=2.7875043548949017),

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OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.06324110671936758, lift=2.742032031803331),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate', 'mineral
water'}), items_add=frozenset({'pancakes'}), confidence=0.1951219512195122,
lift=2.0527486060274347), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.5714285714285714, lift=2.397251518056887),
OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.22857142857142854,
lift=2.3263423144020154), OrderedStatistic(items_base=frozenset({'ground beef',
'pancakes', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.2857142857142857, lift=1.743810298733)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'mineral water',
'spaghetti'}), support=0.003999466737768298,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'chocolate', 'mineral water', 'spaghetti'}),
confidence=0.003999466737768298, lift=1.0),
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items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.024410089503661515, lift=1.4304693856794144),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0407055630936228, lift=2.5658187291198704),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate', 'spaghetti'}),
confidence=0.01677852348993289, lift=1.8239957202606754),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'chocolate', 'mineral water'}),
confidence=0.02297090352220521, lift=2.101277406342211),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.17341040462427748, lift=2.9034630470685387),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.0759493670886076, lift=1.9377421854817876),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.10204081632653061, lift=2.493186199561258),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.0977198697068404,
lift=2.493186199561258), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.10204081632653061, lift=1.9377421854817876),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.06696428571428573, lift=2.903463047068539),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate', 'mineral

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water'}), items_add=frozenset({'spaghetti'}), confidence=0.3658536585365854,
lift=2.1012774063422106), OrderedStatistic(items_base=frozenset({'ground beef',
'chocolate', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.4347826086956522, lift=1.8239957202606754),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.25210084033613445,
lift=2.5658187291198704), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.23437500000000006, lift=1.4304693856794144)])
RelationRecord(items=frozenset({'olive oil', 'chocolate', 'mineral water',
'milk'}), support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'chocolate', 'mineral water', 'milk'}),
confidence=0.0025329956005865884, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'mineral water', 'olive oil', 'milk'}),
confidence=0.015459723352318957, lift=1.8119278885272578),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'chocolate', 'olive oil'}), confidence=0.01954732510288066,
lift=2.3649110580114168), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'chocolate', 'olive oil', 'milk'}),
confidence=0.010626398210290829, lift=2.0438105891126024),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.038461538461538464, lift=2.7476190476190476),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.07883817427385893, lift=2.856836450377854),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.04810126582278481,
lift=2.818809335443038), OrderedStatistic(items_base=frozenset({'chocolate',
'olive oil'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.15447154471544716, lift=3.2185862691960256),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'chocolate', 'olive oil'}), confidence=0.05277777777777778,
lift=3.218586269196025), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.1484375, lift=2.818809335443038),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.09178743961352656,
lift=2.856836450377854), OrderedStatistic(items_base=frozenset({'chocolate',
'mineral water', 'milk'}), items_add=frozenset({'olive oil'}),
confidence=0.18095238095238095, lift=2.7476190476190476),
OrderedStatistic(items_base=frozenset({'chocolate', 'olive oil', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.4871794871794871,
lift=2.0438105891126024), OrderedStatistic(items_base=frozenset({'olive oil',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3064516129032258, lift=2.3649110580114168),

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OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.296875,
lift=1.8119278885272578)])
RelationRecord(items=frozenset({'chocolate', 'pancakes', 'mineral water',
'milk'}), support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'chocolate', 'pancakes', 'mineral water', 'milk'}),
confidence=0.0025329956005865884, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'pancakes', 'mineral water', 'milk'}),
confidence=0.015459723352318957, lift=1.965481099419398),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.01954732510288066, lift=2.0946355085243975),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'pancakes', 'milk'}),
confidence=0.010626398210290829, lift=2.2141281382053197),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.02664796633941094, lift=1.903679957256395),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.07883817427385893, lift=2.337411641218244),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'pancakes', 'milk'}), confidence=0.04810126582278481,
lift=2.9097386688444264), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.12751677852348992, lift=2.656953765846383),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'chocolate', 'pancakes'}), confidence=0.05277777777777778,
lift=2.656953765846383), OrderedStatistic(items_base=frozenset({'pancakes',
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confidence=0.1532258064516129, lift=2.9097386688444264),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.07509881422924901,
lift=2.337411641218244), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.18095238095238095, lift=1.9036799572563947),
OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5277777777777778,
lift=2.2141281382053197), OrderedStatistic(items_base=frozenset({'chocolate',
'pancakes', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.2714285714285714, lift=2.0946355085243975),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.3220338983050847,
lift=1.965481099419398)])
RelationRecord(items=frozenset({'shrimp', 'chocolate', 'mineral water',
'milk'}), support=0.0029329422743634183,

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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'chocolate', 'mineral water', 'milk'}),
confidence=0.0029329422743634183, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'shrimp', 'mineral water', 'milk'}),
confidence=0.01790073230268511, lift=2.2758202203803557),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'shrimp',
'chocolate', 'mineral water'}), confidence=0.02263374485596708,
lift=2.9785214063966503), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'shrimp', 'chocolate', 'milk'}),
confidence=0.012304250559284116, lift=2.251077645004638),
OrderedStatistic(items_base=frozenset({'shrimp'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.041044776119402986, lift=2.9321606254442076),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.09128630705394192, lift=3.8685796000656403),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'shrimp', 'milk'}), confidence=0.05569620253164557,
lift=3.164978902953586), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.16296296296296298, lift=3.3955144032921813),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'shrimp', 'chocolate'}), confidence=0.06111111111111116,
lift=3.395514403292182), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.16666666666666666, lift=3.164978902953586),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.12429378531073446,
lift=3.86857960006564), OrderedStatistic(items_base=frozenset({'chocolate',
'mineral water', 'milk'}), items_add=frozenset({'shrimp'}),
confidence=0.20952380952380953, lift=2.932160625444207),
OrderedStatistic(items_base=frozenset({'shrimp', 'chocolate', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5365853658536586,
lift=2.251077645004638), OrderedStatistic(items_base=frozenset({'shrimp',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.38596491228070173, lift=2.9785214063966503),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.3728813559322034,
lift=2.275820220380356)])
RelationRecord(items=frozenset({'soup', 'chocolate', 'mineral water', 'milk'}),
support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'soup', 'chocolate', 'mineral water', 'milk'}),
confidence=0.0025329956005865884, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'soup', 'mineral water', 'milk'}),
confidence=0.015459723352318957, lift=1.8119278885272578),

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OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'chocolate', 'soup', 'mineral water'}),
confidence=0.01954732510288066, lift=3.4910591808739957),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'soup', 'milk'}),
confidence=0.010626398210290829, lift=2.6569537658463833),
OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.05013192612137203, lift=3.5813293127277297),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),
items_add=frozenset({'soup', 'mineral water'}), confidence=0.07883817427385893,
lift=3.418295637157317), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.04810126582278481, lift=3.164978902953586),
OrderedStatistic(items_base=frozenset({'soup', 'chocolate'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.25,
lift=5.209027777777778), OrderedStatistic(items_base=frozenset({'mineral water',
'milk'}), items_add=frozenset({'chocolate', 'soup'}),
confidence=0.05277777777777778, lift=5.209027777777778),
OrderedStatistic(items_base=frozenset({'soup', 'milk'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.16666666666666666, lift=3.164978902953586),
OrderedStatistic(items_base=frozenset({'soup', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.10982658959537572,
lift=3.4182956371573168), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.18095238095238095, lift=3.5813293127277297),
OrderedStatistic(items_base=frozenset({'soup', 'chocolate', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.6333333333333333,
lift=2.6569537658463833), OrderedStatistic(items_base=frozenset({'soup',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.4523809523809524, lift=3.491059180873996),
OrderedStatistic(items_base=frozenset({'soup', 'mineral water', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.296875,
lift=1.8119278885272578)])
RelationRecord(items=frozenset({'spaghetti', 'chocolate', 'mineral water',
'milk'}), support=0.004932675643247567,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'chocolate', 'mineral water', 'milk'}),
confidence=0.004932675643247567, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.030105777054515868, lift=1.913757912592572),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.038065843621399184, lift=2.3994276723034895),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti', 'milk'}),

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confidence=0.02069351230425056, lift=1.8929516560266275),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'mineral water', 'milk'}),
confidence=0.028330781010719758, lift=2.023897032013418),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.15352697095435688, lift=2.570548681090694),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.09367088607594937,
lift=2.6414485581041207), OrderedStatistic(items_base=frozenset({'chocolate',
'spaghetti'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.12585034013605442, lift=2.6222316704459563),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.10277777777777779,
lift=2.6222316704459563), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.13909774436090225, lift=2.6414485581041207),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.08258928571428573,
lift=2.570548681090694), OrderedStatistic(items_base=frozenset({'chocolate',
'mineral water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.3523809523809524, lift=2.023897032013418),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.451219512195122,
lift=1.8929516560266277), OrderedStatistic(items_base=frozenset({'spaghetti',
'chocolate', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.31092436974789917, lift=2.3994276723034895),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.3135593220338983,
lift=1.913757912592572)])
RelationRecord(items=frozenset({'spaghetti', 'chocolate', 'olive oil', 'milk'}),
support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'chocolate', 'olive oil', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'olive oil', 'milk'}),
confidence=0.013832384052074856, lift=1.921420606937287),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'chocolate', 'spaghetti', 'olive oil'}),
confidence=0.01748971193415638, lift=2.4752892305303207),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chocolate', 'spaghetti', 'milk'}),
confidence=0.03441295546558704, lift=3.1479460847240053),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'olive oil', 'milk'}),
confidence=0.013016845329249616, lift=2.5035732516590095),
OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}),

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items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.07053941908713693,
lift=3.076256875422175), OrderedStatistic(items_base=frozenset({'chocolate',
'olive oil'}), items_add=frozenset({'spaghetti', 'milk'}),
confidence=0.13821138211382114, lift=3.8974570572773395),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.057823129251700675,
lift=3.3885257227891157), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.3885257227891157), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'chocolate', 'olive oil'}),
confidence=0.06390977443609022, lift=3.8974570572773395),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'chocolate', 'milk'}), confidence=0.09883720930232558,
lift=3.076256875422175), OrderedStatistic(items_base=frozenset({'chocolate',
'olive oil', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.43589743589743585, lift=2.5035732516590095),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti', 'milk'}),
items_add=frozenset({'olive oil'}), confidence=0.2073170731707317,
lift=3.147946084724005), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.32075471698113206, lift=2.4752892305303207),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil', 'milk'}),
items_add=frozenset({'chocolate'}), confidence=0.3148148148148148,
lift=1.9214206069372872)])
RelationRecord(items=frozenset({'olive oil', 'spaghetti', 'chocolate', 'mineral
water'}), support=0.0038661511798426876,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0038661511798426876, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'mineral water', 'spaghetti', 'olive oil'}),
confidence=0.023596419853539462, lift=2.2986590301480456),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti', 'olive oil'}),
confidence=0.016219239373601792, lift=2.2954814064412647),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.058704453441295545, lift=3.700353825740822),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'chocolate', 'olive oil'}),
confidence=0.0222052067381317, lift=2.6864718668181595),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.07341772151898734,
lift=3.201780983220489), OrderedStatistic(items_base=frozenset({'chocolate',
'olive oil'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.23577235772357724, lift=3.947608159117306),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),

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confidence=0.09863945578231292, lift=3.5743698445561796),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.1400966183574879,
lift=3.5743698445561796), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'chocolate', 'olive oil'}),
confidence=0.06473214285714286, lift=3.947608159117306),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.1686046511627907, lift=3.2017809832204884),
OrderedStatistic(items_base=frozenset({'olive oil', 'chocolate', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.46774193548387094,
lift=2.686471866818159), OrderedStatistic(items_base=frozenset({'spaghetti',
'chocolate', 'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.2436974789915966, lift=3.700353825740822),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'olive oil'}),
items_add=frozenset({'mineral water'}), confidence=0.5471698113207547,
lift=2.2954814064412647), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.3766233766233766, lift=2.298659030148045)])
RelationRecord(items=frozenset({'spaghetti', 'chocolate', 'pancakes', 'mineral
water'}), support=0.0037328356219170776,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'chocolate', 'pancakes', 'mineral water'}),
confidence=0.0037328356219170776, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.02278275020341741, lift=1.9871326659980697),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti', 'pancakes'}),
confidence=0.015659955257270694, lift=2.303241654603676),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.03927068723702665, lift=2.475373319033083),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'pancakes', 'mineral water'}),
confidence=0.021439509954058193, lift=2.29739663093415),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.07088607594936709,
lift=2.8133145804031883), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.1879194630872483, lift=3.1463926174496644),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.09523809523809523, lift=2.8236401279879537),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.11067193675889327,
lift=2.8236401279879537), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.0625, lift=3.1463926174496644),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.14814814814814814, lift=2.813314580403188),
OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.39999999999999997,
lift=2.29739663093415), OrderedStatistic(items_base=frozenset({'spaghetti',
'chocolate', 'mineral water'}), items_add=frozenset({'pancakes'}),
confidence=0.2352941176470588, lift=2.475373319033083),
OrderedStatistic(items_base=frozenset({'chocolate', 'pancakes', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.5490196078431372,
lift=2.3032416546036756), OrderedStatistic(items_base=frozenset({'spaghetti',
'pancakes', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.32558139534883723, lift=1.98713266599807)])
RelationRecord(items=frozenset({'shrimp', 'spaghetti', 'chocolate', 'mineral
water'}), support=0.0034662045060658577,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0034662045060658577, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
confidence=0.02115541090317331, lift=2.4794802685109847),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'shrimp', 'spaghetti'}),
confidence=0.0145413870246085, lift=2.272394668158091),
OrderedStatistic(items_base=frozenset({'shrimp'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.04850746268656716, lift=3.0576006522011783),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'chocolate', 'mineral water'}),
confidence=0.019908116385911178, lift=2.6198382633459603),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.06582278481012657,
lift=3.10526231987899), OrderedStatistic(items_base=frozenset({'shrimp',
'chocolate'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1925925925925926, lift=3.2246362433862434),
OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.08843537414965985, lift=3.747761251393212),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.14689265536723162,
lift=3.747761251393212), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'shrimp', 'chocolate'}),
confidence=0.05803571428571428, lift=3.2246362433862434),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.16352201257861634, lift=3.10526231987899),
OrderedStatistic(items_base=frozenset({'shrimp', 'chocolate', 'mineral water'}),

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items_add=frozenset({'spaghetti'}), confidence=0.45614035087719296,
lift=2.6198382633459607), OrderedStatistic(items_base=frozenset({'spaghetti',
'chocolate', 'mineral water'}), items_add=frozenset({'shrimp'}),
confidence=0.21848739495798317, lift=3.0576006522011783),
OrderedStatistic(items_base=frozenset({'shrimp', 'chocolate', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.5416666666666666,
lift=2.272394668158091), OrderedStatistic(items_base=frozenset({'shrimp',
'spaghetti', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.40625, lift=2.4794802685109842))]
RelationRecord(items=frozenset({'tomatoes', 'spaghetti', 'chocolate', 'mineral
water'}), support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'tomatoes', 'spaghetti', 'chocolate', 'mineral water'}),
confidence=0.0025329956005865884, lift=1.0),
OrderedStatistic(items_base=frozenset({'chocolate'}),
items_add=frozenset({'mineral water', 'tomatoes', 'spaghetti'}),
confidence=0.015459723352318957, lift=1.6566197837963499),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'chocolate', 'tomatoes', 'spaghetti'}),
confidence=0.010626398210290829, lift=2.154286837172743),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'chocolate', 'tomatoes', 'mineral water'}),
confidence=0.01454823889739663, lift=2.53782185975284),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'chocolate', 'spaghetti', 'mineral water'}),
confidence=0.037037037037037035, lift=2.334578275754746),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.04810126582278481,
lift=2.2981375473675727), OrderedStatistic(items_base=frozenset({'chocolate',
'spaghetti'}), items_add=frozenset({'tomatoes', 'mineral water'}),
confidence=0.06462585034013606, lift=2.648953570499238),
OrderedStatistic(items_base=frozenset({'tomatoes', 'chocolate'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.18095238095238095, lift=3.0297406462585035),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'chocolate', 'tomatoes'}), confidence=0.04241071428571429,
lift=3.0297406462585035), OrderedStatistic(items_base=frozenset({'tomatoes',
'mineral water'}), items_add=frozenset({'chocolate', 'spaghetti'}),
confidence=0.10382513661202185, lift=2.6489535704992377),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'chocolate', 'mineral water'}),
confidence=0.12101910828025478, lift=2.2981375473675723),
OrderedStatistic(items_base=frozenset({'spaghetti', 'chocolate', 'mineral
water'}), items_add=frozenset({'tomatoes'}), confidence=0.15966386554621848,
lift=2.334578275754746), OrderedStatistic(items_base=frozenset({'tomatoes',
'chocolate', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.4418604651162791, lift=2.53782185975284),
OrderedStatistic(items_base=frozenset({'tomatoes', 'chocolate', 'spaghetti'}),

