rahulml6

October 18, 2024

```
[2]: import pandas as pd
     !pip install apyori
     from apyori import apriori
```

Requirement already satisfied: apyori in /usr/local/lib/python3.10/dist-packages
(1.1.2)

```
[3]: A = pd.read_csv("/content/Market_Basket_Optimisation.csv",header= None)
```

```
[4]: A.fillna(0,inplace=True)
     A.head()
```

```
[4]:                  0          1            2                  3             4  \
     0          shrimp    almonds      avocado     vegetables mix   green grapes
     1         burgers  meatballs         eggs                  0              0
     2         chutney          0            0                  0              0
     3          turkey    avocado            0                  0              0
     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                  0      0                0               0              0
     2                  0      0                0               0              0
     3                  0      0                0               0              0
     4                  0      0                0               0              0

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

                          16                17        18          19
     0   antioxydant juice   frozen smoothie   spinach   olive oil
     1                   0                 0         0           0
     2                   0                 0         0           0
     3                   0                 0         0           0
```

```
    4              0              0      0      0
```

[ ]:

```
[5]: transactions =[]
     for i in range(0,7501):
       transactions.append([str(A.values[i,j]) for j in range (0,20)])
     transactions[0]
```

[5]: ['shrimp',
      'almonds',
      'avocado',
      'vegetables mix',
      'green grapes',
      'whole weat flour',
      'yams',
      'cottage cheese',
      'energy drink',
      'tomato juice',
      'low fat yogurt',
      'green tea',
      'honey',
      'salad',
      'mineral water',
      'salmon',
      'antioxydant juice',
      'frozen smoothie',
      'spinach',
      'olive oil']

```
[6]: rule_list=apriori(transactions,min_support=0.003,min_lift=3,min_length=2)
     rule_list
```

[6]: <generator object apriori at 0x79feb16e8e40>

```
[7]: Results = list(rule_list)
     for i in Results:
       print(i)
```

RelationRecord(items=frozenset({'brownies', 'cottage cheese'}),
support=0.0034662045060658577,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'brownies'}),
items_add=frozenset({'cottage cheese'}), confidence=0.10276679841897232,
lift=3.225329518580382), OrderedStatistic(items_base=frozenset({'cottage
cheese'}), items_add=frozenset({'brownies'}), confidence=0.10878661087866107,
lift=3.2253295185803816)])
RelationRecord(items=frozenset({'chicken', 'light cream'}),

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support=0.004532728969470737,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'chicken'}),
items_add=frozenset({'light cream'}), confidence=0.07555555555555556,
lift=4.843950617283951), OrderedStatistic(items_base=frozenset({'light cream'}),
items_add=frozenset({'chicken'}), confidence=0.29059829059829057,
lift=4.84395061728395)])
RelationRecord(items=frozenset({'escalope', 'mushroom cream sauce'}),
support=0.005732568990801226,
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lift=3.790832696715049)])
RelationRecord(items=frozenset({'escalope', 'pasta'}),
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'escalope'}),
items_add=frozenset({'pasta'}), confidence=0.07394957983193277,
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lift=4.700811850163794)])
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items_add=frozenset({'tomato juice'}), confidence=0.09907120743034055,
lift=3.2593558198902826), OrderedStatistic(items_base=frozenset({'tomato
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lift=3.2593558198902826)])
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lift=3.7850703088205613), OrderedStatistic(items_base=frozenset({'honey'}),
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lift=3.7850703088205613)])
RelationRecord(items=frozenset({'honey', 'fromage blanc'}),
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lift=5.164270764485569), OrderedStatistic(items_base=frozenset({'honey'}),
items_add=frozenset({'fromage blanc'}), confidence=0.0702247191011236,
lift=5.16427076448557)])
RelationRecord(items=frozenset({'ground beef', 'herb & pepper'}),
support=0.015997866951073192,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'herb & pepper'}), confidence=0.1628222523744912,
lift=3.291993841134928), OrderedStatistic(items_base=frozenset({'herb &
pepper'}), items_add=frozenset({'ground beef'}), confidence=0.3234501347708895,
lift=3.2919938411349285)])
```

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RelationRecord(items=frozenset({'ground beef', 'tomato sauce'}),
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
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sauce'}), items_add=frozenset({'ground beef'}), confidence=0.3773584905660377,
lift=3.840659481324083)])
RelationRecord(items=frozenset({'olive oil', 'light cream'}),
support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'light cream'}),
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lift=4.1224100976422955), OrderedStatistic(items_base=frozenset({'whole wheat
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lift=4.122410097642296)])
RelationRecord(items=frozenset({'shrimp', 'pasta'}),
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items_add=frozenset({'pasta'}), confidence=0.0708955223880597,
lift=4.506672147735896)])
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'brownies'}),
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cheese'}), items_add=frozenset({'brownies', '0'}),
confidence=0.10878661087866107, lift=3.2253295185803816),
OrderedStatistic(items_base=frozenset({'brownies', '0'}),
items_add=frozenset({'cottage cheese'}), confidence=0.10276679841897232,
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lift=3.2388813232802995)])
RelationRecord(items=frozenset({'chicken', 'light cream', '0'}),
support=0.004532728969470737,
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items_add=frozenset({'light cream', '0'}), confidence=0.07555555555555556,
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items_add=frozenset({'chicken', '0'}), confidence=0.29059829059829057,
lift=4.84395061728395), OrderedStatistic(items_base=frozenset({'chicken', '0'}),
items_add=frozenset({'light cream'}), confidence=0.07555555555555556,
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lift=4.843950617283951), OrderedStatistic(items_base=frozenset({'light cream', '0'}), items_add=frozenset({'chicken'}), confidence=0.29059829059829057, lift=4.84395061728395)])
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'escalope'}), items_add=frozenset({'0', 'mushroom cream sauce'}),
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OrderedStatistic(items_base=frozenset({'mushroom cream sauce'}),
items_add=frozenset({'escalope', '0'}), confidence=0.3006993006993007,
lift=3.790832696715049), OrderedStatistic(items_base=frozenset({'escalope', '0'}), items_add=frozenset({'mushroom cream sauce'}),
confidence=0.0722689075630252, lift=3.7908326967150496),
OrderedStatistic(items_base=frozenset({'mushroom cream sauce', '0'}),
items_add=frozenset({'escalope'}), confidence=0.3006993006993007,
lift=3.790832696715049)])
RelationRecord(items=frozenset({'escalope', '0', 'pasta'}),
support=0.005865884548726837,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'escalope'}), items_add=frozenset({'0', 'pasta'}), confidence=0.07394957983193277,
lift=4.700811850163794), OrderedStatistic(items_base=frozenset({'pasta'}), items_add=frozenset({'escalope', '0'}), confidence=0.3728813559322034,
lift=4.700811850163794), OrderedStatistic(items_base=frozenset({'escalope', '0'}), items_add=frozenset({'pasta'}), confidence=0.07394957983193277,
lift=4.700811850163794), OrderedStatistic(items_base=frozenset({'0', 'pasta'}), items_add=frozenset({'escalope'}), confidence=0.3728813559322034,
lift=4.700811850163794)])
RelationRecord(items=frozenset({'tomato juice', '0', 'fresh bread'}),
support=0.004266097853619517,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'fresh bread'}), items_add=frozenset({'tomato juice', '0'}), confidence=0.09907120743034055,
lift=3.273714215572619), OrderedStatistic(items_base=frozenset({'tomato juice'}), items_add=frozenset({'0', 'fresh bread'}),
confidence=0.14035087719298245, lift=3.2593558198902826),
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lift=3.2593558198902826), OrderedStatistic(items_base=frozenset({'tomato juice', '0'}), items_add=frozenset({'fresh bread'}), confidence=0.1409691629955947,
lift=3.2737142155726184)])
RelationRecord(items=frozenset({'honey', 'fresh tuna', '0'}),
support=0.003999466737768298,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'fresh tuna'}), items_add=frozenset({'honey', '0'}), confidence=0.17964071856287428,
lift=3.795732478704563), OrderedStatistic(items_base=frozenset({'honey'}), items_add=frozenset({'fresh tuna', '0'}), confidence=0.08426966292134831,
lift=3.7850703088205613), OrderedStatistic(items_base=frozenset({'fresh tuna', '0'}), items_add=frozenset({'honey'}), confidence=0.17964071856287428,
lift=3.7850703088205613), OrderedStatistic(items_base=frozenset({'honey', '0'}),

```
items_add=frozenset({'fresh tuna'}), confidence=0.08450704225352113,
lift=3.7957324787045628)])
RelationRecord(items=frozenset({'honey', 'fromage blanc', '0'}),
support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'fromage blanc'}),
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lift=5.1788180060756694), OrderedStatistic(items_base=frozenset({'honey'}),
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lift=5.16427076448557), OrderedStatistic(items_base=frozenset({'fromage blanc',
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items_add=frozenset({'fromage blanc'}), confidence=0.07042253521126761,
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RelationRecord(items=frozenset({'ground beef', 'herb & pepper', '0'}),
support=0.015997866951073192,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
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lift=3.291993841134928), OrderedStatistic(items_base=frozenset({'herb &
pepper'}), items_add=frozenset({'ground beef', '0'}),
confidence=0.3234501347708895, lift=3.2919938411349285),
OrderedStatistic(items_base=frozenset({'ground beef', '0'}),
items_add=frozenset({'herb & pepper'}), confidence=0.1628222523744912,
lift=3.291993841134928), OrderedStatistic(items_base=frozenset({'herb & pepper',
'0'}), items_add=frozenset({'ground beef'}), confidence=0.3234501347708895,
lift=3.2919938411349285)])
RelationRecord(items=frozenset({'ground beef', '0', 'tomato sauce'}),
support=0.005332622317024397,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'tomato sauce', '0'}), confidence=0.054274084124830396,
lift=3.840659481324083), OrderedStatistic(items_base=frozenset({'tomato
sauce'}), items_add=frozenset({'ground beef', '0'}),
confidence=0.3773584905660377, lift=3.840659481324083),
OrderedStatistic(items_base=frozenset({'ground beef', '0'}),
items_add=frozenset({'tomato sauce'}), confidence=0.054274084124830396,
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lift=3.840659481324083)])
RelationRecord(items=frozenset({'olive oil', 'light cream', '0'}),
support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'light cream'}),
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RelationRecord(items=frozenset({'olive oil', 'whole wheat pasta', '0'}),
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confidence=0.2714932126696833, lift=4.13077198425009),
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pasta', '0'}), items_add=frozenset({'olive oil'}),
confidence=0.2714932126696833, lift=4.122410097642296)])
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items_add=frozenset({'0', 'pasta'}), confidence=0.0708955223880597,
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lift=4.506672147735896), OrderedStatistic(items_base=frozenset({'shrimp', '0'}),
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RelationRecord(items=frozenset({'turkey', 'chocolate', 'burgers'}),
support=0.0030662578322890282,
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items_add=frozenset({'chocolate', 'turkey'}), confidence=0.035168195718654434,
lift=3.1034898363014927), OrderedStatistic(items_base=frozenset({'chocolate',
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lift=3.1034898363014927)])
RelationRecord(items=frozenset({'turkey', 'milk', 'burgers'}),
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RelationRecord(items=frozenset({'olive oil', 'chicken', 'milk'}), support=0.0035995200639914677, ordered_statistics=[OrderedStatistic(items_base=frozenset({'chicken'}), items_add=frozenset({'olive oil', 'milk'}), confidence=0.06, lift=3.51609375), OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'olive oil', 'chicken'}), confidence=0.02777777777777778, lift=3.8585390946502063), OrderedStatistic(items_base=frozenset({'olive oil'}), items_add=frozenset({'chicken', 'milk'}), confidence=0.054655870445344125,