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items_add=frozenset({'mineral water'}), confidence=0.5135135135135135,
lift=2.154286837172743), OrderedStatistic(items_base=frozenset({'tomatoes',
'spaghetti', 'mineral water'}), items_add=frozenset({'chocolate'}),
confidence=0.2714285714285714, lift=1.6566197837963499)])
RelationRecord(items=frozenset({'cooking oil', 'eggs', 'mineral water',
'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cooking oil', 'eggs', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.041775456919060046, lift=3.1975275749986674),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'cooking
oil', 'mineral water', 'milk'}), confidence=0.011869436201780414,
lift=2.543789741415854), OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'cooking oil', 'eggs', 'mineral water'}),
confidence=0.01646090534979424, lift=2.5723593964334706),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'cooking oil', 'eggs', 'milk'}),
confidence=0.008948545861297539, lift=2.2374347501864276),
OrderedStatistic(items_base=frozenset({'cooking oil', 'eggs'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.1818181818181818,
lift=3.788383838383838), OrderedStatistic(items_base=frozenset({'cooking oil',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.18604651162790697, lift=3.653232679897723),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.10596026490066225,
lift=3.44072704337605), OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.06926406926406926, lift=3.44072704337605),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'cooking oil', 'milk'}), confidence=0.0418848167539267,
lift=3.653232679897723), OrderedStatistic(items_base=frozenset({'mineral water',
'milk'}), items_add=frozenset({'cooking oil', 'eggs'}),
confidence=0.04444444444444444, lift=3.788383838383838),
OrderedStatistic(items_base=frozenset({'cooking oil', 'eggs', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5333333333333332,
lift=2.2374347501864276), OrderedStatistic(items_base=frozenset({'cooking oil',
'eggs', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3333333333333333, lift=2.5723593964334706),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.4571428571428571,
lift=2.543789741415854), OrderedStatistic(items_base=frozenset({'eggs', 'mineral
water', 'milk'}), items_add=frozenset({'cooking oil'}),
confidence=0.16326530612244897, lift=3.1975275749986674)])
RelationRecord(items=frozenset({'cooking oil', 'eggs', 'spaghetti', 'mineral
water'}), support=0.0029329422743634183,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),

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items_add=frozenset({'cooking oil', 'eggs', 'spaghetti', 'mineral water'}),
confidence=0.0029329422743634183, lift=1.0),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.057441253263707574, lift=4.026792904028696),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'cooking
oil', 'spaghetti', 'mineral water'}), confidence=0.016320474777448073,
lift=2.147717215888386), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'cooking oil', 'eggs', 'spaghetti'}),
confidence=0.012304250559284116, lift=2.977231724038392),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cooking oil', 'eggs', 'mineral water'}),
confidence=0.016845329249617153, lift=2.632433639612047),
OrderedStatistic(items_base=frozenset({'cooking oil', 'eggs'}),
items_add=frozenset({'spaghetti', 'mineral water'}), confidence=0.25,
lift=4.185825892857143), OrderedStatistic(items_base=frozenset({'cooking oil',
'mineral water'}), items_add=frozenset({'eggs', 'spaghetti'}),
confidence=0.14569536423841062, lift=3.988543529752986),
OrderedStatistic(items_base=frozenset({'cooking oil', 'spaghetti'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.18487394957983191,
lift=3.6302081041840815), OrderedStatistic(items_base=frozenset({'eggs',
'mineral water'}), items_add=frozenset({'cooking oil', 'spaghetti'}),
confidence=0.05759162303664921, lift=3.6302081041840815),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.08029197080291971, lift=3.988543529752985),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cooking oil', 'eggs'}), confidence=0.04910714285714286,
lift=4.185825892857143), OrderedStatistic(items_base=frozenset({'cooking oil',
'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.4583333333333333, lift=2.6324336396120467),
OrderedStatistic(items_base=frozenset({'cooking oil', 'eggs', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.7096774193548387,
lift=2.9772317240383925), OrderedStatistic(items_base=frozenset({'cooking oil',
'spaghetti', 'mineral water'}), items_add=frozenset({'eggs'}),
confidence=0.38596491228070173, lift=2.1477172158883855),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'mineral water'}),
items_add=frozenset({'cooking oil'}), confidence=0.205607476635514,
lift=4.026792904028696)])
RelationRecord(items=frozenset({'cooking oil', 'ground beef', 'spaghetti',
'mineral water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cooking oil', 'ground beef', 'spaghetti', 'mineral
water'}), confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.041775456919060046, lift=2.448107049608355),
OrderedStatistic(items_base=frozenset({'ground beef'}),

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items_add=frozenset({'cooking oil', 'spaghetti', 'mineral water'}),
confidence=0.021709633649932156, lift=2.856911614177914),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'cooking oil', 'ground beef', 'spaghetti'}),
confidence=0.008948545861297539, lift=1.8645289584886902),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cooking oil', 'ground beef', 'mineral water'}),
confidence=0.012251148545176109, lift=3.8289943848902497),
OrderedStatistic(items_base=frozenset({'cooking oil', 'ground beef'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.25396825396825395, lift=4.252267573696145),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.10596026490066225, lift=2.703428391224039),
OrderedStatistic(items_base=frozenset({'cooking oil', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.134453781512605, lift=3.2851394629513035),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'cooking oil', 'spaghetti'}),
confidence=0.052117263843648204, lift=3.2851394629513035),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.054421768707482984, lift=2.703428391224039),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cooking oil', 'ground beef'}),
confidence=0.03571428571428571, lift=4.252267573696145),
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water'}), items_add=frozenset({'spaghetti'}), confidence=0.6666666666666666,
lift=3.82899438489025), OrderedStatistic(items_base=frozenset({'cooking oil',
'ground beef', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.4444444444444444, lift=1.86452895848869),
OrderedStatistic(items_base=frozenset({'cooking oil', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.2807017543859649,
lift=2.856911614177914), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'cooking oil'}),
confidence=0.125, lift=2.448107049608355)])
RelationRecord(items=frozenset({'cooking oil', 'spaghetti', 'pancakes', 'mineral
water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'cooking oil', 'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'cooking oil'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.041775456919060046, lift=3.6436942133705745),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'cooking oil', 'spaghetti', 'pancakes'}),
confidence=0.008948545861297539, lift=3.0510473866178565),
OrderedStatistic(items_base=frozenset({'pancakes'}),

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items_add=frozenset({'cooking oil', 'spaghetti', 'mineral water'}),
confidence=0.02244039270687237, lift=2.9530769420043796),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'cooking oil', 'pancakes', 'mineral water'}),
confidence=0.012251148545176109, lift=2.625596149639028),
OrderedStatistic(items_base=frozenset({'cooking oil', 'mineral water'}),
items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.10596026490066225,
lift=4.205333053015172), OrderedStatistic(items_base=frozenset({'cooking oil',
'pancakes'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.27118644067796605, lift=4.540556900726392),
OrderedStatistic(items_base=frozenset({'cooking oil', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.134453781512605, lift=3.986315474806522),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'cooking oil', 'spaghetti'}),
confidence=0.06324110671936758, lift=3.986315474806523),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'cooking oil', 'pancakes'}),
confidence=0.03571428571428571, lift=4.540556900726392),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'cooking oil', 'mineral water'}),
confidence=0.08465608465608465, lift=4.205333053015172),
OrderedStatistic(items_base=frozenset({'cooking oil', 'pancakes', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.4571428571428571,
lift=2.625596149639028), OrderedStatistic(items_base=frozenset({'cooking oil',
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confidence=0.2807017543859649, lift=2.9530769420043796),
OrderedStatistic(items_base=frozenset({'cooking oil', 'pancakes', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.7272727272727272,
lift=3.051047386617856), OrderedStatistic(items_base=frozenset({'spaghetti',
'pancakes', 'mineral water'}), items_add=frozenset({'cooking oil'}),
confidence=0.18604651162790697, lift=3.643694213370575)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'frozen vegetables',
'milk'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'frozen vegetables', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
fries', 'frozen vegetables', 'milk'}), confidence=0.01261127596439169,
lift=2.19993444206749), OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'eggs', 'frozen vegetables', 'milk'}),
confidence=0.01326053042121685, lift=1.8084952489008652),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'eggs', 'french fries', 'milk'}),
confidence=0.023776223776223775, lift=3.3026936026936027),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'french fries', 'frozen vegetables'}), confidence=0.01748971193415638,
lift=3.363854595336077), OrderedStatistic(items_base=frozenset({'french fries',

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'eggs'}), items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.06227106227106227, lift=2.6389561474307235),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.10429447852760734,
lift=4.395016199076307), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.07359307359307359, lift=3.8602912239275873),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.11888111888111888,
lift=3.8602912239275877), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.09550561797752807, lift=4.395016199076307),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'eggs', 'french fries'}), confidence=0.09604519774011298,
lift=2.6389561474307235), OrderedStatistic(items_base=frozenset({'french fries',
'eggs', 'frozen vegetables'}), items_add=frozenset({'milk'}),
confidence=0.43589743589743585, lift=3.363854595336077),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'milk'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.3148148148148148,
lift=3.3026936026936027), OrderedStatistic(items_base=frozenset({'eggs', 'frozen
vegetables', 'milk'}), items_add=frozenset({'french fries'}),
confidence=0.3090909090909091, lift=1.8084952489008652),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables',
'milk'}), items_add=frozenset({'eggs'}), confidence=0.3953488372093023,
lift=2.19993444206749)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'mineral water',
'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
fries', 'mineral water', 'milk'}), confidence=0.011869436201780414,
lift=1.4360103378960465), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.0124804992199688, lift=0.9552675984590404),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'french fries', 'mineral water'}), confidence=0.01646090534979424,
lift=2.374485596707819), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'french fries', 'milk'}),
confidence=0.008948545861297539, lift=1.2430193056591268),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.05860805860805861,
lift=1.2211640211640211), OrderedStatistic(items_base=frozenset({'eggs',
'milk'}), items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.06926406926406926, lift=2.053556456718512),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.0418848167539267,
lift=1.7650450026472142), OrderedStatistic(items_base=frozenset({'french fries',

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'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.08988764044943819, lift=1.7650450026472142),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.06324110671936758,
lift=2.053556456718512), OrderedStatistic(items_base=frozenset({'mineral water',
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confidence=0.04444444444444444, lift=1.2211640211640211),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.2962962962962963,
lift=1.2430193056591268), OrderedStatistic(items_base=frozenset({'french fries',
'eggs', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3076923076923077, lift=2.374485596707819),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water', 'milk'}),
items_add=frozenset({'french fries'}), confidence=0.16326530612244897,
lift=0.9552675984590404), OrderedStatistic(items_base=frozenset({'french fries',
'mineral water', 'milk'}), items_add=frozenset({'eggs'}),
confidence=0.25806451612903225, lift=1.4360103378960467)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'spaghetti', 'milk'}),
support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'spaghetti', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
fries', 'spaghetti', 'milk'}), confidence=0.014836795252225518,
lift=2.318558358061325), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'eggs', 'spaghetti', 'milk'}),
confidence=0.015600624024960999, lift=1.746571355391529),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'french fries', 'spaghetti'}), confidence=0.0205761316872428,
lift=2.57235939643347), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'french fries', 'milk'}),
confidence=0.015313935681470138, lift=2.127219102716806),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.07326007326007326,
lift=2.065878983172216), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.08658008658008658, lift=3.137377919986615),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.07299270072992702,
lift=3.0759452144673176), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.11235955056179775, lift=3.075945214467317),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.0966183574879227,
lift=3.1373779199866156), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'eggs', 'french fries'}),
confidence=0.07518796992481203, lift=2.065878983172216),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'milk'}),

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items_add=frozenset({'spaghetti'}), confidence=0.3703703703703704,
lift=2.127219102716806), OrderedStatistic(items_base=frozenset({'french fries',
'eggs', 'spaghetti'}), items_add=frozenset({'milk'}),
confidence=0.3333333333333333, lift=2.5723593964334706),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'milk'}),
items_add=frozenset({'french fries'}), confidence=0.29850746268656714,
lift=1.7465713553915292), OrderedStatistic(items_base=frozenset({'french fries',
'spaghetti', 'milk'}), items_add=frozenset({'eggs'}),
confidence=0.41666666666666663, lift=2.3185583580613254)])
RelationRecord(items=frozenset({'french fries', 'eggs', 'spaghetti', 'mineral
water'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'eggs', 'spaghetti', 'mineral water'}),
confidence=0.0030662578322890282, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'french
fries', 'spaghetti', 'mineral water'}), confidence=0.017062314540059347,
lift=1.6840055442761206), OrderedStatistic(items_base=frozenset({'french
fries'}), items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.01794071762870515, lift=1.2576946068496946),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'french fries', 'spaghetti'}),
confidence=0.012863534675615214, lift=1.6081562266964953),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'french fries', 'mineral water'}),
confidence=0.01761102603369066, lift=2.540390505359878),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.08424908424908426, lift=1.410607993197279),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.060209424083769635, lift=2.181791739383362),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.08394160583941607, lift=2.4887193098871934),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.09090909090909091,
lift=2.4887193098871934), OrderedStatistic(items_base=frozenset({'french fries',
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confidence=0.11111111111111111, lift=2.181791739383362),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'french fries'}), confidence=0.05133928571428572,
lift=1.410607993197279), OrderedStatistic(items_base=frozenset({'french fries',
'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.44230769230769235, lift=2.540390505359878),
OrderedStatistic(items_base=frozenset({'french fries', 'eggs', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.3833333333333333,
lift=1.608156226696495), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'french fries'}),

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confidence=0.21495327102803738, lift=1.2576946068496946),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.3026315789473684,
lift=1.6840055442761206)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'frozen vegetables',
'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'eggs', 'frozen vegetables', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'ground
beef', 'frozen vegetables', 'milk'}), confidence=0.011869436201780414,
lift=2.070526533710579), OrderedStatistic(items_base=frozenset({'frozen
vegetables'}), items_add=frozenset({'eggs', 'ground beef', 'milk'}),
confidence=0.022377622377622374, lift=3.8148760330578506),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'eggs', 'frozen vegetables', 'milk'}),
confidence=0.021709633649932156, lift=2.960799309238929),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'ground beef', 'frozen vegetables'}), confidence=0.01646090534979424,
lift=3.741613667539594), OrderedStatistic(items_base=frozenset({'eggs', 'frozen
vegetables'}), items_add=frozenset({'ground beef', 'milk'}),
confidence=0.09815950920245398, lift=4.4623907789551955),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.10666666666666666, lift=4.520376647834275),
OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.06926406926406926, lift=4.09094317755735),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.1259842519685039,
lift=4.09094317755735), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.09039548022598869, lift=4.520376647834275),
OrderedStatistic(items_base=frozenset({'ground beef', 'milk'}),
items_add=frozenset({'eggs', 'frozen vegetables'}),
confidence=0.09696969696969697, lift=4.4623907789551955),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'frozen
vegetables'}), items_add=frozenset({'milk'}), confidence=0.4848484848484848,
lift=3.7416136675395935), OrderedStatistic(items_base=frozenset({'eggs', 'frozen
vegetables', 'milk'}), items_add=frozenset({'ground beef'}),
confidence=0.2909090909090909, lift=2.9607993092389293),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'milk'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.3636363636363636,
lift=3.8148760330578506), OrderedStatistic(items_base=frozenset({'ground beef',
'frozen vegetables', 'milk'}), items_add=frozenset({'eggs'}),
confidence=0.37209302325581395, lift=2.070526533710579)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'frozen vegetables',
'mineral water'}), support=0.0026663111585121984,

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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'eggs', 'frozen vegetables', 'mineral
water'}), confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'ground
beef', 'frozen vegetables', 'mineral water'}), confidence=0.014836795252225518,
lift=1.6129101621296176), OrderedStatistic(items_base=frozenset({'frozen
vegetables'}), items_add=frozenset({'eggs', 'ground beef', 'mineral water'}),
confidence=0.027972027972027972, lift=2.7607655502392343),
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items_add=frozenset({'eggs', 'frozen vegetables', 'mineral water'}),
confidence=0.027137042062415198, lift=2.9934551839731824),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'ground beef', 'frozen vegetables'}),
confidence=0.011185682326621925, lift=2.5425394888482136),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.12269938650306747, lift=2.9979416878159904),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.13333333333333333, lift=3.7318407960199003),
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items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.05235602094240838, lift=3.0923032526693324),
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items_add=frozenset({'eggs', 'mineral water'}), confidence=0.15748031496062992,
lift=3.0923032526693324), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.07462686567164178, lift=3.7318407960199003),
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items_add=frozenset({'eggs', 'frozen vegetables'}),
confidence=0.06514657980456026, lift=2.997941687815991),
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confidence=0.6060606060606061, lift=2.542539488848214),
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lift=2.9934551839731824), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.2631578947368421, lift=2.7607655502392343),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables',
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lift=1.6129101621296178)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'spaghetti', 'frozen
vegetables'}), support=0.0023996800426609784,
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confidence=0.0023996800426609784, lift=1.0),
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beef', 'spaghetti', 'frozen vegetables'}), confidence=0.013353115727002967,
lift=1.5409495548961425), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.025174825174825173, lift=2.818453188602442),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'eggs', 'spaghetti', 'frozen vegetables'}),
confidence=0.024423337856173677, lift=4.260452494399041),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'ground beef', 'frozen vegetables'}),
confidence=0.013782542113323124, lift=3.132813587637477),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.11042944785276072, lift=2.817453361712783),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.12000000000000001, lift=4.306794258373206),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.06569343065693431, lift=3.880050577619403),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.1417322834645669,
lift=3.8800505776194028), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.0861244019138756, lift=4.306794258373206),
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items_add=frozenset({'eggs', 'frozen vegetables'}),
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OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'frozen
vegetables'}), items_add=frozenset({'spaghetti'}),
confidence=0.5454545454545454, lift=3.132813587637477),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'ground beef'}),
confidence=0.4186046511627907, lift=4.260452494399041),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'spaghetti'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.2686567164179104,
lift=2.8184531886024415), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.27692307692307694, lift=1.5409495548961425)])
RelationRecord(items=frozenset({'eggs', 'frozen vegetables', 'mineral water',
'milk'}), support=0.0037328356219170776,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.0037328356219170776, lift=1.0),
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vegetables', 'mineral water', 'milk'}), confidence=0.020771513353115726,
lift=1.8771942368882055), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.03916083916083916, lift=2.9974025974025973),