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lift=3.6934566145092456), OrderedStatistic(items_base=frozenset({'chicken',
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lift=3.693456614509246), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.858539094650206), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.51609375)])
RelationRecord(items=frozenset({'chicken', 'milk', 'pancakes'}),
support=0.0030662578322890282,
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items_add=frozenset({'milk', 'pancakes'}), confidence=0.051111111111111114,
lift=3.091810035842294), OrderedStatistic(items_base=frozenset({'milk',
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lift=3.091810035842294)])
RelationRecord(items=frozenset({'olive oil', 'chicken', 'spaghetti'}),
support=0.0034662045060658577,
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items_add=frozenset({'chicken', 'spaghetti'}), confidence=0.052631578947368842,
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confidence=0.20155038759689922, lift=3.0603835169318647)])
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lift=3.2545123221103784), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.23255813953488375, lift=3.2545123221103784),
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items_add=frozenset({'frozen vegetables'}), confidence=0.29629629629629634,
lift=3.1084175084175087)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'herb & pepper'}),
support=0.003999466737768298,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'chocolate', 'herb & pepper'}),
confidence=0.0407055630936228, lift=4.490182775959774),
OrderedStatistic(items_base=frozenset({'herb & pepper'}),
items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.08086253369272238, lift=3.5060685851393676),
OrderedStatistic(items_base=frozenset({'ground beef', 'chocolate'}),
items_add=frozenset({'herb & pepper'}), confidence=0.17341040462427748,
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RelationRecord(items=frozenset({'chocolate', 'soup', 'milk'}),
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support=0.003999466737768298,
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RelationRecord(items=frozenset({'cooking oil', 'ground beef', 'spaghetti'}),
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items_add=frozenset({'cooking oil', 'ground beef'}),
confidence=0.027565084226646247, lift=3.2819951870487856),
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items_add=frozenset({'spaghetti'}), confidence=0.5714285714285714,
lift=3.2819951870487856), OrderedStatistic(items_base=frozenset({'cooking oil',
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confidence=0.3025210084033613, lift=3.0789824749438446)])
RelationRecord(items=frozenset({'ground beef', 'herb & pepper', 'eggs'}),
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lift=3.3564912381997174), OrderedStatistic(items_base=frozenset({'herb &
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confidence=0.08355795148247978, lift=4.178454627133872),
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items_add=frozenset({'herb & pepper'}), confidence=0.2066666666666667,
lift=4.178454627133872), OrderedStatistic(items_base=frozenset({'herb & pepper',
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lift=3.3564912381997174)])
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items_add=frozenset({'eggs', 'spaghetti'}), confidence=0.13270142180094788,
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items_add=frozenset({'red wine', 'eggs'}), confidence=0.021439509954058193,
lift=3.0342974370828397), OrderedStatistic(items_base=frozenset({'red wine',
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lift=3.0342974370828397), OrderedStatistic(items_base=frozenset({'spaghetti',
'eggs'}), items_add=frozenset({'red wine'}), confidence=0.10218978102189781,
lift=3.632822499740547)])
RelationRecord(items=frozenset({'ground beef', 'french fries', 'herb &
pepper'}), support=0.003199573390214638,
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items_add=frozenset({'french fries', 'herb & pepper'}),
confidence=0.03256445047489824, lift=4.697421981004071),
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items_add=frozenset({'ground beef', 'french fries'}),
confidence=0.0646900269541779, lift=4.665768194070082),
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items_add=frozenset({'herb & pepper'}), confidence=0.23076923076923078,
lift=4.665768194070081), OrderedStatistic(items_base=frozenset({'french fries',
'herb & pepper'}), items_add=frozenset({'ground beef'}),
confidence=0.46153846153846156, lift=4.697421981004071)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'green tea'}),
support=0.003332888948140248,
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items_add=frozenset({'frozen vegetables', 'green tea'}),
confidence=0.04873294346978558, lift=3.38468341635983),
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items_add=frozenset({'tomatoes'}), confidence=0.2314814814814815,
lift=3.38468341635983)])
RelationRecord(items=frozenset({'frozen vegetables', 'ground beef',
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items_add=frozenset({'frozen vegetables', 'spaghetti'}),
confidence=0.08819538670284939, lift=3.165328208890303),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'spaghetti'}),
items_add=frozenset({'ground beef'}), confidence=0.31100478468899523,
lift=3.165328208890303)])
RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'olive oil'}),
support=0.004799360085321957,
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items_add=frozenset({'frozen vegetables', 'olive oil'}),
confidence=0.037037037037037035, lift=3.2684095860566447),
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items_add=frozenset({'olive oil'}), confidence=0.20338983050847456,
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confidence=0.4235294117647058, lift=3.2684095860566447)])
RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'soup'}),
support=0.003999466737768298,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'frozen vegetables', 'soup'}),
confidence=0.030864197530864203, lift=3.858539094650206),
OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'frozen
vegetables', 'milk'}), confidence=0.079155672823219, lift=3.3545011403783374),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}),
items_add=frozenset({'soup'}), confidence=0.16949152542372883,
lift=3.354501140378338), OrderedStatistic(items_base=frozenset({'frozen
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lift=3.858539094650206)])
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RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'milk'}),
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confidence=0.043356643356643354, lift=3.0973160173160172),
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RelationRecord(items=frozenset({'frozen vegetables', 'shrimp', 'mineral
water'}), support=0.007199040127982935,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.07552447552447553, lift=3.2006163328197226),
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items_add=frozenset({'frozen vegetables'}), confidence=0.30508474576271183,
lift=3.200616332819722)])
RelationRecord(items=frozenset({'frozen vegetables', 'olive oil', 'spaghetti'}),
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items_add=frozenset({'frozen vegetables', 'spaghetti'}),
confidence=0.08704453441295547, lift=3.124024175270713),
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items_add=frozenset({'olive oil'}), confidence=0.20574162679425836,
lift=3.1240241752707125)])
RelationRecord(items=frozenset({'frozen vegetables', 'shrimp', 'spaghetti'}),
support=0.005999200106652446,
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items_add=frozenset({'frozen vegetables', 'spaghetti'}),
confidence=0.08395522388059701, lift=3.013148968078269),
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items_add=frozenset({'shrimp'}), confidence=0.21531100478468898,
lift=3.0131489680782684)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'shrimp'}),
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.04195804195804196, lift=3.7467532467532467),
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lift=3.469686690514371), OrderedStatistic(items_base=frozenset({'tomatoes'}),
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confidence=0.058479532163742694, lift=3.5092397660818713),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'shrimp'}),
items_add=frozenset({'tomatoes'}), confidence=0.24000000000000002,
lift=3.5092397660818717), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.2479338842975207, lift=3.4696866905143704),
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items_add=frozenset({'frozen vegetables'}), confidence=0.35714285714285715,
lift=3.7467532467532467)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'spaghetti'}),
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confidence=0.06993006993006994, lift=3.341053850607991),
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confidence=0.09746588693957116, lift=3.4980460188216425),
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items_add=frozenset({'tomatoes'}), confidence=0.23923444976076558,
lift=3.4980460188216425), OrderedStatistic(items_base=frozenset({'tomatoes',
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confidence=0.3184713375796179, lift=3.341053850607991)])
RelationRecord(items=frozenset({'ground beef', 'grated cheese', 'spaghetti'}),
support=0.005332622317024397,
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confidence=0.054274084124830396, lift=3.283144395325426),
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items_add=frozenset({'ground beef'}), confidence=0.3225806451612903,
lift=3.283144395325426)])
RelationRecord(items=frozenset({'herb & pepper', 'grated cheese', 'spaghetti'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'grated cheese'}),
items_add=frozenset({'herb & pepper', 'spaghetti'}),
confidence=0.058524173027989825, lift=3.5982772285487843),
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items_add=frozenset({'grated cheese', 'spaghetti'}),
confidence=0.06199460916442048, lift=3.7501738979219197),
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items_add=frozenset({'herb & pepper'}), confidence=0.18548387096774194,
lift=3.7501738979219197), OrderedStatistic(items_base=frozenset({'herb &
pepper', 'spaghetti'}), items_add=frozenset({'grated cheese'}),
confidence=0.18852459016393444, lift=3.5982772285487843)])
RelationRecord(items=frozenset({'ground beef', 'tomatoes', 'green tea'}),
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items_add=frozenset({'tomatoes'}), confidence=0.2072072072072072,
lift=3.0297490472929067)])
RelationRecord(items=frozenset({'ground beef', 'milk', 'herb & pepper'}),
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RelationRecord(items=frozenset({'ground beef', 'milk', 'olive oil'}), support=0.004932675643247567, ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}), items_add=frozenset({'ground beef', 'milk'}), confidence=0.07489878542510121, lift=3.4049441786283894), OrderedStatistic(items_base=frozenset({'ground beef', 'milk'}), items_add=frozenset({'olive oil'}), confidence=0.22424242424242427, lift=3.40494417862839)])
RelationRecord(items=frozenset({'ground beef', 'milk', 'soup'}), support=0.003999466737768298, ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'ground beef', 'soup'}), confidence=0.030864197530864203, lift=3.1714019956029094), OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'ground beef', 'milk'}), confidence=0.079155672823219, lift=3.5984648596785807), OrderedStatistic(items_base=frozenset({'ground beef',

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items_add=frozenset({'pepper'}), confidence=0.08503401360544217,
lift=3.2052268143438276), OrderedStatistic(items_base=frozenset({'pepper',
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confidence=0.33783783783783783, lift=3.4384282518610876)])
RelationRecord(items=frozenset({'ground beef', 'shrimp', 'spaghetti'}),
support=0.005999200106652446,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'shrimp'}), confidence=0.03445635528330781,
lift=3.0053153602336264), OrderedStatistic(items_base=frozenset({'ground beef',
'shrimp'}), items_add=frozenset({'spaghetti'}), confidence=0.5232558139534884,
lift=3.005315360233627)])
RelationRecord(items=frozenset({'ground beef', 'tomato sauce', 'spaghetti'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'tomato sauce', 'spaghetti'}),
confidence=0.03120759837177748, lift=4.980599901844742),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'tomato sauce'}),
confidence=0.01761102603369066, lift=3.302507656967841),
OrderedStatistic(items_base=frozenset({'tomato sauce'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.2169811320754717, lift=5.535970992170453),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'tomato sauce'}), confidence=0.0782312925170068,
lift=5.535970992170453), OrderedStatistic(items_base=frozenset({'ground beef',
'tomato sauce'}), items_add=frozenset({'spaghetti'}),
confidence=0.5750000000000001, lift=3.3025076569678413),
OrderedStatistic(items_base=frozenset({'tomato sauce', 'spaghetti'}),
items_add=frozenset({'ground beef'}), confidence=0.4893617021276596,