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OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'frozen vegetables', 'mineral water'}), confidence=0.02880658436213992,
lift=3.177620430888405), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'frozen vegetables', 'milk'}),
confidence=0.015659955257270694, lift=2.1357331706324993),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.17177914110429446,
lift=3.5792092706203134), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.121212121212122, lift=3.392582541836273),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.07329842931937172, lift=3.106279764545804),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.1581920903954802,
lift=3.106279764545804), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.10447761194029849, lift=3.3925825418362727),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'eggs', 'frozen vegetables'}),
confidence=0.07777777777777778, lift=3.5792092706203134),
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items_add=frozenset({'mineral water'}), confidence=0.509090909090909,
lift=2.1357331706324993), OrderedStatistic(items_base=frozenset({'eggs', 'frozen
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confidence=0.411764705882353, lift=3.177620430888405),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water', 'milk'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.2857142857142857,
lift=2.9974025974025973), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'mineral water', 'milk'}), items_add=frozenset({'eggs'}),
confidence=0.3373493975903614, lift=1.8771942368882055)])
RelationRecord(items=frozenset({'eggs', 'spaghetti', 'frozen vegetables',
'milk'}), support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.014836795252225518, lift=1.7950129223700582),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'eggs', 'spaghetti', 'milk'}),
confidence=0.027972027972027972, lift=3.1316146540027137),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
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lift=3.589338692697866), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'frozen vegetables', 'milk'}),
confidence=0.015313935681470138, lift=2.088542391758318),
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items_add=frozenset({'spaghetti', 'milk'}), confidence=0.12269938650306747,
lift=3.4600304442086807), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.08658008658008658, lift=3.1073551647714326),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.07299270072992702, lift=3.09332343601798),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.11299435028248588,
lift=3.09332343601798), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.09569377990430622, lift=3.1073551647714326),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'eggs', 'frozen vegetables'}),
confidence=0.07518796992481203, lift=3.4600304442086807),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.36363636363636365,
lift=2.088542391758318), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.4651162790697675, lift=3.5893386926978663),
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items_add=frozenset({'frozen vegetables'}), confidence=0.29850746268656714,
lift=3.131614654002713), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.3225806451612903, lift=1.7950129223700584)])
RelationRecord(items=frozenset({'eggs', 'spaghetti', 'frozen vegetables',
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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.0029329422743634183, lift=1.0),
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items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.016320474777448073, lift=1.3602209033959778),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.03076923076923077, lift=2.1570093457943926),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti', 'frozen vegetables'}),
confidence=0.012304250559284116, lift=2.146376359190469),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'frozen vegetables', 'mineral water'}),
confidence=0.016845329249617153, lift=1.8581884514908569),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.13496932515337423, lift=2.259832383873795),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.05759162303664921, lift=2.0669605952052907),

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OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.08029197080291971, lift=2.2472763917638083),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.08208955223880597,
lift=2.247276391763809), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.10526315789473685, lift=2.0669605952052907),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'frozen vegetables'}),
confidence=0.04910714285714286, lift=2.2598323838737953),
OrderedStatistic(items_base=frozenset({'eggs', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.3235294117647059,
lift=1.8581884514908569), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.5116279069767442, lift=2.146376359190469),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'mineral water'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.205607476635514,
lift=2.1570093457943926), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.24444444444444446, lift=1.3602209033959776)])
RelationRecord(items=frozenset({'grated cheese', 'eggs', 'spaghetti', 'mineral
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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
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confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'grated
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lift=1.8943115095649976), OrderedStatistic(items_base=frozenset({'grated
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confidence=0.04071246819338422, lift=2.854058167463318),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'grated cheese', 'eggs', 'spaghetti'}),
confidence=0.008948545861297539, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'grated cheese', 'eggs', 'mineral water'}),
confidence=0.012251148545176109, lift=2.784723189011091),
OrderedStatistic(items_base=frozenset({'grated cheese', 'eggs'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.23529411764705882, lift=3.9396008403361344),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'grated cheese', 'spaghetti'}),
confidence=0.0418848167539267, lift=2.5336936328322914),
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items_add=frozenset({'grated cheese', 'mineral water'}),
confidence=0.058394160583941604, lift=3.343622889619435),
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.12213740458015267,

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lift=3.343622889619435), OrderedStatistic(items_base=frozenset({'grated cheese',
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confidence=0.12903225806451613, lift=2.533693632832292),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'grated cheese', 'eggs'}), confidence=0.03571428571428571,
lift=3.9396008403361344), OrderedStatistic(items_base=frozenset({'grated
cheese', 'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.4848484848484848, lift=2.784723189011091),
OrderedStatistic(items_base=frozenset({'grated cheese', 'eggs', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.5,
lift=2.0975950782997765), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'grated cheese'}),
confidence=0.14953271028037382, lift=2.854058167463318),
OrderedStatistic(items_base=frozenset({'grated cheese', 'spaghetti', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.3404255319148936,
lift=1.8943115095649976)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'mineral water',
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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'eggs', 'mineral water', 'milk'}),
confidence=0.003332888948140248, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'ground
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lift=1.676066282935898), OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.033921302578019, lift=2.5963641901808217),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'ground beef', 'mineral water'}), confidence=0.025720164609053502,
lift=2.5385125622698728), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'ground beef', 'milk'}),
confidence=0.013982102908277406, lift=2.3836307707952007),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.16666666666666669,
lift=3.4726851851851857), OrderedStatistic(items_base=frozenset({'eggs',
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confidence=0.10822510822510824, lift=2.6442883934740613),
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items_add=frozenset({'ground beef', 'milk'}), confidence=0.06544502617801047,
lift=2.975170553704585), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.15151515151515152, lift=2.975170553704585),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.08143322475570033,
lift=2.6442883934740617), OrderedStatistic(items_base=frozenset({'mineral
water', 'milk'}), items_add=frozenset({'eggs', 'ground beef'}),
confidence=0.06944444444444445, lift=3.4726851851851857),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5681818181818182,

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lift=2.3836307707952007), OrderedStatistic(items_base=frozenset({'ground beef',
'eggs', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.32894736842105265, lift=2.5385125622698728),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.25510204081632654,
lift=2.5963641901808217), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.30120481927710846, lift=1.676066282935898)])
RelationRecord(items=frozenset({'ground beef', 'eggs', 'spaghetti', 'milk'}),
support=0.0029329422743634183,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'eggs', 'spaghetti', 'milk'}),
confidence=0.0029329422743634183, lift=1.0),
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beef', 'spaghetti', 'milk'}), confidence=0.016320474777448073,
lift=1.6769846754196984), OrderedStatistic(items_base=frozenset({'ground
beef'}), items_add=frozenset({'eggs', 'spaghetti', 'milk'}),
confidence=0.02985074626865672, lift=3.341946981510359),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'ground beef', 'spaghetti'}), confidence=0.02263374485596708,
lift=2.5339659726061052), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'ground beef', 'milk'}),
confidence=0.016845329249617153, lift=2.871745788667688),
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items_add=frozenset({'spaghetti', 'milk'}), confidence=0.14666666666666667,
lift=4.135889724310776), OrderedStatistic(items_base=frozenset({'eggs',
'milk'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.09523809523809525, lift=2.429867184969226),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.08029197080291971,
lift=3.6501216545012167), OrderedStatistic(items_base=frozenset({'ground beef',
'milk'}), items_add=frozenset({'eggs', 'spaghetti'}),
confidence=0.13333333333333333, lift=3.6501216545012167),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.07482993197278912,
lift=2.429867184969226), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'eggs', 'ground beef'}),
confidence=0.08270676691729323, lift=4.135889724310777),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.5, lift=2.871745788667688),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'spaghetti'}),
items_add=frozenset({'milk'}), confidence=0.3283582089552239,
lift=2.5339659726061057), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'milk'}), items_add=frozenset({'ground beef'}),
confidence=0.3283582089552239, lift=3.341946981510359),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.3013698630136986,
lift=1.6769846754196982)])

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RelationRecord(items=frozenset({'ground beef', 'eggs', 'spaghetti', 'mineral
water'}), support=0.0038661511798426876,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'eggs', 'spaghetti', 'mineral water'}),
confidence=0.0038661511798426876, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'ground
beef', 'spaghetti', 'mineral water'}), confidence=0.021513353115727003,
lift=1.260716107195846), OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.03934871099050204, lift=2.758454963922951),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'ground beef', 'spaghetti'}),
confidence=0.016219239373601792, lift=1.8158285752445826),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'ground beef', 'mineral water'}),
confidence=0.0222052067381317, lift=2.1915954702990246),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.19333333333333336, lift=3.237038690476191),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.07591623036649214, lift=1.936896748228087),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.10583941605839416, lift=2.5859982405668225),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.09446254071661238,
lift=2.585998240566823), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.09863945578231292, lift=1.936896748228087),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'ground beef'}), confidence=0.06473214285714286,
lift=3.237038690476191), OrderedStatistic(items_base=frozenset({'ground beef',
'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.3815789473684211, lift=2.191595470299025),
OrderedStatistic(items_base=frozenset({'ground beef', 'eggs', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.43283582089552236,
lift=1.8158285752445824), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'ground beef'}),
confidence=0.27102803738317754, lift=2.7584549639229508),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.22656250000000003,
lift=1.260716107195846)])
RelationRecord(items=frozenset({'herb & pepper', 'eggs', 'spaghetti', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'herb & pepper', 'eggs', 'spaghetti', 'mineral water'}),
confidence=0.0023996800426609784, lift=1.0),

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OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'herb &
pepper', 'spaghetti', 'mineral water'}), confidence=0.013353115727002967,
lift=2.225816023738872), OrderedStatistic(items_base=frozenset({'herb &
pepper'}), items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.048517520215633415, lift=3.4012141975464134),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'herb & pepper', 'eggs', 'spaghetti'}),
confidence=0.010067114093959731, lift=2.097595078299776),
OrderedStatistic(items_base=frozenset({'spaghetti'}), items_add=frozenset({'herb
& pepper', 'eggs', 'mineral water'}), confidence=0.013782542113323124,
lift=2.584571209800919), OrderedStatistic(items_base=frozenset({'herb & pepper',
'eggs'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.19148936170212766, lift=3.2061645136778116),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'herb & pepper', 'spaghetti'}),
confidence=0.04712041884816753, lift=2.8971332932795466),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'herb & pepper', 'mineral water'}),
confidence=0.06569343065693431, lift=3.849737682481752),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.140625,
lift=3.8497376824817517), OrderedStatistic(items_base=frozenset({'herb &
pepper', 'spaghetti'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.14754098360655737, lift=2.8971332932795466),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'herb & pepper', 'eggs'}), confidence=0.040178571428571425,
lift=3.206164513677811), OrderedStatistic(items_base=frozenset({'herb & pepper',
'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}), confidence=0.45,
lift=2.584571209800919), OrderedStatistic(items_base=frozenset({'herb & pepper',
'eggs', 'spaghetti'}), items_add=frozenset({'mineral water'}), confidence=0.5,
lift=2.0975950782997765), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'herb & pepper'}),
confidence=0.16822429906542055, lift=3.401214197546414),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'spaghetti', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.4,
lift=2.2258160237388727)])
RelationRecord(items=frozenset({'olive oil', 'eggs', 'mineral water', 'milk'}),
support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'eggs', 'mineral water', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'mineral
water', 'olive oil', 'milk'}), confidence=0.014836795252225518,
lift=1.7389187685459941), OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'mineral water', 'eggs', 'olive oil'}),
confidence=0.0205761316872428, lift=3.5077628133183687),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'olive oil', 'milk'}),

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confidence=0.011185682326621925, lift=2.996564397571109),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.04048582995951417, lift=3.0988184747583243),
OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.08658008658008658, lift=3.137377919986615),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.05235602094240838,
lift=3.0681446335078535), OrderedStatistic(items_base=frozenset({'eggs', 'olive
oil'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.22222222222222224, lift=4.6302469135802475),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'eggs', 'olive oil'}), confidence=0.05555555555555556,
lift=4.6302469135802475), OrderedStatistic(items_base=frozenset({'olive oil',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}), confidence=0.15625,
lift=3.0681446335078535), OrderedStatistic(items_base=frozenset({'olive oil',
'mineral water'}), items_add=frozenset({'eggs', 'milk'}),
confidence=0.0966183574879227, lift=3.1373779199866156),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water', 'milk'}),
items_add=frozenset({'olive oil'}), confidence=0.20408163265306123,
lift=3.0988184747583243), OrderedStatistic(items_base=frozenset({'eggs', 'olive
oil', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.7142857142857143, lift=2.996564397571109),
OrderedStatistic(items_base=frozenset({'olive oil', 'eggs', 'mineral water'}),
items_add=frozenset({'milk'}), confidence=0.45454545454545453,
lift=3.507762813318369), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=1.738918768545994)])
RelationRecord(items=frozenset({'eggs', 'pancakes', 'mineral water', 'milk'}),
support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'pancakes', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'pancakes', 'mineral water', 'milk'}),
confidence=0.011869436201780414, lift=1.50902781270432),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'pancakes', 'mineral water'}), confidence=0.01646090534979424,
lift=2.092766966589942), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'pancakes', 'milk'}),
confidence=0.008948545861297539, lift=1.9178012144455097),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.02244039270687237, lift=1.7176059764719351),
OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.06926406926406926, lift=2.053556456718512),

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OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'pancakes', 'milk'}), confidence=0.0418848167539267,
lift=2.5336936328322914), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.09815950920245398, lift=2.0452624403544646),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'eggs', 'pancakes'}), confidence=0.04444444444444444,
lift=2.0452624403544646), OrderedStatistic(items_base=frozenset({'pancakes',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.12903225806451613, lift=2.533693632832292),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.06324110671936758,
lift=2.053556456718512), OrderedStatistic(items_base=frozenset({'eggs', 'mineral
water', 'milk'}), items_add=frozenset({'pancakes'}),
confidence=0.16326530612244897, lift=1.7176059764719351),
OrderedStatistic(items_base=frozenset({'eggs', 'pancakes', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.4571428571428571,
lift=1.9178012144455094), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.27118644067796605, lift=2.092766966589942),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.27118644067796605,
lift=1.50902781270432)])
RelationRecord(items=frozenset({'eggs', 'spaghetti', 'mineral water', 'milk'}),
support=0.004399413411545127,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.004399413411545127, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.024480712166172106, lift=1.5561849318513301),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'eggs',
'spaghetti', 'mineral water'}), confidence=0.03395061728395062,
lift=2.380033460251529), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'spaghetti', 'milk'}),
confidence=0.018456375838926176, lift=2.0662876890714212),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'mineral water', 'milk'}),
confidence=0.02526799387442573, lift=1.9340328780823204),
OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.14285714285714288, lift=2.3919005102040822),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.08638743455497382,
lift=2.4360607014919493), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.12043795620437957, lift=2.5094586374695864),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),

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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.09166666666666667,
lift=2.509458637469587), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.12406015037593984, lift=2.4360607014919498),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.07366071428571429,
lift=2.391900510204082), OrderedStatistic(items_base=frozenset({'eggs', 'mineral
water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.336734693877551, lift=1.9340328780823202),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.4925373134328358,
lift=2.0662876890714212), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.308411214953271, lift=2.380033460251529),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.2796610169491525,
lift=1.5561849318513301)])
RelationRecord(items=frozenset({'turkey', 'eggs', 'mineral water', 'milk'}),
support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'turkey', 'eggs', 'mineral water', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'mineral
water', 'turkey', 'milk'}), confidence=0.01261127596439169,
lift=2.056460456715262), OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'mineral water', 'eggs', 'turkey'}),
confidence=0.01748971193415638, lift=3.1235792670977856),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'turkey', 'milk'}),
confidence=0.009507829977628635, lift=2.4592494021445654),
OrderedStatistic(items_base=frozenset({'turkey'}), items_add=frozenset({'eggs',
'mineral water', 'milk'}), confidence=0.03624733475479744,
lift=2.77440059179322), OrderedStatistic(items_base=frozenset({'eggs', 'milk'}),
items_add=frozenset({'mineral water', 'turkey'}),
confidence=0.07359307359307359, lift=3.833483645983646),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'turkey', 'milk'}), confidence=0.04450261780104712,
lift=3.927225130890052), OrderedStatistic(items_base=frozenset({'eggs',
'turkey'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.11643835616438356, lift=2.426122526636225),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'eggs', 'turkey'}), confidence=0.04722222222222222,
lift=2.426122526636225), OrderedStatistic(items_base=frozenset({'turkey',
'milk'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.19999999999999998, lift=3.927225130890052),
OrderedStatistic(items_base=frozenset({'turkey', 'mineral water'}),
items_add=frozenset({'eggs', 'milk'}), confidence=0.11805555555555555,
lift=3.833483645983646), OrderedStatistic(items_base=frozenset({'eggs', 'mineral