lift=4.980599901844742)])
RelationRecord(items=frozenset({'light cream', 'mineral water', 'spaghetti'}),
support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'light cream'}),
items_add=frozenset({'mineral water', 'spaghetti'}),
confidence=0.20512820512820515, lift=3.4345238095238098),
OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}),

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items_add=frozenset({'light cream'}), confidence=0.053571428571428575,
lift=3.4345238095238098)])
RelationRecord(items=frozenset({'milk', 'soup', 'mineral water'}),
support=0.008532195707239034,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'milk', 'mineral water'}), confidence=0.16886543535620052,
lift=3.518498973907945), OrderedStatistic(items_base=frozenset({'milk', 'mineral
water'}), items_add=frozenset({'soup'}), confidence=0.17777777777777776,
lift=3.5184989739079446)])
RelationRecord(items=frozenset({'olive oil', 'milk', 'shrimp'}),
support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'olive oil', 'shrimp'}), confidence=0.02469135802469136,
lift=3.0362274843149164), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.0362274843149164)])
RelationRecord(items=frozenset({'olive oil', 'milk', 'soup'}),
support=0.0035995200639914677,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'olive oil', 'soup'}), confidence=0.02777777777777778,
lift=3.1098673300165838), OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'milk', 'soup'}), confidence=0.054655870445344125,
lift=3.596260387811634), OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'olive oil', 'milk'}), confidence=0.07124010554089709,
lift=4.174781497361478), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=4.174781497361478), OrderedStatistic(items_base=frozenset({'milk',
'soup'}), items_add=frozenset({'olive oil'}), confidence=0.23684210526315788,
lift=3.5962603878116344), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.1098673300165833)])
RelationRecord(items=frozenset({'olive oil', 'milk', 'spaghetti'}),
support=0.007199040127982935,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'milk', 'spaghetti'}), confidence=0.10931174089068825,
lift=3.0825089038385434), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.20300751879699247, lift=3.0825089038385434)])
RelationRecord(items=frozenset({'tomatoes', 'milk', 'soup'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'tomatoes', 'soup'}), confidence=0.02366255144032922,
lift=3.4133230452674903), OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'tomatoes', 'milk'}), confidence=0.06068601583113457,
lift=4.335293378565146), OrderedStatistic(items_base=frozenset({'tomatoes',
'milk'}), items_add=frozenset({'soup'}), confidence=0.21904761904761905,
lift=4.335293378565146), OrderedStatistic(items_base=frozenset({'tomatoes',
'soup'}), items_add=frozenset({'milk'}), confidence=0.44230769230769235,
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lift=3.4133230452674903)])
RelationRecord(items=frozenset({'milk', 'whole wheat pasta', 'spaghetti'}),
support=0.003999466737768298,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'whole wheat pasta', 'spaghetti'}),
confidence=0.030864197530864203, lift=3.5077628133183696),
OrderedStatistic(items_base=frozenset({'whole wheat pasta'}),
items_add=frozenset({'milk', 'spaghetti'}), confidence=0.13574660633484165,
lift=3.8279522335249894), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.11278195488721805, lift=3.827952233524989),
OrderedStatistic(items_base=frozenset({'whole wheat pasta', 'spaghetti'}),
items_add=frozenset({'milk'}), confidence=0.4545454545454546,
lift=3.5077628133183696)])
RelationRecord(items=frozenset({'olive oil', 'soup', 'mineral water'}),
support=0.005199306759098787,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'soup', 'mineral water'}), confidence=0.07894736842105264,
lift=3.423030118649225), OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'olive oil', 'mineral water'}),
confidence=0.1029023746701847, lift=3.7288440212611373),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'soup'}), confidence=0.18840579710144928,
lift=3.7288440212611373), OrderedStatistic(items_base=frozenset({'soup',
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confidence=0.22543352601156072, lift=3.4230301186492245)])
RelationRecord(items=frozenset({'olive oil', 'whole wheat pasta', 'mineral
water'}), support=0.0038661511798426876,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'whole wheat pasta', 'mineral water'}),
confidence=0.058704453441295545, lift=6.115862573099415),
OrderedStatistic(items_base=frozenset({'whole wheat pasta'}),
items_add=frozenset({'olive oil', 'mineral water'}),
confidence=0.13122171945701358, lift=4.755044046604149),
OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water'}),
items_add=frozenset({'whole wheat pasta'}), confidence=0.1400966183574879,
lift=4.755044046604148), OrderedStatistic(items_base=frozenset({'whole wheat
pasta', 'mineral water'}), items_add=frozenset({'olive oil'}),
confidence=0.4027777777777778, lift=6.115862573099416)])
RelationRecord(items=frozenset({'tomatoes', 'soup', 'mineral water'}),
support=0.0037328356219170776,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'soup'}),
items_add=frozenset({'tomatoes', 'mineral water'}),
confidence=0.07387862796833773, lift=3.0282163300027394),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'soup'}), confidence=0.15300546448087432,
lift=3.0282163300027394)])
RelationRecord(items=frozenset({'olive oil', 'pancakes', 'spaghetti'}),
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support=0.005065991201173177,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'pancakes', 'spaghetti'}), confidence=0.07692307692307693,
lift=3.052910052910053), OrderedStatistic(items_base=frozenset({'pancakes',
'spaghetti'}), items_add=frozenset({'olive oil'}),
confidence=0.20105820105820105, lift=3.0529100529100526)])
RelationRecord(items=frozenset({'olive oil', 'tomatoes', 'spaghetti'}),
support=0.004399413411545127,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.06680161943319839,
lift=3.1915856520281602), OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'olive oil', 'tomatoes'}), confidence=0.02526799387442573,
lift=3.5099115194827295), OrderedStatistic(items_base=frozenset({'olive oil',
'tomatoes'}), items_add=frozenset({'spaghetti'}), confidence=0.6111111111111112,
lift=3.5099115194827295), OrderedStatistic(items_base=frozenset({'tomatoes',
'spaghetti'}), items_add=frozenset({'olive oil'}),
confidence=0.21019108280254778, lift=3.19158565202816)])
RelationRecord(items=frozenset({'tomatoes', 'whole wheat rice', 'spaghetti'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'whole wheat rice', 'spaghetti'}),