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water', 'milk'}), items_add=frozenset({'turkey'}),
confidence=0.17346938775510204, lift=2.7744005917932206),
OrderedStatistic(items_base=frozenset({'eggs', 'turkey', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5862068965517241,
lift=2.459249402144565), OrderedStatistic(items_base=frozenset({'turkey',
'eggs', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.4047619047619047, lift=3.1235792670977856),
OrderedStatistic(items_base=frozenset({'turkey', 'mineral water', 'milk'}),
items_add=frozenset({'eggs'}), confidence=0.3695652173913043,
lift=2.0564604567152625)])
RelationRecord(items=frozenset({'olive oil', 'eggs', 'spaghetti', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'eggs', 'spaghetti', 'mineral water'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}), items_add=frozenset({'mineral
water', 'spaghetti', 'olive oil'}), confidence=0.013353115727002967,
lift=1.3008015723149253), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'eggs', 'spaghetti', 'olive oil'}),
confidence=0.010067114093959731, lift=1.98719533733663),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.03643724696356275, lift=2.554353172651254),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'eggs', 'olive oil'}),
confidence=0.013782542113323124, lift=2.3496101907281077),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.04712041884816753,
lift=2.054943382442469), OrderedStatistic(items_base=frozenset({'eggs', 'olive
oil'}), items_add=frozenset({'spaghetti', 'mineral water'}), confidence=0.2,
lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti'}), items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.06569343065693431, lift=2.3805141225007933),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.08695652173913043,
lift=2.3805141225007933), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'eggs', 'olive oil'}),
confidence=0.040178571428571425, lift=3.348660714285714),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.10465116279069768,
lift=2.0549433824424694), OrderedStatistic(items_base=frozenset({'olive oil',
'eggs', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.40909090909090906, lift=2.3496101907281077),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'mineral water'}),
items_add=frozenset({'olive oil'}), confidence=0.16822429906542055,
lift=2.554353172651254), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'olive oil'}), items_add=frozenset({'mineral water'}),
confidence=0.47368421052631576, lift=1.9871953373366302),

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OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.23376623376623376,
lift=1.3008015723149253)])
RelationRecord(items=frozenset({'eggs', 'pancakes', 'mineral water',
'spaghetti'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'pancakes', 'mineral water', 'spaghetti'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.013353115727002967, lift=1.1646711752122008),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'pancakes', 'spaghetti'}),
confidence=0.010067114093959731, lift=1.5102684563758388),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'eggs', 'spaghetti', 'mineral water'}),
confidence=0.025245441795231416, lift=1.7697762514582323),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'pancakes', 'mineral water'}),
confidence=0.013782542113323124, lift=1.7522516676616398),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'pancakes', 'spaghetti'}), confidence=0.04712041884816753,
lift=1.870107205185739), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.11042944785276072, lift=1.8489537686240138),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.06569343065693431, lift=1.9476933729551946),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.07114624505928853,
lift=1.9476933729551944), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'eggs', 'pancakes'}),
confidence=0.040178571428571425, lift=1.8489537686240138),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'eggs', 'mineral water'}), confidence=0.09523809523809523,
lift=1.870107205185739), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.30508474576271183, lift=1.7522516676616398),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti', 'mineral water'}),
items_add=frozenset({'pancakes'}), confidence=0.16822429906542055,
lift=1.7697762514582323), OrderedStatistic(items_base=frozenset({'eggs',
'pancakes', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.36, lift=1.5102684563758388),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral
water'}), items_add=frozenset({'eggs'}), confidence=0.20930232558139536,
lift=1.1646711752122008)])
RelationRecord(items=frozenset({'eggs', 'soup', 'mineral water', 'spaghetti'}),
support=0.0021330489268097585,

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ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'eggs', 'soup', 'mineral water', 'spaghetti'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'eggs'}),
items_add=frozenset({'spaghetti', 'soup', 'mineral water'}),
confidence=0.011869436201780414, lift=1.5898685883849086),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'eggs', 'soup', 'spaghetti'}),
confidence=0.008948545861297539, lift=2.796793437733035),
OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'eggs',
'spaghetti', 'mineral water'}), confidence=0.04221635883905013,
lift=2.9594851182403272), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'eggs', 'soup', 'mineral water'}),
confidence=0.012251148545176109, lift=2.483672033442324),
OrderedStatistic(items_base=frozenset({'eggs', 'mineral water'}),
items_add=frozenset({'soup', 'spaghetti'}), confidence=0.0418848167539267,
lift=2.9362430885159267), OrderedStatistic(items_base=frozenset({'eggs',
'soup'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.23529411764705882, lift=3.9396008403361344),
OrderedStatistic(items_base=frozenset({'eggs', 'spaghetti'}),
items_add=frozenset({'soup', 'mineral water'}), confidence=0.058394160583941604,
lift=2.531876292139572), OrderedStatistic(items_base=frozenset({'soup', 'mineral
water'}), items_add=frozenset({'eggs', 'spaghetti'}),
confidence=0.09248554913294797, lift=2.531876292139572),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'eggs', 'soup'}), confidence=0.03571428571428571,
lift=3.9396008403361344), OrderedStatistic(items_base=frozenset({'soup',
'spaghetti'}), items_add=frozenset({'eggs', 'mineral water'}),
confidence=0.14953271028037382, lift=2.9362430885159267),
OrderedStatistic(items_base=frozenset({'eggs', 'soup', 'mineral water'}),
items_add=frozenset({'spaghetti'}), confidence=0.43243243243243235,
lift=2.483672033442324), OrderedStatistic(items_base=frozenset({'eggs',
'spaghetti', 'mineral water'}), items_add=frozenset({'soup'}),
confidence=0.14953271028037382, lift=2.9594851182403272),
OrderedStatistic(items_base=frozenset({'eggs', 'soup', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.6666666666666666,
lift=2.796793437733035), OrderedStatistic(items_base=frozenset({'spaghetti',
'soup', 'mineral water'}), items_add=frozenset({'eggs'}),
confidence=0.2857142857142857, lift=1.5898685883849086))]
RelationRecord(items=frozenset({'french fries', 'frozen vegetables', 'mineral
water', 'milk'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'frozen vegetables', 'mineral water',
'milk'}), confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.014040561622464899, lift=1.268894611206135),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),

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items_add=frozenset({'french fries', 'mineral water', 'milk'}),
confidence=0.025174825174825173, lift=3.04574780058651),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'french
fries', 'frozen vegetables', 'mineral water'}), confidence=0.018518518518518517,
lift=3.0197262479871174), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'french fries', 'frozen vegetables', 'milk'}),
confidence=0.010067114093959731, lift=1.756126112064929),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.1258741258741259,
lift=2.622727272727273), OrderedStatistic(items_base=frozenset({'french fries',
'milk'}), items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.10112359550561796, lift=2.830328693610598),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.07114624505928853, lift=3.015073357004086),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.10169491525423728, lift=3.015073357004086),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.0671641791044776,
lift=2.830328693610598), OrderedStatistic(items_base=frozenset({'mineral water',
'milk'}), items_add=frozenset({'french fries', 'frozen vegetables'}),
confidence=0.05, lift=2.622727272727273),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables',
'milk'}), items_add=frozenset({'mineral water'}), confidence=0.4186046511627907,
lift=1.7561261120649292), OrderedStatistic(items_base=frozenset({'french fries',
'frozen vegetables', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3913043478260869, lift=3.0197262479871174),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water',
'milk'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.29032258064516125, lift=3.04574780058651),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
'milk'}), items_add=frozenset({'french fries'}), confidence=0.21686746987951808,
lift=1.2688946112061352)])
RelationRecord(items=frozenset({'french fries', 'spaghetti', 'frozen
vegetables', 'mineral water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.0124804992199688, lift=1.0401802738776218),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'french fries', 'spaghetti', 'mineral water'}),
confidence=0.022377622377622374, lift=2.2086124401913874),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'french fries', 'spaghetti', 'frozen vegetables'}),
confidence=0.008948545861297539, lift=1.678076062639821),

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OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'french fries', 'frozen vegetables', 'mineral water'}),
confidence=0.012251148545176109, lift=1.997736200812304),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.11188811188811189, lift=1.8733766233766234),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.06324110671936758, lift=2.269720294267829),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.07729468599033815, lift=2.163385968707188),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.059701492537313425, lift=2.163385968707188),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.07655502392344497, lift=2.2697202942678287),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'french fries', 'frozen vegetables'}),
confidence=0.03571428571428571, lift=1.8733766233766234),
OrderedStatistic(items_base=frozenset({'french fries', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.3478260869565217, lift=1.997736200812304),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'mineral water'}),
confidence=0.39999999999999997, lift=1.678076062639821),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti', 'mineral
water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.21052631578947367, lift=2.2086124401913874),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'french fries'}),
confidence=0.17777777777777776, lift=1.0401802738776218)])
RelationRecord(items=frozenset({'ground beef', 'french fries', 'spaghetti',
'mineral water'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'french fries', 'spaghetti', 'mineral
water'}), confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.01638065522620905, lift=0.9599319910296413),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'french fries', 'spaghetti', 'mineral water'}),
confidence=0.02849389416553596, lift=2.8122723702063848),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'french fries', 'ground beef', 'spaghetti'}),
confidence=0.01174496644295302, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'spaghetti'}),

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items_add=frozenset({'french fries', 'ground beef', 'mineral water'}),
confidence=0.016079632465543645, lift=3.015333078101072),
OrderedStatistic(items_base=frozenset({'ground beef', 'french fries'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.20192307692307693, lift=3.380859375),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.08300395256916995, lift=2.1177300959909653),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.10144927536231883, lift=2.4787329462304677),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.06840390879478828, lift=2.4787329462304677),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.07142857142857142, lift=2.1177300959909653),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'french fries', 'ground beef'}), confidence=0.046875,
lift=3.380859375), OrderedStatistic(items_base=frozenset({'ground beef', 'french
fries', 'mineral water'}), items_add=frozenset({'spaghetti'}), confidence=0.525,
lift=3.0153330781010723), OrderedStatistic(items_base=frozenset({'ground beef',
'french fries', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.5, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.27631578947368424,
lift=2.8122723702063848), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'french fries'}),
confidence=0.16406250000000003, lift=0.9599319910296414)])
RelationRecord(items=frozenset({'french fries', 'spaghetti', 'mineral water',
'milk'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.01638065522620905, lift=1.0412821597609667),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'french
fries', 'spaghetti', 'mineral water'}), confidence=0.02160493827160494,
lift=2.132350552306693), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'french fries', 'spaghetti', 'milk'}),
confidence=0.01174496644295302, lift=1.8353956935123041),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'french fries', 'mineral water', 'milk'}),
confidence=0.016079632465543645, lift=1.9453761794200466),
OrderedStatistic(items_base=frozenset({'french fries', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.11797752808988764, lift=1.9753335674157304),

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OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.08300395256916995,
lift=2.3406490534636983), OrderedStatistic(items_base=frozenset({'french fries',
'spaghetti'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.10144927536231883, lift=2.1138083735909823),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.058333333333333334, lift=2.1138083735909823),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.07894736842105263, lift=2.3406490534636983),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'french fries', 'milk'}), confidence=0.046875,
lift=1.9753335674157302), OrderedStatistic(items_base=frozenset({'french fries',
'mineral water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.3387096774193548, lift=1.9453761794200464),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.4375,
lift=1.8353956935123044), OrderedStatistic(items_base=frozenset({'french fries',
'spaghetti', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.27631578947368424, lift=2.132350552306693),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'french fries'}), confidence=0.17796610169491525,
lift=1.0412821597609667)])
RelationRecord(items=frozenset({'french fries', 'pancakes', 'mineral water',
'spaghetti'}), support=0.0025329956005865884,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'french fries', 'pancakes', 'mineral water', 'spaghetti'}),
confidence=0.0025329956005865884, lift=1.0),
OrderedStatistic(items_base=frozenset({'french fries'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.014820592823712949, lift=1.292665892682219),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'french fries', 'pancakes', 'spaghetti'}),
confidence=0.010626398210290829, lift=1.853688673846314),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'french fries', 'spaghetti', 'mineral water'}),
confidence=0.02664796633941094, lift=2.630084151472651),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'french fries', 'pancakes', 'mineral water'}),
confidence=0.01454823889739663, lift=2.2270681626402475),
OrderedStatistic(items_base=frozenset({'french fries', 'mineral water'}),
items_add=frozenset({'pancakes', 'spaghetti'}), confidence=0.07509881422924901,
lift=2.9805090239872847), OrderedStatistic(items_base=frozenset({'french fries',
'pancakes'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.12582781456953643, lift=2.1067732970671713),
OrderedStatistic(items_base=frozenset({'french fries', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),

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confidence=0.09178743961352656, lift=2.7213343262492597),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'french fries', 'spaghetti'}),
confidence=0.07509881422924901, lift=2.7213343262492597),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'french fries', 'pancakes'}),
confidence=0.04241071428571429, lift=2.1067732970671713),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'french fries', 'mineral water'}),
confidence=0.10052910052910052, lift=2.9805090239872847),
OrderedStatistic(items_base=frozenset({'french fries', 'pancakes', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.3877551020408163,
lift=2.2270681626402475), OrderedStatistic(items_base=frozenset({'french fries',
'spaghetti', 'mineral water'}), items_add=frozenset({'pancakes'}),
confidence=0.25, lift=2.630084151472651),
OrderedStatistic(items_base=frozenset({'french fries', 'pancakes',
'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.4418604651162791, lift=1.853688673846314),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral
water'}), items_add=frozenset({'french fries'}), confidence=0.22093023255813954,
lift=1.292665892682219)])
RelationRecord(items=frozenset({'frozen smoothie', 'spaghetti', 'mineral water',
'milk'}), support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'frozen smoothie', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.003199573390214638, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen smoothie'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.05052631578947369, lift=3.2118465655664585),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'frozen
smoothie', 'spaghetti', 'mineral water'}), confidence=0.02469135802469136,
lift=3.6315662067296057), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'frozen smoothie', 'spaghetti', 'milk'}),
confidence=0.01342281879194631, lift=2.3972515180568874),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'frozen smoothie', 'mineral water', 'milk'}),
confidence=0.018376722817764167, lift=2.996604301218457),
OrderedStatistic(items_base=frozenset({'frozen smoothie', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.22429906542056074, lift=3.7555073431241657),
OrderedStatistic(items_base=frozenset({'frozen smoothie', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.15789473684210528,
lift=4.452512861100119), OrderedStatistic(items_base=frozenset({'frozen
smoothie', 'spaghetti'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.20512820512820515, lift=4.274074074074075),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'frozen smoothie', 'spaghetti'}),
confidence=0.06666666666666668, lift=4.274074074074075),

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OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'frozen smoothie', 'mineral water'}),
confidence=0.09022556390977443, lift=4.452512861100119),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'frozen smoothie', 'milk'}),
confidence=0.053571428571428575, lift=3.7555073431241657),
OrderedStatistic(items_base=frozenset({'frozen smoothie', 'mineral water',
'milk'}), items_add=frozenset({'spaghetti'}), confidence=0.5217391304347826,
lift=2.9966043012184564), OrderedStatistic(items_base=frozenset({'frozen
smoothie', 'spaghetti', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.5714285714285714, lift=2.397251518056887),
OrderedStatistic(items_base=frozenset({'frozen smoothie', 'spaghetti', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.4705882352941177,
lift=3.631566206729606), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water', 'milk'}), items_add=frozenset({'frozen smoothie'}),
confidence=0.2033898305084746, lift=3.211846565566459)])
RelationRecord(items=frozenset({'ground beef', 'frozen vegetables', 'mineral
water', 'milk'}), support=0.0037328356219170776,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'frozen vegetables', 'mineral water',
'milk'}), confidence=0.0037328356219170776, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'ground beef', 'mineral water', 'milk'}),
confidence=0.03916083916083916, lift=3.5391018619934282),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.037991858887381276, lift=3.433457030292132),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground
beef', 'frozen vegetables', 'mineral water'}), confidence=0.02880658436213992,
lift=3.1315679608755294), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'ground beef', 'frozen vegetables', 'milk'}),
confidence=0.015659955257270694, lift=2.731751729878779),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.22047244094488186,
lift=4.593788276465442), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'milk'}), items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.1581920903954802, lift=3.865142899206831),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.10447761194029849,
lift=4.749615558570782), OrderedStatistic(items_base=frozenset({'ground beef',
'milk'}), items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.1696969696969697, lift=4.749615558570782),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.09120521172638436, lift=3.865142899206831),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.07777777777777778, lift=4.593788276465442),

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OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables',
'milk'}), items_add=frozenset({'mineral water'}), confidence=0.6511627906976745,
lift=2.731751729878779), OrderedStatistic(items_base=frozenset({'ground beef',
'frozen vegetables', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.40579710144927533, lift=3.1315679608755294),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
'milk'}), items_add=frozenset({'ground beef'}), confidence=0.3373493975903614,
lift=3.4334570302921317), OrderedStatistic(items_base=frozenset({'ground beef',
'mineral water', 'milk'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.3373493975903614, lift=3.539101861993428)])
RelationRecord(items=frozenset({'ground beef', 'spaghetti', 'frozen vegetables',
'milk'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.0030662578322890282, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'ground beef', 'spaghetti', 'milk'}),
confidence=0.03216783216783217, lift=3.3053549190535496),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.03120759837177748, lift=3.77561605462424),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground
beef', 'spaghetti', 'frozen vegetables'}), confidence=0.02366255144032922,
lift=2.730658436213992), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'frozen vegetables', 'milk'}),
confidence=0.01761102603369066, lift=3.0721001460165964),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.1811023622047244,
lift=5.1069504469836), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'milk'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.12994350282485875, lift=3.315327260847842),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.11004784688995216,
lift=5.002841815282007), OrderedStatistic(items_base=frozenset({'ground beef',
'milk'}), items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.1393939393939394, lift=5.002841815282007),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.0782312925170068, lift=3.315327260847842),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.08646616541353383, lift=5.1069504469836),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables',
'milk'}), items_add=frozenset({'spaghetti'}), confidence=0.5348837209302326,
lift=3.0721001460165964), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'frozen vegetables'}), items_add=frozenset({'milk'}),
confidence=0.35384615384615387, lift=2.730658436213992),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',

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'milk'}), items_add=frozenset({'ground beef'}), confidence=0.3709677419354839,
lift=3.7756160546242397), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'milk'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.3150684931506849, lift=3.305354919053549)])
RelationRecord(items=frozenset({'ground beef', 'spaghetti', 'frozen vegetables',
'mineral water'}), support=0.004399413411545127,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.004399413411545127, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.046153846153846156, lift=2.7046875000000004),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.04477611940298508, lift=3.731840796019901),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti', 'frozen vegetables'}),
confidence=0.018456375838926176, lift=2.1298657718120806),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'frozen vegetables', 'mineral water'}),
confidence=0.02526799387442573, lift=2.7468872761169187),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.25984251968503935, lift=4.350622187851519),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.12313432835820895, lift=3.1416006701187937),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.15789473684210528, lift=3.857877593005315),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.10749185667752444, lift=3.857877593005315),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.11224489795918367, lift=3.1416006701187937),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.07366071428571429, lift=4.350622187851518),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.4782608695652174, lift=2.7468872761169187),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'mineral water'}),
confidence=0.5076923076923077, lift=2.1298657718120806),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'ground beef'}),
confidence=0.3666666666666667, lift=3.7318407960199007),

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OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'mineral
water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.25781250000000006, lift=2.7046875000000004)])
RelationRecord(items=frozenset({'ground beef', 'spaghetti', 'frozen vegetables',
'olive oil'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'spaghetti', 'frozen vegetables', 'olive
oil'}), confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'ground beef', 'spaghetti', 'olive oil'}),
confidence=0.022377622377622374, lift=3.6490118577075092),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'olive oil'}),
confidence=0.021709633649932156, lift=3.7870688839102584),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'ground beef', 'spaghetti', 'frozen vegetables'}),
confidence=0.032388663967611336, lift=3.7376518218623485),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'frozen vegetables', 'olive oil'}),
confidence=0.012251148545176109, lift=3.6758346094946397),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.1259842519685039,
lift=5.494231825672952), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'olive oil'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.18823529411764703, lift=4.802561024409763),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'ground beef', 'olive oil'}),
confidence=0.07655502392344497, lift=5.417351268393969),
OrderedStatistic(items_base=frozenset({'ground beef', 'olive oil'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.1509433962264151, lift=5.417351268393969),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.054421768707482984, lift=4.802561024409763),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.09302325581395349, lift=5.494231825672953),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables',
'olive oil'}), items_add=frozenset({'spaghetti'}),
confidence=0.6399999999999999, lift=3.6758346094946397),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'olive oil'}),
confidence=0.24615384615384614, lift=3.737651821862348),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'ground beef'}), confidence=0.37209302325581395,
lift=3.7870688839102584), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'olive oil'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.3478260869565217, lift=3.6490118577075092)])

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RelationRecord(items=frozenset({'shrimp', 'ground beef', 'spaghetti', 'frozen
vegetables'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'ground beef', 'spaghetti', 'frozen
vegetables'}), confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'shrimp', 'ground beef', 'spaghetti'}),
confidence=0.025174825174825173, lift=4.196363636363636),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'shrimp', 'spaghetti', 'frozen vegetables'}),
confidence=0.024423337856173677, lift=4.071099050203528),
OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'ground
beef', 'spaghetti', 'frozen vegetables'}), confidence=0.0335820895522388,
lift=3.8753731343283575), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'ground beef', 'frozen vegetables'}),
confidence=0.013782542113323124, lift=4.307618683001531),
OrderedStatistic(items_base=frozenset({'ground beef', 'frozen vegetables'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.1417322834645669,
lift=6.686376467092556), OrderedStatistic(items_base=frozenset({'shrimp',
'frozen vegetables'}), items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.144, lift=3.673959183673469),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'shrimp', 'ground beef'}), confidence=0.0861244019138756,
lift=7.511850450650941), OrderedStatistic(items_base=frozenset({'shrimp',
'ground beef'}), items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.20930232558139536, lift=7.5118504506509405),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'shrimp', 'frozen vegetables'}),
confidence=0.061224489795918366, lift=3.6739591836734693),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti'}),
items_add=frozenset({'ground beef', 'frozen vegetables'}),
confidence=0.11320754716981132, lift=6.686376467092557),
OrderedStatistic(items_base=frozenset({'shrimp', 'ground beef', 'frozen
vegetables'}), items_add=frozenset({'spaghetti'}),
confidence=0.7499999999999999, lift=4.307618683001531),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'shrimp'}), confidence=0.27692307692307694,
lift=3.875373134328358), OrderedStatistic(items_base=frozenset({'shrimp',
'spaghetti', 'frozen vegetables'}), items_add=frozenset({'ground beef'}),
confidence=0.4, lift=4.071099050203528),
OrderedStatistic(items_base=frozenset({'shrimp', 'ground beef', 'spaghetti'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.4,
lift=4.196363636363636)])
RelationRecord(items=frozenset({'olive oil', 'frozen vegetables', 'mineral
water', 'milk'}), support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'frozen vegetables', 'mineral water',
'milk'}), confidence=0.003332888948140248, lift=1.0),

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OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'mineral water', 'olive oil', 'milk'}),
confidence=0.03496503496503497, lift=4.098011363636364),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'frozen vegetables', 'olive oil'}), confidence=0.025720164609053502,
lift=3.9372847904593944), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'frozen vegetables', 'olive oil', 'milk'}),
confidence=0.013982102908277406, lift=2.9133264976385784),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.05060728744939272, lift=4.573557387444516),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.14124293785310735, lift=5.118180081334097),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.09328358208955223,
lift=5.4665636660447765), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'olive oil'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.29411764705882354, lift=6.12826797385621),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.06944444444444445, lift=6.128267973856209),
OrderedStatistic(items_base=frozenset({'olive oil', 'milk'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.19531250000000003, lift=5.4665636660447765),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.12077294685990338, lift=5.118180081334097),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
'milk'}), items_add=frozenset({'olive oil'}), confidence=0.30120481927710846,
lift=4.573557387444516), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'olive oil', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.6944444444444445, lift=2.9133264976385784),
OrderedStatistic(items_base=frozenset({'olive oil', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'milk'}), confidence=0.5102040816326531,
lift=3.937284790459394), OrderedStatistic(items_base=frozenset({'olive oil',
'mineral water', 'milk'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.39062500000000006, lift=4.098011363636364)])
RelationRecord(items=frozenset({'shrimp', 'frozen vegetables', 'mineral water',
'milk'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'shrimp', 'mineral water', 'milk'}),
confidence=0.02937062937062937, lift=3.734052388289676),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'shrimp',
'frozen vegetables', 'mineral water'}), confidence=0.02160493827160494,

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lift=3.0010859625057162), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'shrimp', 'frozen vegetables', 'milk'}),
confidence=0.01174496644295302, lift=2.5171140939597314),
OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'frozen
vegetables', 'mineral water', 'milk'}), confidence=0.039179104477611935,
lift=3.540752562488761), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'milk'}), items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.11864406779661016, lift=5.027961313798716),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'shrimp', 'milk'}), confidence=0.07835820895522387,
lift=4.452764586160108), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.16799999999999998, lift=3.5004666666666666),
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items_add=frozenset({'shrimp', 'frozen vegetables'}),
confidence=0.058333333333333334, lift=3.5004666666666666),
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items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.11864406779661016, lift=5.027961313798716),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
'milk'}), items_add=frozenset({'shrimp'}), confidence=0.2530120481927711,
lift=3.5407525624887612), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.6, lift=2.5171140939597314),
OrderedStatistic(items_base=frozenset({'shrimp', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.3888888888888889,
lift=3.001085962505716), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.3559322033898305, lift=3.7340523882896766))]
RelationRecord(items=frozenset({'soup', 'frozen vegetables', 'mineral water',
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confidence=0.03216783216783217, lift=3.7701704545454553),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'soup',
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lift=4.670863114576566), OrderedStatistic(items_base=frozenset({'mineral
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confidence=0.012863534675615214, lift=3.2163124533929905),
OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'frozen
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lift=5.484407286136632), OrderedStatistic(items_base=frozenset({'frozen

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vegetables', 'milk'}), items_add=frozenset({'soup', 'mineral water'}),
confidence=0.12994350282485875, lift=5.634139969302113),
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items_add=frozenset({'soup', 'milk'}), confidence=0.08582089552238806,
lift=5.646864362398533), OrderedStatistic(items_base=frozenset({'soup', 'frozen
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confidence=0.3833333333333333, lift=7.987175925925926),
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items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.13294797687861273, lift=5.6341399693021135),
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lift=5.484407286136631), OrderedStatistic(items_base=frozenset({'soup', 'frozen
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confidence=0.7666666666666666, lift=3.21631245339299),
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lift=4.670863114576565), OrderedStatistic(items_base=frozenset({'soup', 'mineral
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confidence=0.35937500000000006, lift=3.7701704545454553)])
RelationRecord(items=frozenset({'spaghetti', 'frozen vegetables', 'mineral
water', 'milk'}), support=0.004532728969470737,
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confidence=0.01901565995525727, lift=2.300588150393303),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.026033690658499233, lift=2.3527555858964186),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.19209039548022597, lift=3.216227804681194),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.12686567164179102,

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lift=3.5775165525754677), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.16267942583732056, lift=3.389606592238171),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.09444444444444444, lift=3.389606592238171),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.12781954887218044, lift=3.577516552575468),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.07589285714285714, lift=3.216227804681194),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
'milk'}), items_add=frozenset({'spaghetti'}), confidence=0.40963855421686746,
lift=2.3527555858964186), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.5483870967741935, lift=2.300588150393303),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',
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confidence=0.37777777777777777, lift=2.9153406492912666),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.28813559322033894,
lift=3.0228043143297376)])
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water', 'milk'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
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OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'mineral water'}),
confidence=0.01748971193415638, lift=2.9815983913206137),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'milk'}),
confidence=0.009507829977628635, lift=2.300588150393303),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'frozen vegetables', 'mineral water', 'milk'}),
confidence=0.03313840155945419, lift=2.9948331337044083),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'tomatoes', 'mineral water'}),
confidence=0.09604519774011298, lift=3.9368034330523907),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'tomatoes', 'milk'}), confidence=0.06343283582089551,
lift=4.5315209665955924), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.14049586776859505, lift=2.927387511478421),

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OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'tomatoes', 'frozen vegetables'}),
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OrderedStatistic(items_base=frozenset({'tomatoes', 'milk'}),
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confidence=0.16190476190476188, lift=4.5315209665955924),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.09289617486338797, lift=3.9368034330523907),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water',
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lift=2.9948331337044083), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.5483870967741935, lift=2.300588150393303),
OrderedStatistic(items_base=frozenset({'tomatoes', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.38636363636363635,
lift=2.9815983913206137), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.3469387755102041, lift=3.6397031539888682)])
RelationRecord(items=frozenset({'spaghetti', 'frozen vegetables', 'olive oil',
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items_add=frozenset({'spaghetti', 'frozen vegetables', 'olive oil', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
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items_add=frozenset({'spaghetti', 'olive oil', 'milk'}),
confidence=0.022377622377622374, lift=3.108417508417508),
OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'olive oil'}),
confidence=0.01646090534979424, lift=2.8714709541582932),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.032388663967611336, lift=3.9185059422750426),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'olive oil', 'milk'}),
confidence=0.012251148545176109, lift=2.5526629232601667),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.09039548022598869,
lift=3.9421889370647745), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.18823529411764703, lift=5.308093763821317),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.07655502392344497,
lift=4.4862440191387565), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.125, lift=4.4862440191387565),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),

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confidence=0.060150375939849614, lift=5.308093763821317),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.09302325581395349, lift=3.9421889370647745),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'olive oil',
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lift=2.5526629232601667), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'milk'}), items_add=frozenset({'olive oil'}),
confidence=0.25806451612903225, lift=3.9185059422750426),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'milk'}), confidence=0.37209302325581395,
lift=2.871470954158293), OrderedStatistic(items_base=frozenset({'spaghetti',
'olive oil', 'milk'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.2962962962962963, lift=3.1084175084175083)])
RelationRecord(items=frozenset({'tomatoes', 'spaghetti', 'frozen vegetables',
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confidence=0.0021330489268097585, lift=1.0),
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confidence=0.022377622377622374, lift=3.8148760330578506),
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items_add=frozenset({'tomatoes', 'frozen vegetables', 'spaghetti'}),
confidence=0.01646090534979424, lift=2.469465020576132),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'milk'}),
confidence=0.012251148545176109, lift=2.9643827495924513),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'milk'}),
confidence=0.031189083820662766, lift=3.773376092561152),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.09039548022598869,
lift=4.318831192198352), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.07655502392344497, lift=5.468945089997722),
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items_add=frozenset({'spaghetti', 'milk'}), confidence=0.1322314049586777,
lift=3.728826197725719), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.060150375939849614, lift=3.728826197725719),
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confidence=0.15238095238095237, lift=5.468945089997721),
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items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.10191082802547771, lift=4.318831192198352),
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'milk'}), items_add=frozenset({'tomatoes'}), confidence=0.25806451612903225,
lift=3.773376092561152), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.5161290322580645, lift=2.9643827495924517),
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lift=2.4694650205761315), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.3636363636363636, lift=3.8148760330578506)])
RelationRecord(items=frozenset({'olive oil', 'spaghetti', 'frozen vegetables',
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items_add=frozenset({'olive oil', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.0027996267164378083, lift=1.0),
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items_add=frozenset({'mineral water', 'spaghetti', 'olive oil'}),
confidence=0.02937062937062937, lift=2.861157024793388),
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lift=3.417237938215897), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.24705882352941175, lift=4.136580882352941),
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items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.10047846889952154, lift=3.6410096387213096),
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confidence=0.10144927536231883, lift=3.641009638721309),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}), confidence=0.046875,
lift=4.136580882352941), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.12209302325581396, lift=3.417237938215897),
OrderedStatistic(items_base=frozenset({'olive oil', 'frozen vegetables',
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confidence=0.4285714285714286, lift=2.4614963902865896),
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confidence=0.23333333333333334, lift=3.542982456140351),

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OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'mineral water'}), confidence=0.48837209302325585,
lift=2.048813797409084), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.2727272727272727, lift=2.861157024793388)])
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items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.025174825174825173, lift=2.195771670190275),
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items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.0671641791044776,
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OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.0861244019138756, lift=2.5534353310513076),
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items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.07114624505928853, lift=2.5534353310513076),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'pancakes', 'frozen vegetables'}),
confidence=0.040178571428571425, lift=2.983955091937765),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.09523809523809523, lift=2.665600568585643),
OrderedStatistic(items_base=frozenset({'pancakes', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.3913043478260869,
lift=2.2474532259138424), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'mineral water'}), items_add=frozenset({'pancakes'}),
confidence=0.2, lift=2.1040673211781207),
OrderedStatistic(items_base=frozenset({'pancakes', 'frozen vegetables',
'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.5454545454545454, lift=2.2882855399633923),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral

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water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.20930232558139536, lift=2.195771670190275)])
RelationRecord(items=frozenset({'shrimp', 'spaghetti', 'frozen vegetables',
'mineral water'}), support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.003332888948140248, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
confidence=0.03496503496503497, lift=4.098011363636364),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti', 'frozen vegetables'}),
confidence=0.013982102908277406, lift=2.330661198110863),
OrderedStatistic(items_base=frozenset({'shrimp'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.046641791044776115, lift=3.8873341625207294),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'frozen vegetables', 'mineral water'}),
confidence=0.019142419601837674, lift=2.6590238783960074),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.09328358208955223,
lift=4.400755655683844), OrderedStatistic(items_base=frozenset({'shrimp',
'frozen vegetables'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.2, lift=3.3486607142857148),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.11961722488038279, lift=5.069202281512719),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.14124293785310735, lift=5.069202281512719),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'shrimp', 'frozen vegetables'}),
confidence=0.05580357142857143, lift=3.3486607142857143),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.15723270440251574, lift=4.400755655683845),
OrderedStatistic(items_base=frozenset({'shrimp', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.462962962962963,
lift=2.6590238783960074), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables', 'mineral water'}), items_add=frozenset({'shrimp'}),
confidence=0.2777777777777778, lift=3.8873341625207294),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'mineral water'}),
confidence=0.5555555555555556, lift=2.330661198110863),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.39062500000000006,
lift=4.098011363636364)])
RelationRecord(items=frozenset({'tomatoes', 'spaghetti', 'frozen vegetables',