confidence=0.04483430799220273, lift=3.1726617382029496),
OrderedStatistic(items_base=frozenset({'whole wheat rice', 'spaghetti'}),
items_add=frozenset({'tomatoes'}), confidence=0.2169811320754717,
lift=3.1726617382029496)])
RelationRecord(items=frozenset({'avocado', 'milk', '0', 'spaghetti'}),
support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'avocado', '0', 'spaghetti'}),
confidence=0.025720164609053502, lift=3.2154492455418384),
OrderedStatistic(items_base=frozenset({'milk', '0'}),
items_add=frozenset({'avocado', 'spaghetti'}), confidence=0.025720164609053502,
lift=3.2154492455418384), OrderedStatistic(items_base=frozenset({'avocado',
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confidence=0.41666666666666663, lift=3.215449245541838),
OrderedStatistic(items_base=frozenset({'avocado', '0', 'spaghetti'}),
items_add=frozenset({'milk'}), confidence=0.41666666666666663,
lift=3.215449245541838)])
RelationRecord(items=frozenset({'milk', 'burgers', '0', 'cake'}),
support=0.0037328356219170776,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'burgers'}),
items_add=frozenset({'milk', 'cake', '0'}), confidence=0.04281345565749235,
lift=3.211437308868501), OrderedStatistic(items_base=frozenset({'burgers',
'0'}), items_add=frozenset({'milk', 'cake'}), confidence=0.04281345565749235,
lift=3.211437308868501), OrderedStatistic(items_base=frozenset({'milk',
'cake'}), items_add=frozenset({'burgers', '0'}), confidence=0.27999999999999997,
lift=3.211437308868501), OrderedStatistic(items_base=frozenset({'milk', 'cake',
'0'}), items_add=frozenset({'burgers'}), confidence=0.27999999999999997,
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lift=3.211437308868501)])
RelationRecord(items=frozenset({'turkey', 'chocolate', 'burgers', '0'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'burgers'}),
items_add=frozenset({'chocolate', 'turkey', '0'}),
confidence=0.035168195718654434, lift=3.1034898363014927),
OrderedStatistic(items_base=frozenset({'burgers', '0'}),
items_add=frozenset({'chocolate', 'turkey'}), confidence=0.035168195718654434,
lift=3.1034898363014927), OrderedStatistic(items_base=frozenset({'chocolate',
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confidence=0.27058823529411763, lift=3.1034898363014927),
OrderedStatistic(items_base=frozenset({'chocolate', 'turkey', '0'}),
items_add=frozenset({'burgers'}), confidence=0.27058823529411763,
lift=3.1034898363014927)])
RelationRecord(items=frozenset({'turkey', 'milk', 'burgers', '0'}),
support=0.003199573390214638,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'burgers'}),
items_add=frozenset({'turkey', 'milk', '0'}), confidence=0.03669724770642202,
lift=3.2384241770102538), OrderedStatistic(items_base=frozenset({'burgers',
'0'}), items_add=frozenset({'turkey', 'milk'}), confidence=0.03669724770642202,
lift=3.2384241770102538), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.2823529411764706, lift=3.2384241770102533),
OrderedStatistic(items_base=frozenset({'milk', 'turkey', '0'}),
items_add=frozenset({'burgers'}), confidence=0.2823529411764706,
lift=3.2384241770102533)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'cake', '0'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen
vegetables'}), items_add=frozenset({'tomatoes', 'cake', '0'}),
confidence=0.03216783216783217, lift=3.83001443001443),
OrderedStatistic(items_base=frozenset({'tomatoes'}),
items_add=frozenset({'frozen vegetables', 'cake', '0'}),
confidence=0.04483430799220273, lift=4.367560314928736),
OrderedStatistic(items_base=frozenset({'frozen vegetables', '0'}),
items_add=frozenset({'tomatoes', 'cake'}), confidence=0.03216783216783217,
lift=3.83001443001443), OrderedStatistic(items_base=frozenset({'tomatoes',
'0'}), items_add=frozenset({'frozen vegetables', 'cake'}),
confidence=0.04483430799220273, lift=4.367560314928736),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'cake'}),
items_add=frozenset({'tomatoes', '0'}), confidence=0.2987012987012987,
lift=4.367560314928736), OrderedStatistic(items_base=frozenset({'tomatoes',
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lift=4.367560314928736), OrderedStatistic(items_base=frozenset({'tomatoes',
'cake', '0'}), items_add=frozenset({'frozen vegetables'}),

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confidence=0.36507936507936506, lift=3.8300144300144296)])
RelationRecord(items=frozenset({'ground beef', 'cereals', '0', 'spaghetti'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'cereals'}),
items_add=frozenset({'ground beef', '0', 'spaghetti'}),
confidence=0.11917098445595856, lift=3.040481477565119),
OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'cereals', '0', 'spaghetti'}),
confidence=0.03120759837177748, lift=4.681763907734057),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'ground beef', 'cereals', '0'}),
confidence=0.01761102603369066, lift=3.885303125844519),
OrderedStatistic(items_base=frozenset({'cereals', '0'}),
items_add=frozenset({'ground beef', 'spaghetti'}),
confidence=0.11917098445595856, lift=3.040481477565119),
OrderedStatistic(items_base=frozenset({'ground beef', '0'}),
items_add=frozenset({'cereals', 'spaghetti'}), confidence=0.03120759837177748,
lift=4.681763907734057), OrderedStatistic(items_base=frozenset({'0',
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confidence=0.01761102603369066, lift=3.885303125844519),
OrderedStatistic(items_base=frozenset({'ground beef', 'cereals'}),
items_add=frozenset({'0', 'spaghetti'}), confidence=0.6764705882352942,
lift=3.8853031258445188), OrderedStatistic(items_base=frozenset({'cereals',
'spaghetti'}), items_add=frozenset({'ground beef', '0'}),
confidence=0.45999999999999996, lift=4.681763907734057),
OrderedStatistic(items_base=frozenset({'ground beef', 'spaghetti'}),
items_add=frozenset({'cereals', '0'}), confidence=0.0782312925170068,
lift=3.0404814775651197), OrderedStatistic(items_base=frozenset({'ground beef',
'cereals', '0'}), items_add=frozenset({'spaghetti'}),
confidence=0.6764705882352942, lift=3.8853031258445188),
OrderedStatistic(items_base=frozenset({'cereals', '0', 'spaghetti'}),
items_add=frozenset({'ground beef'}), confidence=0.45999999999999996,
lift=4.681763907734057), OrderedStatistic(items_base=frozenset({'ground beef',
'0', 'spaghetti'}), items_add=frozenset({'cereals'}),
confidence=0.0782312925170068, lift=3.0404814775651197)])
RelationRecord(items=frozenset({'ground beef', 'chicken', 'milk', '0'}),
support=0.0038661511798426876,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'ground beef', 'chicken', '0'}),
confidence=0.02983539094650206, lift=3.1520460209818584),