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'mineral water'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'tomatoes', 'spaghetti', 'frozen vegetables', 'mineral
water'}), confidence=0.0030662578322890282, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'mineral water', 'tomatoes', 'spaghetti'}),
confidence=0.03216783216783217, lift=3.4470129870129873),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'spaghetti'}),
confidence=0.012863534675615214, lift=1.9297874720357944),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'mineral water'}),
confidence=0.01761102603369066, lift=3.0022796881525826),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'mineral water'}),
confidence=0.04483430799220273, lift=3.736690491661252),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.08582089552238806,
lift=4.1002709383021205), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'tomatoes', 'mineral water'}),
confidence=0.11004784688995216, lift=4.510759013778858),
OrderedStatistic(items_base=frozenset({'tomatoes', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.1900826446280992, lift=3.1826114226682414),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'tomatoes', 'frozen vegetables'}),
confidence=0.05133928571428572, lift=3.1826114226682414),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.12568306010928962, lift=4.510759013778858),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.14649681528662423, lift=4.1002709383021205),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables',
'mineral water'}), items_add=frozenset({'tomatoes'}),
confidence=0.2555555555555556, lift=3.7366904916612524),
OrderedStatistic(items_base=frozenset({'tomatoes', 'frozen vegetables', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.5227272727272727,
lift=3.0022796881525826), OrderedStatistic(items_base=frozenset({'tomatoes',
'spaghetti', 'frozen vegetables'}), items_add=frozenset({'mineral water'}),
confidence=0.45999999999999996, lift=1.9297874720357941),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti', 'mineral
water'}), items_add=frozenset({'frozen vegetables'}),
confidence=0.32857142857142857, lift=3.447012987012987))]
RelationRecord(items=frozenset({'tomatoes', 'spaghetti', 'frozen vegetables',
'olive oil'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'tomatoes', 'spaghetti', 'frozen vegetables', 'olive

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oil'}), confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'frozen vegetables'}),
items_add=frozenset({'olive oil', 'tomatoes', 'spaghetti'}),
confidence=0.022377622377622374, lift=5.0865013774104675),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'spaghetti'}),
confidence=0.032388663967611336, lift=4.8589473684210525),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'tomatoes', 'frozen vegetables', 'olive oil'}),
confidence=0.012251148545176109, lift=4.836624486177158),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'spaghetti', 'frozen vegetables', 'olive oil'}),
confidence=0.031189083820662766, lift=5.44068180787887),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'olive oil'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.18823529411764703,
lift=8.99333083551892), OrderedStatistic(items_base=frozenset({'spaghetti',
'frozen vegetables'}), items_add=frozenset({'tomatoes', 'olive oil'}),
confidence=0.07655502392344497, lift=10.634059897217792),
OrderedStatistic(items_base=frozenset({'tomatoes', 'frozen vegetables'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.1322314049586777,
lift=5.766673073226985), OrderedStatistic(items_base=frozenset({'spaghetti',
'olive oil'}), items_add=frozenset({'tomatoes', 'frozen vegetables'}),
confidence=0.09302325581395349, lift=5.766673073226984),
OrderedStatistic(items_base=frozenset({'tomatoes', 'olive oil'}),
items_add=frozenset({'spaghetti', 'frozen vegetables'}),
confidence=0.2962962962962963, lift=10.634059897217792),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.10191082802547771, lift=8.99333083551892),
OrderedStatistic(items_base=frozenset({'spaghetti', 'frozen vegetables', 'olive
oil'}), items_add=frozenset({'tomatoes'}), confidence=0.37209302325581395,
lift=5.44068180787887), OrderedStatistic(items_base=frozenset({'tomatoes',
'frozen vegetables', 'olive oil'}), items_add=frozenset({'spaghetti'}),
confidence=0.8421052631578947, lift=4.836624486177158),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti', 'frozen
vegetables'}), items_add=frozenset({'olive oil'}),
confidence=0.31999999999999995, lift=4.858947368421052),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti', 'olive oil'}),
items_add=frozenset({'frozen vegetables'}), confidence=0.4848484848484848,
lift=5.0865013774104675)])
RelationRecord(items=frozenset({'grated cheese', 'ground beef', 'spaghetti',
'mineral water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'grated cheese', 'ground beef', 'spaghetti', 'mineral
water'}), confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'grated cheese'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.04580152671755725, lift=2.684041030534351),

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OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'grated cheese', 'spaghetti', 'mineral water'}),
confidence=0.024423337856173677, lift=3.8978607927480584),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'grated cheese', 'ground beef', 'spaghetti'}),
confidence=0.010067114093959731, lift=1.8878355704697984),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'grated cheese', 'ground beef', 'mineral water'}),
confidence=0.013782542113323124, lift=2.720601273474651),
OrderedStatistic(items_base=frozenset({'grated cheese', 'ground beef'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.2117647058823529, lift=3.5456407563025207),
OrderedStatistic(items_base=frozenset({'grated cheese', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.13740458015267176, lift=3.5056862439632344),
OrderedStatistic(items_base=frozenset({'grated cheese', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.14516129032258063, lift=3.5467584322790793),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'grated cheese', 'spaghetti'}),
confidence=0.05863192182410423, lift=3.5467584322790793),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'grated cheese', 'mineral water'}),
confidence=0.061224489795918366, lift=3.505686243963234),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'grated cheese', 'ground beef'}),
confidence=0.040178571428571425, lift=3.5456407563025203),
OrderedStatistic(items_base=frozenset({'grated cheese', 'ground beef', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.47368421052631576,
lift=2.720601273474651), OrderedStatistic(items_base=frozenset({'grated cheese',
'ground beef', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.45, lift=1.8878355704697987),
OrderedStatistic(items_base=frozenset({'grated cheese', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.3829787234042553,
lift=3.8978607927480584), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'grated cheese'}),
confidence=0.140625, lift=2.684041030534351)])
RelationRecord(items=frozenset({'green tea', 'ground beef', 'spaghetti',
'mineral water'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'green tea', 'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'green tea'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.017154389505549948, lift=1.0052740287588295),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'green tea', 'spaghetti', 'mineral water'}),
confidence=0.023066485753052916, lift=2.7906727360266115),

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OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'green tea', 'ground beef', 'spaghetti'}),
confidence=0.009507829977628635, lift=1.4857965137956748),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'green tea', 'ground beef', 'mineral water'}),
confidence=0.013016845329249616, lift=2.5035732516590095),
OrderedStatistic(items_base=frozenset({'green tea', 'ground beef'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.15315315315315314, lift=2.564289736164736),
OrderedStatistic(items_base=frozenset({'green tea', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.07296137339055793, lift=1.8615076932060375),
OrderedStatistic(items_base=frozenset({'green tea', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.08542713567839195, lift=2.0872604062658566),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'green tea', 'spaghetti'}), confidence=0.05537459283387622,
lift=2.0872604062658566), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti'}), items_add=frozenset({'green tea', 'mineral water'}),
confidence=0.057823129251700675, lift=1.8615076932060377),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'green tea', 'ground beef'}),
confidence=0.03794642857142857, lift=2.564289736164736),
OrderedStatistic(items_base=frozenset({'green tea', 'ground beef', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.43589743589743585,
lift=2.5035732516590095), OrderedStatistic(items_base=frozenset({'green tea',
'ground beef', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.35416666666666663, lift=1.4857965137956748),
OrderedStatistic(items_base=frozenset({'green tea', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.27419354838709675,
lift=2.7906727360266115), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'green tea'}),
confidence=0.1328125, lift=1.0052740287588295))]
RelationRecord(items=frozenset({'green tea', 'olive oil', 'spaghetti', 'mineral
water'}), support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'green tea', 'olive oil', 'spaghetti', 'mineral water'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'green tea'}),
items_add=frozenset({'mineral water', 'spaghetti', 'olive oil'}),
confidence=0.018163471241170535, lift=1.769405165974288),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'green tea', 'spaghetti', 'olive oil'}),
confidence=0.010067114093959731, lift=2.2209830240821162),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'green tea', 'spaghetti', 'mineral water'}),
confidence=0.03643724696356275, lift=4.4083191850594226),
OrderedStatistic(items_base=frozenset({'spaghetti'}),

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items_add=frozenset({'green tea', 'mineral water', 'olive oil'}),
confidence=0.013782542113323124, lift=3.230714012251149),
OrderedStatistic(items_base=frozenset({'green tea', 'mineral water'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.07725321888412016,
lift=3.369048807266194), OrderedStatistic(items_base=frozenset({'green tea',
'olive oil'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.24000000000000002, lift=4.0183928571428575),
OrderedStatistic(items_base=frozenset({'green tea', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.09045226130653265, lift=3.277692811885514),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'green tea', 'spaghetti'}), confidence=0.08695652173913043,
lift=3.2776928118855144), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'green tea', 'olive oil'}),
confidence=0.040178571428571425, lift=4.018392857142857),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'green tea', 'mineral water'}),
confidence=0.10465116279069768, lift=3.3690488072661946),
OrderedStatistic(items_base=frozenset({'green tea', 'olive oil', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.5625,
lift=3.2307140122511484), OrderedStatistic(items_base=frozenset({'green tea',
'spaghetti', 'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.29032258064516125, lift=4.4083191850594226),
OrderedStatistic(items_base=frozenset({'green tea', 'spaghetti', 'olive oil'}),
items_add=frozenset({'mineral water'}), confidence=0.5294117647058824,
lift=2.2209830240821162), OrderedStatistic(items_base=frozenset({'olive oil',
'spaghetti', 'mineral water'}), items_add=frozenset({'green tea'}),
confidence=0.23376623376623376, lift=1.7694051659742882)])
RelationRecord(items=frozenset({'herb & pepper', 'ground beef', 'spaghetti',
'mineral water'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'herb & pepper', 'ground beef', 'spaghetti', 'mineral
water'}), confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'herb & pepper', 'spaghetti', 'mineral water'}),
confidence=0.02849389416553596, lift=4.749615558570783),
OrderedStatistic(items_base=frozenset({'herb & pepper'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.056603773584905655, lift=3.317069575471698),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'herb & pepper', 'ground beef', 'spaghetti'}),
confidence=0.01174496644295302, lift=1.8353956935123041),
OrderedStatistic(items_base=frozenset({'spaghetti'}), items_add=frozenset({'herb
& pepper', 'ground beef', 'mineral water'}), confidence=0.016079632465543645,
lift=2.4122664624808574), OrderedStatistic(items_base=frozenset({'herb &
pepper', 'ground beef'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.175, lift=2.930078125),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),

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items_add=frozenset({'herb & pepper', 'spaghetti'}),
confidence=0.06840390879478828, lift=4.205719015325466),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'herb & pepper', 'mineral water'}),
confidence=0.07142857142857142, lift=4.185825892857143),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.16406250000000003, lift=4.185825892857143),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.17213114754098363, lift=4.205719015325466),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'herb & pepper', 'ground beef'}), confidence=0.046875,
lift=2.9300781249999996), OrderedStatistic(items_base=frozenset({'herb &
pepper', 'ground beef', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.42, lift=2.4122664624808574),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'ground beef',
'spaghetti'}), items_add=frozenset({'mineral water'}), confidence=0.4375,
lift=1.8353956935123044), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'herb & pepper'}),
confidence=0.16406250000000003, lift=3.3170695754716983),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'spaghetti', 'mineral
water'}), items_add=frozenset({'ground beef'}), confidence=0.4666666666666667,
lift=4.749615558570783)])
RelationRecord(items=frozenset({'olive oil', 'ground beef', 'mineral water',
'milk'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'ground beef', 'mineral water', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
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items_add=frozenset({'mineral water', 'olive oil', 'milk'}),
confidence=0.023066485753052916, lift=2.7034642130257804),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'ground beef', 'olive oil'}), confidence=0.01748971193415638,
lift=2.6238065843621396), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'ground beef', 'olive oil', 'milk'}),
confidence=0.009507829977628635, lift=1.9275198016808752),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'ground beef', 'mineral water', 'milk'}),
confidence=0.03441295546558704, lift=3.11001902346227),
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items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.10303030303030303, lift=3.7334797247840723),
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items_add=frozenset({'olive oil', 'milk'}), confidence=0.05537459283387622,
lift=3.2450376628664497), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.16037735849056603, lift=3.341640461215933),

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OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
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OrderedStatistic(items_base=frozenset({'olive oil', 'milk'}),
items_add=frozenset({'ground beef', 'mineral water'}), confidence=0.1328125,
lift=3.2450376628664497), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.08212560386473429, lift=3.7334797247840723),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water', 'milk'}),
items_add=frozenset({'olive oil'}), confidence=0.20481927710843373,
lift=3.11001902346227), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.45945945945945943, lift=1.9275198016808754),
OrderedStatistic(items_base=frozenset({'olive oil', 'ground beef', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.33999999999999997,
lift=2.6238065843621396), OrderedStatistic(items_base=frozenset({'olive oil',
'mineral water', 'milk'}), items_add=frozenset({'ground beef'}),
confidence=0.265625, lift=2.7034642130257804)])
RelationRecord(items=frozenset({'ground beef', 'soup', 'mineral water',
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confidence=0.021709633649932156, lift=2.544436906377205),
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beef', 'soup', 'mineral water'}), confidence=0.01646090534979424,
lift=3.2492960797054367), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'ground beef', 'soup', 'milk'}),
confidence=0.008948545861297539, lift=2.2374347501864276),
OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'ground
beef', 'mineral water', 'milk'}), confidence=0.04221635883905013,
lift=3.8152398512254826), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.09696969696969697, lift=4.204449115431775),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'soup', 'milk'}), confidence=0.052117263843648204,
lift=3.4292245271158346), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.2191780821917808, lift=4.566818873668189),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'ground beef', 'soup'}), confidence=0.04444444444444444,
lift=4.566818873668188), OrderedStatistic(items_base=frozenset({'soup',
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confidence=0.14035087719298245, lift=3.429224527115835),
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items_add=frozenset({'ground beef', 'milk'}), confidence=0.09248554913294797,

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lift=4.204449115431775), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.19277108433734938, lift=3.815239851225482),
OrderedStatistic(items_base=frozenset({'ground beef', 'soup', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5333333333333332,
lift=2.2374347501864276), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.42105263157894735, lift=3.2492960797054367),
OrderedStatistic(items_base=frozenset({'soup', 'mineral water', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.25, lift=2.544436906377205)])
RelationRecord(items=frozenset({'ground beef', 'spaghetti', 'mineral water',
'milk'}), support=0.004399413411545127,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
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confidence=0.004399413411545127, lift=1.0),
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confidence=0.04477611940298508, lift=2.8463192512016193),
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lift=1.989559220679013), OrderedStatistic(items_base=frozenset({'mineral
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confidence=0.018456375838926176, lift=1.8964558242162362),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water', 'milk'}),
confidence=0.02526799387442573, lift=2.283556892193583),
OrderedStatistic(items_base=frozenset({'ground beef', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}), confidence=0.2,
lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.10749185667752444, lift=3.0311895373613185),
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items_add=frozenset({'mineral water', 'milk'}), confidence=0.11224489795918367,
lift=2.33874716553288), OrderedStatistic(items_base=frozenset({'mineral water',
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confidence=0.09166666666666667, lift=2.33874716553288),
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confidence=0.12406015037593984, lift=3.0311895373613185),
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items_add=frozenset({'ground beef', 'milk'}), confidence=0.07366071428571429,
lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.39759036144578314, lift=2.283556892193583),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.452054794520548,
lift=1.8964558242162364), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.25781250000000006, lift=1.989559220679013),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.2796610169491525,
lift=2.846319251201619)])
RelationRecord(items=frozenset({'turkey', 'ground beef', 'mineral water',
'milk'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'turkey', 'ground beef', 'mineral water', 'milk'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'mineral water', 'turkey', 'milk'}),
confidence=0.021709633649932156, lift=3.540086130611763),
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water', 'ground beef', 'turkey'}), confidence=0.01646090534979424,
lift=4.257698311338158), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'ground beef', 'turkey', 'milk'}),
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OrderedStatistic(items_base=frozenset({'turkey'}), items_add=frozenset({'ground
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lift=3.083104272099057), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.09696969696969697, lift=5.051178451178451),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'turkey', 'milk'}), confidence=0.052117263843648204,
lift=4.599195248131825), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.23188405797101447, lift=4.831561996779388),
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lift=4.831561996779388), OrderedStatistic(items_base=frozenset({'turkey',
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confidence=0.18823529411764703, lift=4.599195248131825),
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lift=5.051178451178451), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.19277108433734938, lift=3.083104272099057),
OrderedStatistic(items_base=frozenset({'ground beef', 'turkey', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.6399999999999999,
lift=2.6849217002237133), OrderedStatistic(items_base=frozenset({'turkey',
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confidence=0.5517241379310345, lift=4.257698311338158),
OrderedStatistic(items_base=frozenset({'turkey', 'mineral water', 'milk'}),
items_add=frozenset({'ground beef'}), confidence=0.3478260869565217,
lift=3.540086130611763)])
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ordered_statistics=[OrderedStatistic(items_base=frozenset(),