OrderedStatistic(items_base=frozenset({'milk', '0'}),
items_add=frozenset({'ground beef', 'chicken'}), confidence=0.029835390946502 06,
lift=3.1520460209818584), OrderedStatistic(items_base=frozenset({'ground beef',
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lift=3.152046020981858), OrderedStatistic(items_base=frozenset({'ground beef',
'chicken', '0'}), items_add=frozenset({'milk'}), confidence=0.40845070422535207,
lift=3.152046020981858)])
RelationRecord(items=frozenset({'olive oil', 'chicken', 'milk', '0'}),
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support=0.0035995200639914677,
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lift=3.51609375), OrderedStatistic(items_base=frozenset({'milk'}),
items_add=frozenset({'olive oil', 'chicken', '0'}),
confidence=0.02777777777777778, lift=3.8585390946502063),
OrderedStatistic(items_base=frozenset({'olive oil'}),
items_add=frozenset({'chicken', 'milk', '0'}), confidence=0.054655870445344125,
lift=3.6934566145092456), OrderedStatistic(items_base=frozenset({'chicken',
'0'}), items_add=frozenset({'olive oil', 'milk'}), confidence=0.06,
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lift=3.8585390946502063), OrderedStatistic(items_base=frozenset({'olive oil',
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items_add=frozenset({'olive oil', '0'}), confidence=0.24324324324324323,
lift=3.700948412915958), OrderedStatistic(items_base=frozenset({'olive oil',
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lift=3.858539094650206), OrderedStatistic(items_base=frozenset({'olive oil',
'milk'}), items_add=frozenset({'chicken', '0'}), confidence=0.2109375,
lift=3.51609375), OrderedStatistic(items_base=frozenset({'chicken', 'milk',
'0'}), items_add=frozenset({'olive oil'}), confidence=0.24324324324324323,
lift=3.693456614509246), OrderedStatistic(items_base=frozenset({'olive oil',
'chicken', '0'}), items_add=frozenset({'milk'}), confidence=0.5,
lift=3.858539094650206), OrderedStatistic(items_base=frozenset({'olive oil',
'milk', '0'}), items_add=frozenset({'chicken'}), confidence=0.2109375,
lift=3.51609375)])
RelationRecord(items=frozenset({'chicken', 'milk', '0', 'pancakes'}),
support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'chicken'}),
items_add=frozenset({'milk', '0', 'pancakes'}), confidence=0.051111111111111114,
lift=3.091810035842294), OrderedStatistic(items_base=frozenset({'chicken',
'0'}), items_add=frozenset({'milk', 'pancakes'}),
confidence=0.051111111111111114, lift=3.091810035842294),
OrderedStatistic(items_base=frozenset({'milk', 'pancakes'}),
items_add=frozenset({'chicken', '0'}), confidence=0.18548387096774194,
lift=3.091810035842294), OrderedStatistic(items_base=frozenset({'milk', '0',
'pancakes'}), items_add=frozenset({'chicken'}), confidence=0.18548387096774194,
lift=3.091810035842294)])
RelationRecord(items=frozenset({'olive oil', 'chicken', '0', 'spaghetti'}),
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'olive oil'}),
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confidence=0.05263157894736842, lift=3.0603835169318647),
OrderedStatistic(items_base=frozenset({'olive oil', '0'}),
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confidence=0.35714285714285715, lift=3.7467532467532467)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', '0',
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.06993006993006994, lift=3.341053850607991),
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items_add=frozenset({'frozen vegetables', '0', 'spaghetti'}),
confidence=0.09746588693957116, lift=3.4980460188216425),
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OrderedStatistic(items_base=frozenset({'frozen vegetables', 'spaghetti'}),
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items_add=frozenset({'tomatoes'}), confidence=0.23923444976076558,
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confidence=0.3184713375796179, lift=3.341053850607991)])

RelationRecord(items=frozenset({'ground beef', 'grated cheese', '0', 'spaghetti'})), support=0.005332622317024397, ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}), items_add=frozenset({'0', 'grated cheese', 'spaghetti'}), confidence=0.054274084124830396, lift=3.283144395325426), OrderedStatistic(items_base=frozenset({'ground beef', '0'}), items_add=frozenset({'grated cheese', 'spaghetti'}), confidence=0.054274084124830396, lift=3.283144395325426), OrderedStatistic(items_base=frozenset({'grated cheese', 'spaghetti'}), items_add=frozenset({'ground beef', '0'}), confidence=0.3225806451612903, lift=3.283144395325426), OrderedStatistic(items_base=frozenset({'grated cheese', '0', 'spaghetti'}), items_add=frozenset({'ground beef'}), confidence=0.3225806451612903, lift=3.283144395325426)])
RelationRecord(items=frozenset({'herb & pepper', 'grated cheese', '0', 'spaghetti'})), support=0.0030662578322890282, ordered_statistics=[OrderedStatistic(items_base=frozenset({'grated cheese'}), items_add=frozenset({'herb & pepper', '0', 'spaghetti'}), confidence=0.058524173027989825, lift=3.5982772285487843), OrderedStatistic(items_base=frozenset({'herb & pepper'}), items_add=frozenset({'0', 'grated cheese', 'spaghetti'}), confidence=0.06199460916442048, lift=3.7501738979219197), OrderedStatistic(items_base=frozenset({'grated cheese', '0'}), items_add=frozenset({'herb & pepper', 'spaghetti'}), confidence=0.058524173027989825, lift=3.5982772285487843), OrderedStatistic(items_base=frozenset({'herb & pepper', '0'}), items_add=frozenset({'grated cheese', 'spaghetti'}), confidence=0.06199460916442048, lift=3.7501738979219197), OrderedStatistic(items_base=frozenset({'grated cheese', 'spaghetti'}), items_add=frozenset({'herb & pepper', '0'}), confidence=0.18548387096774194, lift=3.7501738979219197), OrderedStatistic(items_base=frozenset({'herb & pepper', 'spaghetti'}), items_add=frozenset({'0', 'grated cheese'}), confidence=0.18852459016393444, lift=3.5982772285487843), OrderedStatistic(items_base=frozenset({'grated cheese', '0', 'spaghetti'}), items_add=frozenset({'herb & pepper'}), confidence=0.18548387096774194, lift=3.7501738979219197), OrderedStatistic(items_base=frozenset({'herb & pepper', '0', 'spaghetti'}), items_add=frozenset({'grated cheese'}), confidence=0.18852459016393444, lift=3.5982772285487843)])
RelationRecord(items=frozenset({'ground beef', 'tomatoes', 'green tea', '0'})), support=0.0030662578322890282, ordered_statistics=[OrderedStatistic(items_base=frozenset({'tomatoes'}), items_add=frozenset({'ground beef', 'green tea', '0'}), confidence=0.04483430799220273, lift=3.0297490472929067), OrderedStatistic(items_base=frozenset({'tomatoes', '0'}), items_add=frozenset({'ground beef', 'green tea'}), confidence=0.04483430799220273, lift=3.0297490472929067), OrderedStatistic(items_base=frozenset({'ground beef', 'green tea'}), items_add=frozenset({'tomatoes', '0'}), confidence=0.2072072072072072, lift=3.0297490472929067), OrderedStatistic(items_base=frozenset({'ground beef',