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confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'olive oil', 'milk'}),
confidence=0.021709633649932156, lift=3.0156289260766873),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground
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lift=2.6842011093218825), OrderedStatistic(items_base=frozenset({'olive oil'}),
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confidence=0.032388663967611336, lift=3.3280461427541455),
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items_add=frozenset({'ground beef', 'olive oil', 'milk'}),
confidence=0.012251148545176109, lift=2.483672033442324),
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lift=4.228893587033122), OrderedStatistic(items_base=frozenset({'ground beef',
'olive oil'}), items_add=frozenset({'spaghetti', 'milk'}),
confidence=0.1509433962264151, lift=4.256490282309547),
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items_add=frozenset({'olive oil', 'milk'}), confidence=0.054421768707482984,
lift=3.1892006802721085), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.060150375939849614, lift=4.256490282309547),
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items_add=frozenset({'ground beef', 'milk'}), confidence=0.09302325581395349,
lift=4.228893587033122), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.43243243243243235, lift=2.483672033442324),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'milk'}),
items_add=frozenset({'olive oil'}), confidence=0.2191780821917808,
lift=3.3280461427541455), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.3478260869565217, lift=2.684201109321882),
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items_add=frozenset({'ground beef'}), confidence=0.2962962962962963,
lift=3.0156289260766873)])
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'mineral water'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.0030662578322890282, lift=1.0),
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confidence=0.03120759837177748, lift=3.040106433593544),
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items_add=frozenset({'ground beef', 'spaghetti', 'olive oil'}),

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confidence=0.012863534675615214, lift=2.0975950782997765),
OrderedStatistic(items_base=frozenset({'olive oil'}),
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confidence=0.0465587044534413, lift=2.7284128289473686),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'ground beef', 'olive oil'}),
confidence=0.01761102603369066, lift=2.6420061255742726),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.0749185667752443,
lift=3.267233542913416), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.2169811320754717, lift=3.63298096361186),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.0782312925170068, lift=2.8348450491307635),
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items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.1111111111111111, lift=2.834845049130763),
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confidence=0.05133928571428572, lift=3.63298096361186),
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confidence=0.13372093023255816, lift=3.267233542913416),
OrderedStatistic(items_base=frozenset({'olive oil', 'ground beef', 'mineral
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lift=2.6420061255742726), OrderedStatistic(items_base=frozenset({'ground beef',
'spaghetti', 'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.17968750000000003, lift=2.728412828947369),
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oil'}), items_add=frozenset({'mineral water'}), confidence=0.5,
lift=2.0975950782997765), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.2987012987012987, lift=3.0401064335935435)])
RelationRecord(items=frozenset({'ground beef', 'pancakes', 'mineral water',
'spaghetti'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'ground beef', 'pancakes', 'mineral water', 'spaghetti'}),
confidence=0.0030662578322890282, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.03120759837177748, lift=2.721955760310499),
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items_add=frozenset({'ground beef', 'pancakes', 'spaghetti'}),
confidence=0.012863534675615214, lift=2.010195283370619),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.03225806451612903, lift=1.8903729838709677),

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OrderedStatistic(items_base=frozenset({'spaghetti'}),
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lift=2.9733553935508334), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.21100917431192662, lift=3.532990661861075),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.0782312925170068, lift=2.3194186765615337),
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confidence=0.09090909090909091, lift=2.3194186765615337),
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confidence=0.05133928571428572, lift=3.532990661861075),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
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lift=2.358934040691315), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.17968750000000003, lift=1.890372983870968),
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items_add=frozenset({'mineral water'}), confidence=0.4791666666666667,
lift=2.010195283370619), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.2674418604651163, lift=2.7219557603104985)])
RelationRecord(items=frozenset({'salmon', 'ground beef', 'spaghetti', 'mineral
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items_add=frozenset({'salmon', 'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.0021330489268097585, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'salmon', 'spaghetti', 'mineral water'}),
confidence=0.021709633649932156, lift=3.1930188629047276),
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items_add=frozenset({'salmon', 'ground beef', 'spaghetti'}),
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OrderedStatistic(items_base=frozenset({'salmon'}), items_add=frozenset({'ground
beef', 'spaghetti', 'mineral water'}), confidence=0.050156739811912224,
lift=2.939263322884013), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'salmon', 'ground beef', 'mineral water'}),
confidence=0.012251148545176109, lift=3.168822939219517),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'salmon', 'spaghetti'}), confidence=0.052117263843648204,

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lift=3.8706098622891605), OrderedStatistic(items_base=frozenset({'salmon',
'ground beef'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.2388059701492537, lift=3.9984008528784645),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'salmon', 'mineral water'}),
confidence=0.054421768707482984, lift=3.1892006802721085),
OrderedStatistic(items_base=frozenset({'salmon', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}), confidence=0.125,
lift=3.189200680272109), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.03571428571428571, lift=3.9984008528784645),
OrderedStatistic(items_base=frozenset({'salmon', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.15841584158415842, lift=3.8706098622891605),
OrderedStatistic(items_base=frozenset({'salmon', 'ground beef', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.5517241379310345,
lift=3.1688229392195173), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.125, lift=2.9392633228840124),
OrderedStatistic(items_base=frozenset({'salmon', 'ground beef', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.5517241379310345,
lift=2.31458767260665), OrderedStatistic(items_base=frozenset({'salmon',
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confidence=0.3137254901960784, lift=3.1930188629047276)])
RelationRecord(items=frozenset({'shrimp', 'ground beef', 'spaghetti', 'mineral
water'}), support=0.0029329422743634183,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.0029329422743634183, lift=1.0),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
confidence=0.02985074626865672, lift=3.4986007462686572),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'shrimp', 'ground beef', 'spaghetti'}),
confidence=0.012304250559284116, lift=2.050981854337559),
OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'ground
beef', 'spaghetti', 'mineral water'}), confidence=0.041044776119402986,
lift=2.405288013059702), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'ground beef', 'mineral water'}),
confidence=0.016845329249617153, lift=3.3251793342467963),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.07166123778501629,
lift=3.380697764939668), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.2558139534883721, lift=4.283170681063123),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.07482993197278912, lift=3.1711825973327183),

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OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
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OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'shrimp', 'ground beef'}), confidence=0.04910714285714286,
lift=4.283170681063123), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.13836477987421383, lift=3.3806977649396677),
OrderedStatistic(items_base=frozenset({'shrimp', 'ground beef', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.5789473684210527,
lift=3.3251793342467963), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.17187500000000003, lift=2.405288013059702),
OrderedStatistic(items_base=frozenset({'shrimp', 'ground beef', 'spaghetti'}),
items_add=frozenset({'mineral water'}), confidence=0.48888888888888893,
lift=2.050981854337559), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.34375000000000006, lift=3.4986007462686572)])
RelationRecord(items=frozenset({'tomatoes', 'ground beef', 'spaghetti', 'mineral
water'}), support=0.0030662578322890282,
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confidence=0.0030662578322890282, lift=1.0),
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confidence=0.03120759837177748, lift=3.344117076952898),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'ground beef', 'tomatoes', 'spaghetti'}),
confidence=0.012863534675615214, lift=2.2973660381378505),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'tomatoes', 'mineral water'}),
confidence=0.01761102603369066, lift=3.221958689724723),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'ground beef', 'spaghetti', 'mineral water'}),
confidence=0.04483430799220273, lift=2.627360501949318),
OrderedStatistic(items_base=frozenset({'ground beef', 'mineral water'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.0749185667752443,
lift=3.579389613892405), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.0782312925170068, lift=3.2066280063938146),
OrderedStatistic(items_base=frozenset({'ground beef', 'tomatoes'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.26136363636363635, lift=4.3760907061688314),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'ground beef', 'tomatoes'}),
confidence=0.05133928571428572, lift=4.3760907061688314),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'ground beef', 'spaghetti'}),

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confidence=0.12568306010928962, lift=3.206628006393814),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.14649681528662423, lift=3.579389613892405),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti', 'mineral
water'}), items_add=frozenset({'tomatoes'}), confidence=0.17968750000000003,
lift=2.627360501949318), OrderedStatistic(items_base=frozenset({'ground beef',
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confidence=0.5609756097560976, lift=3.221958689724723),
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items_add=frozenset({'mineral water'}), confidence=0.5476190476190477,
lift=2.2973660381378505), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.32857142857142857, lift=3.344117076952898)])
RelationRecord(items=frozenset({'herb & pepper', 'spaghetti', 'pancakes',
'mineral water'}), support=0.0021330489268097585,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'herb & pepper', 'spaghetti', 'pancakes', 'mineral
water'}), confidence=0.0021330489268097585, lift=1.0),
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items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.043126684636118594, lift=3.761549551808437),
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items_add=frozenset({'herb & pepper', 'spaghetti', 'pancakes'}),
confidence=0.008948545861297539, lift=2.4860386113182535),
OrderedStatistic(items_base=frozenset({'pancakes'}), items_add=frozenset({'herb
& pepper', 'spaghetti', 'mineral water'}), confidence=0.02244039270687237,
lift=3.740564126538881), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'herb & pepper', 'pancakes', 'mineral water'}),
confidence=0.012251148545176109, lift=3.403550564346889),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'mineral water'}),
items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.125,
lift=4.960978835978836), OrderedStatistic(items_base=frozenset({'herb & pepper',
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confidence=0.2909090909090909, lift=4.87077922077922),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.13114754098360656, lift=3.888291323786691),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'herb & pepper', 'spaghetti'}),
confidence=0.06324110671936758, lift=3.888291323786691),
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items_add=frozenset({'herb & pepper', 'pancakes'}),
confidence=0.03571428571428571, lift=4.87077922077922),
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items_add=frozenset({'herb & pepper', 'mineral water'}),
confidence=0.08465608465608465, lift=4.960978835978836),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'pancakes', 'mineral

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water'}), items_add=frozenset({'spaghetti'}), confidence=0.5925925925925926,
lift=3.403550564346889), OrderedStatistic(items_base=frozenset({'herb & pepper',
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confidence=0.3555555555555555, lift=3.7405641265388807),
OrderedStatistic(items_base=frozenset({'herb & pepper', 'pancakes',
'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.5925925925925926, lift=2.4860386113182535),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral
water'}), items_add=frozenset({'herb & pepper'}),
confidence=0.18604651162790697, lift=3.761549551808437)])
RelationRecord(items=frozenset({'olive oil', 'soup', 'mineral water', 'milk'}),
support=0.0022663644847353685,
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items_add=frozenset({'olive oil', 'soup', 'mineral water', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'soup', 'olive oil'}), confidence=0.01748971193415638,
lift=3.363854595336077), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'soup', 'olive oil', 'milk'}),
confidence=0.009507829977628635, lift=2.641416024525644),
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items_add=frozenset({'soup', 'mineral water', 'milk'}),
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confidence=0.04722222222222222, lift=5.286774461028192),
OrderedStatistic(items_base=frozenset({'olive oil', 'milk'}),
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lift=5.758535043352602), OrderedStatistic(items_base=frozenset({'soup',
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confidence=0.14912280701754385, lift=5.403720654292736),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'soup', 'milk'}), confidence=0.08212560386473429,
lift=5.403720654292735), OrderedStatistic(items_base=frozenset({'soup', 'mineral
water'}), items_add=frozenset({'olive oil', 'milk'}),
confidence=0.09826589595375722, lift=5.758535043352601),
OrderedStatistic(items_base=frozenset({'soup', 'olive oil'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.25373134328358204,
lift=5.286774461028192), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=5.257132255936676), OrderedStatistic(items_base=frozenset({'soup', 'mineral
water', 'milk'}), items_add=frozenset({'olive oil'}), confidence=0.265625,
lift=4.033305921052632), OrderedStatistic(items_base=frozenset({'soup', 'olive
oil', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.6296296296296297, lift=2.6414160245256446),
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items_add=frozenset({'milk'}), confidence=0.43589743589743585,
lift=3.363854595336077)])
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confidence=0.003332888948140248, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'spaghetti', 'olive oil'}), confidence=0.025720164609053502,
lift=2.505544866655978), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'spaghetti', 'olive oil', 'milk'}),
confidence=0.013982102908277406, lift=1.9422176650923857),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.05060728744939272, lift=3.216993755575379),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil', 'milk'}),
confidence=0.019142419601837674, lift=2.2435513973966312),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.06944444444444445,
lift=3.0285045219638245), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.19531250000000003, lift=3.2701764787946432),
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confidence=0.09398496240601503, lift=3.4057062947223127),
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items_add=frozenset({'spaghetti', 'milk'}), confidence=0.12077294685990338,
lift=3.4057062947223127), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.05580357142857143, lift=3.2701764787946432),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.14534883720930233,
lift=3.0285045219638245), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.39062500000000006, lift=2.2435513973966312),
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items_add=frozenset({'olive oil'}), confidence=0.211864406779661,
lift=3.216993755575379), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.462962962962963, lift=1.9422176650923857),
OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.3246753246753247,
lift=2.505544866655978)])
RelationRecord(items=frozenset({'spaghetti', 'pancakes', 'mineral water',
'milk'}), support=0.0023996800426609784,
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confidence=0.0023996800426609784, lift=1.0),
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items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.018518518518518517, lift=1.6152024117140396),
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items_add=frozenset({'spaghetti', 'pancakes', 'milk'}),
confidence=0.010067114093959731, lift=2.040903319426809),
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items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.025245441795231416, lift=1.6047971093731428),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'pancakes', 'mineral water', 'milk'}),
confidence=0.013782542113323124, lift=1.7522516676616398),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.05,
lift=1.9843915343915346), OrderedStatistic(items_base=frozenset({'pancakes',
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confidence=0.14516129032258063, lift=2.430479550691244),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.06766917293233082, lift=2.0062706172545988),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.07114624505928853,
lift=2.0062706172545988), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.040178571428571425, lift=2.4304795506912438),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.09523809523809523,
lift=1.9843915343915344), OrderedStatistic(items_base=frozenset({'pancakes',
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confidence=0.30508474576271183, lift=1.7522516676616398),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'pancakes'}), confidence=0.15254237288135591,
lift=1.6047971093731426), OrderedStatistic(items_base=frozenset({'pancakes',
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confidence=0.48648648648648646, lift=2.040903319426809),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.20930232558139536,
lift=1.6152024117140398)])
RelationRecord(items=frozenset({'salmon', 'spaghetti', 'mineral water',
'milk'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'salmon', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'salmon',
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lift=2.5723593964334706), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'salmon', 'spaghetti', 'milk'}),

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confidence=0.009507829977628635, lift=2.7430089485458615),
OrderedStatistic(items_base=frozenset({'salmon'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.05329153605015674, lift=3.3876255246798785),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'salmon', 'mineral water', 'milk'}),
confidence=0.013016845329249616, lift=2.958768388324284),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'salmon', 'spaghetti'}), confidence=0.04722222222222222,
lift=3.507068206820682), OrderedStatistic(items_base=frozenset({'salmon',
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confidence=0.2328767123287671, lift=3.8991254892367904),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'salmon', 'mineral water'}),
confidence=0.06390977443609022, lift=3.7452126409774436),
OrderedStatistic(items_base=frozenset({'salmon', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.1328125,
lift=3.7452126409774436), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'salmon', 'milk'}),
confidence=0.03794642857142857, lift=3.8991254892367904),
OrderedStatistic(items_base=frozenset({'salmon', 'spaghetti'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.1683168316831683,
lift=3.5070682068206818), OrderedStatistic(items_base=frozenset({'salmon',
'mineral water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.5151515151515151, lift=2.9587683883242843),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'salmon'}), confidence=0.14406779661016947,
lift=3.3876255246798785), OrderedStatistic(items_base=frozenset({'salmon',
'spaghetti', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.6538461538461539, lift=2.7430089485458615),
OrderedStatistic(items_base=frozenset({'salmon', 'spaghetti', 'mineral water'}),
items_add=frozenset({'milk'}), confidence=0.3333333333333333,
lift=2.5723593964334706)])
RelationRecord(items=frozenset({'shrimp', 'spaghetti', 'mineral water',
'milk'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0030662578322890282, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'shrimp',
'spaghetti', 'mineral water'}), confidence=0.02366255144032922,
lift=2.773324974279836), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'shrimp', 'spaghetti', 'milk'}),
confidence=0.012863534675615214, lift=2.6078209081564787),
OrderedStatistic(items_base=frozenset({'shrimp'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.04291044776119403, lift=2.727722615734885),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'mineral water', 'milk'}),

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confidence=0.01761102603369066, lift=2.2389882420120957),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.06388888888888889,
lift=3.014028651292803), OrderedStatistic(items_base=frozenset({'shrimp',
'milk'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.17424242424242425, lift=2.9173938041125544),
OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.08646616541353383, lift=3.6643090777791936),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'spaghetti', 'milk'}), confidence=0.12994350282485875,
lift=3.6643090777791936), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.05133928571428572, lift=2.9173938041125544),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.14465408805031446,
lift=3.014028651292802), OrderedStatistic(items_base=frozenset({'shrimp',
'mineral water', 'milk'}), items_add=frozenset({'spaghetti'}),
confidence=0.3898305084745763, lift=2.2389882420120957),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water', 'milk'}),
items_add=frozenset({'shrimp'}), confidence=0.19491525423728814,
lift=2.727722615734885), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.6216216216216216, lift=2.6078209081564787),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
items_add=frozenset({'milk'}), confidence=0.35937500000000006,
lift=2.773324974279836)])
RelationRecord(items=frozenset({'spaghetti', 'soup', 'mineral water', 'milk'}),
support=0.0023996800426609784,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'spaghetti', 'soup', 'mineral water', 'milk'}),
confidence=0.0023996800426609784, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'soup',
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lift=2.480489417989418), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'soup', 'spaghetti', 'milk'}),
confidence=0.010067114093959731, lift=2.2209830240821162),
OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.047493403693931395, lift=3.0190510263405033),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'soup', 'mineral water', 'milk'}),
confidence=0.013782542113323124, lift=1.6153570061255744),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'soup', 'spaghetti'}), confidence=0.05,
lift=3.505140186915888), OrderedStatistic(items_base=frozenset({'soup',
'milk'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.15789473684210525, lift=2.6436795112781954),

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OrderedStatistic(items_base=frozenset({'spaghetti', 'milk'}),
items_add=frozenset({'soup', 'mineral water'}), confidence=0.06766917293233082,
lift=2.9340258159850494), OrderedStatistic(items_base=frozenset({'soup',
'mineral water'}), items_add=frozenset({'spaghetti', 'milk'}),
confidence=0.10404624277456648, lift=2.9340258159850494),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'soup', 'milk'}), confidence=0.040178571428571425,
lift=2.643679511278195), OrderedStatistic(items_base=frozenset({'soup',
'spaghetti'}), items_add=frozenset({'mineral water', 'milk'}),
confidence=0.16822429906542055, lift=3.505140186915888),
OrderedStatistic(items_base=frozenset({'soup', 'mineral water', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.28125,
lift=1.6153570061255742), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water', 'milk'}), items_add=frozenset({'soup'}),
confidence=0.15254237288135591, lift=3.0190510263405033),
OrderedStatistic(items_base=frozenset({'soup', 'spaghetti', 'milk'}),
items_add=frozenset({'mineral water'}), confidence=0.5294117647058824,
lift=2.2209830240821162), OrderedStatistic(items_base=frozenset({'spaghetti',
'soup', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.3214285714285714, lift=2.480489417989418)])
RelationRecord(items=frozenset({'tomatoes', 'spaghetti', 'mineral water',
'milk'}), support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'tomatoes', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.003332888948140248, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'tomatoes', 'spaghetti'}), confidence=0.025720164609053502,
lift=2.756099353321576), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'tomatoes', 'spaghetti', 'milk'}),
confidence=0.013982102908277406, lift=2.3836307707952007),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'tomatoes', 'mineral water', 'milk'}),
confidence=0.019142419601837674, lift=2.9303528455792733),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.04873294346978558, lift=3.097845838702217),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.06944444444444445,
lift=3.3178520877565467), OrderedStatistic(items_base=frozenset({'spaghetti',
'milk'}), items_add=frozenset({'tomatoes', 'mineral water'}),
confidence=0.09398496240601503, lift=3.8523563005875343),
OrderedStatistic(items_base=frozenset({'tomatoes', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.2380952380952381, lift=3.9865008503401365),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'tomatoes', 'milk'}), confidence=0.05580357142857143,
lift=3.9865008503401365), OrderedStatistic(items_base=frozenset({'tomatoes',
'mineral water'}), items_add=frozenset({'spaghetti', 'milk'}),

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confidence=0.1366120218579235, lift=3.8523563005875348),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.15923566878980894,
lift=3.3178520877565467), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water', 'milk'}), items_add=frozenset({'tomatoes'}),
confidence=0.211864406779661, lift=3.0978458387022165),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.5102040816326531,
lift=2.9303528455792733), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.5681818181818182, lift=2.3836307707952007),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti', 'mineral
water'}), items_add=frozenset({'milk'}), confidence=0.35714285714285715,
lift=2.756099353321576)])
RelationRecord(items=frozenset({'turkey', 'spaghetti', 'mineral water',
'milk'}), support=0.0026663111585121984,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'turkey', 'spaghetti', 'mineral water', 'milk'}),
confidence=0.0026663111585121984, lift=1.0),
OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'mineral
water', 'spaghetti', 'turkey'}), confidence=0.0205761316872428,
lift=3.215449245541838), OrderedStatistic(items_base=frozenset({'mineral
water'}), items_add=frozenset({'spaghetti', 'turkey', 'milk'}),
confidence=0.011185682326621925, lift=2.330661198110863),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'turkey', 'milk'}),
confidence=0.015313935681470138, lift=2.4971702510153806),
OrderedStatistic(items_base=frozenset({'turkey'}),
items_add=frozenset({'spaghetti', 'mineral water', 'milk'}),
confidence=0.04264392324093817, lift=2.7107802392396376),
OrderedStatistic(items_base=frozenset({'mineral water', 'milk'}),
items_add=frozenset({'spaghetti', 'turkey'}), confidence=0.05555555555555556,
lift=3.3606630824372763), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.07518796992481203, lift=3.91656223893066),
OrderedStatistic(items_base=frozenset({'turkey', 'milk'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.23529411764705882, lift=3.9396008403361344),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'turkey', 'milk'}), confidence=0.044642857142857144,
lift=3.9396008403361344), OrderedStatistic(items_base=frozenset({'turkey',
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confidence=0.13888888888888889, lift=3.91656223893066),
OrderedStatistic(items_base=frozenset({'spaghetti', 'turkey'}),
items_add=frozenset({'mineral water', 'milk'}), confidence=0.16129032258064516,
lift=3.360663082437276), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water', 'milk'}), items_add=frozenset({'turkey'}),
confidence=0.1694915254237288, lift=2.710780239239637),

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OrderedStatistic(items_base=frozenset({'turkey', 'mineral water', 'milk'}),
items_add=frozenset({'spaghetti'}), confidence=0.43478260869565216,
lift=2.4971702510153806), OrderedStatistic(items_base=frozenset({'spaghetti',
'turkey', 'milk'}), items_add=frozenset({'mineral water'}),
confidence=0.5555555555555556, lift=2.330661198110863),
OrderedStatistic(items_base=frozenset({'turkey', 'spaghetti', 'mineral water'}),
items_add=frozenset({'milk'}), confidence=0.41666666666666663,
lift=3.215449245541838)])
RelationRecord(items=frozenset({'olive oil', 'spaghetti', 'pancakes', 'mineral
water'}), support=0.0027996267164378083,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'olive oil', 'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.0027996267164378083, lift=1.0),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'spaghetti', 'pancakes', 'olive oil'}),
confidence=0.01174496644295302, lift=2.3183945602260687),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.04251012145748988, lift=3.7077723378212974),
OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'mineral water', 'spaghetti', 'olive oil'}),
confidence=0.029453015427769985, lift=2.8691827106974372),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'pancakes', 'olive oil'}),
confidence=0.016079632465543645, lift=3.446094946401225),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'spaghetti', 'pancakes'}), confidence=0.10144927536231883,
lift=4.0263016639828235), OrderedStatistic(items_base=frozenset({'pancakes',
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confidence=0.08300395256916995, lift=3.619840978031069),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'pancakes', 'olive oil'}), confidence=0.046875,
lift=4.340856481481481), OrderedStatistic(items_base=frozenset({'pancakes',
'olive oil'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.25925925925925924, lift=4.340856481481481),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.12209302325581396, lift=3.619840978031069),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.11111111111111112, lift=4.0263016639828235),
OrderedStatistic(items_base=frozenset({'olive oil', 'pancakes', 'mineral
water'}), items_add=frozenset({'spaghetti'}), confidence=0.6,
lift=3.446094946401225), OrderedStatistic(items_base=frozenset({'olive oil',
'spaghetti', 'mineral water'}), items_add=frozenset({'pancakes'}),
confidence=0.2727272727272727, lift=2.869182710697437),
OrderedStatistic(items_base=frozenset({'spaghetti', 'pancakes', 'mineral
water'}), items_add=frozenset({'olive oil'}), confidence=0.24418604651162792,

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lift=3.707772337821298), OrderedStatistic(items_base=frozenset({'spaghetti',
'pancakes', 'olive oil'}), items_add=frozenset({'mineral water'}),
confidence=0.5526315789473685, lift=2.3183945602260687)])
RelationRecord(items=frozenset({'shrimp', 'olive oil', 'spaghetti', 'mineral
water'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'shrimp', 'olive oil', 'spaghetti', 'mineral water'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti', 'olive oil'}),
confidence=0.009507829977628635, lift=2.641416024525644),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'shrimp', 'spaghetti', 'mineral water'}),
confidence=0.03441295546558704, lift=4.033305921052632),
OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'mineral
water', 'spaghetti', 'olive oil'}), confidence=0.031716417910447756,
lift=3.0896733863151766), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'shrimp', 'mineral water', 'olive oil'}),
confidence=0.013016845329249616, lift=2.8717457886676874),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'shrimp', 'spaghetti'}), confidence=0.08212560386473429,
lift=3.874365752134415), OrderedStatistic(items_base=frozenset({'shrimp',
'mineral water'}), items_add=frozenset({'spaghetti', 'olive oil'}),
confidence=0.09604519774011298, lift=4.188575745631323),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'shrimp', 'olive oil'}), confidence=0.03794642857142857,
lift=4.666166569086651), OrderedStatistic(items_base=frozenset({'shrimp', 'olive
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confidence=0.2786885245901639, lift=4.666166569086651),
OrderedStatistic(items_base=frozenset({'spaghetti', 'olive oil'}),
items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.09883720930232558, lift=4.188575745631323),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.10691823899371068, lift=3.8743657521344144),
OrderedStatistic(items_base=frozenset({'shrimp', 'olive oil', 'mineral water'}),
items_add=frozenset({'spaghetti'}), confidence=0.5, lift=2.871745788667688),
OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti', 'mineral
water'}), items_add=frozenset({'shrimp'}), confidence=0.22077922077922077,
lift=3.089673386315177), OrderedStatistic(items_base=frozenset({'shrimp',
'spaghetti', 'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.265625, lift=4.033305921052632),
OrderedStatistic(items_base=frozenset({'shrimp', 'spaghetti', 'olive oil'}),
items_add=frozenset({'mineral water'}), confidence=0.6296296296296297,
lift=2.6414160245256446)])
RelationRecord(items=frozenset({'tomatoes', 'olive oil', 'spaghetti', 'mineral
water'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),

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items_add=frozenset({'tomatoes', 'olive oil', 'spaghetti', 'mineral water'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'spaghetti', 'tomatoes', 'olive oil'}),
confidence=0.009507829977628635, lift=2.1611585655209815),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'mineral water', 'tomatoes', 'spaghetti'}),
confidence=0.03441295546558704, lift=3.6875939849624055),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'mineral water', 'tomatoes', 'olive oil'}),
confidence=0.013016845329249616, lift=3.1496566714419796),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'mineral water', 'spaghetti', 'olive oil'}),
confidence=0.03313840155945419, lift=3.2281967545125436),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.08212560386473429,
lift=3.923720729868611), OrderedStatistic(items_base=frozenset({'spaghetti',
'mineral water'}), items_add=frozenset({'tomatoes', 'olive oil'}),
confidence=0.03794642857142857, lift=5.271040013227513),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'spaghetti', 'olive oil'}), confidence=0.09289617486338797,
lift=4.051245393315542), OrderedStatistic(items_base=frozenset({'spaghetti',
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confidence=0.09883720930232558, lift=4.051245393315542),
OrderedStatistic(items_base=frozenset({'tomatoes', 'olive oil'}),
items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.3148148148148148, lift=5.2710400132275135),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti'}),
items_add=frozenset({'mineral water', 'olive oil'}),
confidence=0.10828025477707007, lift=3.923720729868611),
OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti', 'mineral
water'}), items_add=frozenset({'tomatoes'}), confidence=0.22077922077922077,
lift=3.2281967545125436), OrderedStatistic(items_base=frozenset({'olive oil',
'tomatoes', 'mineral water'}), items_add=frozenset({'spaghetti'}),
confidence=0.5483870967741935, lift=3.1496566714419796),
OrderedStatistic(items_base=frozenset({'tomatoes', 'spaghetti', 'mineral
water'}), items_add=frozenset({'olive oil'}), confidence=0.24285714285714283,
lift=3.6875939849624055), OrderedStatistic(items_base=frozenset({'tomatoes',
'spaghetti', 'olive oil'}), items_add=frozenset({'mineral water'}),
confidence=0.5151515151515151, lift=2.1611585655209815))]
RelationRecord(items=frozenset({'soup', 'spaghetti', 'pancakes', 'mineral
water'}), support=0.0022663644847353685,
ordered_statistics=[OrderedStatistic(items_base=frozenset(),
items_add=frozenset({'soup', 'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.0022663644847353685, lift=1.0),
OrderedStatistic(items_base=frozenset({'mineral water'}),
items_add=frozenset({'soup', 'pancakes', 'spaghetti'}),
confidence=0.009507829977628635, lift=3.2417378482814723),

```

```

OrderedStatistic(items_base=frozenset({'pancakes'}),
items_add=frozenset({'mineral water', 'soup', 'spaghetti'}),
confidence=0.023842917251051893, lift=3.1936736125025047),
OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'spaghetti', 'pancakes', 'mineral water'}),
confidence=0.04485488126649076, lift=3.91228446953427),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'soup', 'pancakes', 'mineral water'}),
confidence=0.013016845329249616, lift=3.0512299004594183),
OrderedStatistic(items_base=frozenset({'pancakes', 'mineral water'}),
items_add=frozenset({'soup', 'spaghetti'}), confidence=0.06719367588932805,
lift=4.710465073325698), OrderedStatistic(items_base=frozenset({'soup', 'mineral
water'}), items_add=frozenset({'spaghetti', 'pancakes'}),
confidence=0.09826589595375722, lift=3.899960241000703),
OrderedStatistic(items_base=frozenset({'spaghetti', 'mineral water'}),
items_add=frozenset({'soup', 'pancakes'}), confidence=0.03794642857142857,
lift=5.58110119047619), OrderedStatistic(items_base=frozenset({'soup',
'pancakes'}), items_add=frozenset({'spaghetti', 'mineral water'}),
confidence=0.3333333333333333, lift=5.581101190476191),
OrderedStatistic(items_base=frozenset({'pancakes', 'spaghetti'}),
items_add=frozenset({'soup', 'mineral water'}), confidence=0.08994708994708994,
lift=3.8999602410007035), OrderedStatistic(items_base=frozenset({'soup',
'spaghetti'}), items_add=frozenset({'pancakes', 'mineral water'}),
confidence=0.1588785046728972, lift=4.7104650733256985),
OrderedStatistic(items_base=frozenset({'soup', 'pancakes', 'mineral water'}),
items_add=frozenset({'spaghetti'}), confidence=0.53125,
lift=3.0512299004594183), OrderedStatistic(items_base=frozenset({'spaghetti',
'pancakes', 'mineral water'}), items_add=frozenset({'soup'}),
confidence=0.19767441860465115, lift=3.91228446953427),
OrderedStatistic(items_base=frozenset({'spaghetti', 'soup', 'mineral water'}),
items_add=frozenset({'pancakes'}), confidence=0.30357142857142855,
lift=3.1936736125025043), OrderedStatistic(items_base=frozenset({'soup',
'pancakes', 'spaghetti'}), items_add=frozenset({'mineral water'}),
confidence=0.7727272727272727, lift=3.2417378482814723)])

```

1)Qual é o máximo suporte de uma combinação de 4 itens? e qual é a combinação de 4 itens de maior suporte?

```

[8]: maxi = 0.0
indexMaxi = 0
for i in results:
    if len(i[0]) == 4 and i[1] > maxi:
        maxi = i[1]
        indexMaxi = i
maxi, indexMaxi[0]

```

```

[8]: (0.004932675643247567,
frozenset({'chocolate', 'milk', 'mineral water', 'spaghetti'}))

```

2) O suporte de um item isolado é a probabilidade de encontrá-lo em uma cesta qualquer. Vamos testar por força bruta? Vamos selecionar 100000 cestas aleatoriamente e contar quantas vezes apareceu “eggs”. isso deve dar algo em torno de 18%..complete o código.

```
[13]: cont=0
      quant=100000
      for i in range(quant):
          cesta=random.randint(0,7500)
          #complete o código para obter a probabilidade de "eggs" estar em uma cesta
          → aleatória...deve bater com o suporte
          for j in trans[cesta]:
              if j == 'eggs':
                  cont+=1

      cont/quant
```

```
[13]: 0.18055
```

3) Com base no código da questão 2, mostre que o lift de ‘spaghetti’ e ‘mineral water’ é 1.44

```
[17]: contDup=0
      contIntersec=0
      cont=0
      contSpag=0
      contMin=0
      quant=100000
      for i in range(quant):
          cesta=random.randint(0,7500)
          for j in trans[cesta]:
              if j == 'spaghetti' or j == 'mineral water':
                  contDup += 1
              if j == 'spaghetti':
                  contSpag+=1
              else:
                  contMin+=1
          if contDup == 2:
              contIntersec += 1
          contDup = 0 # zera a lista

      contIntersec, contSpag, contMin
      # cont/quant
```

```
[17]: (6036, 17428, 24094)
```

```
[18]: lift = (contIntersec/quant)/((contSpag/quant)*(contMin/quant))
```

```
[19]: lift
```

[19]: 1.437450088141696

4) A confiança de  $\{\text{'carrots'}\} \Rightarrow \{\text{'carrots'}, \text{'chocolate'}\}$  é 22% e a confiança  $\{\text{'chocolate'}\} \Rightarrow \{\text{'carrots'}, \text{'chocolate'}\}$  é de 2.11%. Por que tanta diferença?  
pois  $\text{suporte}[\text{'chocolate'}] > \text{suporte}[\text{'carrots'}]$