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RelationRecord(items=frozenset({'ground beef', 'milk', 'herb & pepper', '0'}),
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confidence=0.036635006784260515, lift=3.982596896938234),
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items_add=frozenset({'ground beef', 'milk', '0'}),
confidence=0.07277628032345013, lift=3.3084538103406027),
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lift=3.3084538103406027), OrderedStatistic(items_base=frozenset({'milk', 'herb &
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confidence=0.3913043478260869, lift=3.9825968969382335),
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confidence=0.3913043478260869, lift=3.9825968969382335)])
RelationRecord(items=frozenset({'ground beef', 'herb & pepper', 'mineral water',
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items_add=frozenset({'herb & pepper', 'mineral water', '0'}),
confidence=0.067842605156038, lift=3.9756826662143836),
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items_add=frozenset({'ground beef', 'mineral water', '0'}),
confidence=0.1347708894878706, lift=3.292887433382793),
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items_add=frozenset({'herb & pepper', '0'}), confidence=0.16286644951140067,
lift=3.2928874333827935), OrderedStatistic(items_base=frozenset({'herb &
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confidence=0.39062500000000006, lift=3.975682666214383),
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items_add=frozenset({'herb & pepper', '0', 'spaghetti'}),
confidence=0.06512890094979648, lift=4.004359721511667),
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items_add=frozenset({'ground beef', '0', 'spaghetti'}),
confidence=0.1293800539083558, lift=3.3009516475053635),
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pepper', 'spaghetti'}), items_add=frozenset({'ground beef', '0'}),
confidence=0.3934426229508197, lift=4.004359721511667),
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confidence=0.3934426229508197, lift=4.004359721511667)])
RelationRecord(items=frozenset({'ground beef', 'milk', 'olive oil', '0'}),
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confidence=0.07489878542510121, lift=3.4049441786283894),
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items_add=frozenset({'ground beef', 'milk'}), confidence=0.075050709939148078,
lift=3.4118507591124225), OrderedStatistic(items_base=frozenset({'ground beef',
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items_add=frozenset({'olive oil'}), confidence=0.22424242424242427,
lift=3.40494417862839)])
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confidence=0.030864197530864203, lift=3.1714019956029094),
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items_add=frozenset({'ground beef', '0', 'spaghetti'}),
confidence=0.12562814070351758, lift=3.2052268143438276),
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confidence=0.33783783783783783, lift=3.4384282518610876)])
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items_add=frozenset({'ground beef', 'shrimp'}), confidence=0.03445635528330781,
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confidence=0.5232558139534884, lift=3.005315360233627),
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items_add=frozenset({'spaghetti'}), confidence=0.5232558139534884,
lift=3.005315360233627)])
RelationRecord(items=frozenset({'ground beef', 'tomato sauce', '0',
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confidence=0.03120759837177748, lift=4.980599901844742),
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items_add=frozenset({'ground beef', '0', 'tomato sauce'}),
confidence=0.01761102603369066, lift=3.302507656967841),
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confidence=0.2169811320754717, lift=5.535970992170453),
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confidence=0.01761102603369066, lift=3.302507656967841),
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items_add=frozenset({'ground beef', 'spaghetti'}),
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items_add=frozenset({'tomato sauce', '0'}), confidence=0.0782312925170068,
lift=5.535970992170453), OrderedStatistic(items_base=frozenset({'ground beef',
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lift=3.4345238095238098), OrderedStatistic(items_base=frozenset({'mineral
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RelationRecord(items=frozenset({'olive oil', 'milk', 'shrimp', '0'}),
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lift=3.1098673300165833)])
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RelationRecord(items=frozenset({'frozen vegetables', 'chocolate', 'milk', 'spaghetti'})), support=0.0034662045060658577, ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen vegetables'}), items_add=frozenset({'chocolate', 'milk', 'spaghetti'}), confidence=0.03636363636363636, lift=3.326385809312639), OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'frozen vegetables', 'chocolate', 'spaghetti'}), confidence=0.026748971193415638, lift=3.400746320708656), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'chocolate'}), items_add=frozenset({'milk', 'spaghetti'}), confidence=0.1511627906976744, lift=4.262677041440811), OrderedStatistic(items_base=frozenset({'chocolate', 'milk'}), items_add=frozenset({'frozen vegetables', 'spaghetti'}), confidence=0.1078838174273859, lift=3.87194504556374), OrderedStatistic(items_base=frozenset({'chocolate', 'spaghetti'}), items_add=frozenset({'frozen vegetables', 'milk'}), confidence=0.08843537414965985, lift=3.747761251393212), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}), items_add=frozenset({'chocolate', 'spaghetti'}), confidence=0.14689265536723162, lift=3.747761251393212), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'spaghetti'}), items_add=frozenset({'chocolate', 'milk'}), confidence=0.12440191387559808, lift=3.87194504556374), OrderedStatistic(items_base=frozenset({'milk', 'spaghetti'}), items_add=frozenset({'frozen vegetables', 'chocolate'}), confidence=0.09774436090225563, lift=4.262677041440812), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'chocolate', 'spaghetti'}), items_add=frozenset({'milk'}), confidence=0.44067796610169485, lift=3.4007463207086555), OrderedStatistic(items_base=frozenset({'chocolate', 'milk', 'spaghetti'}), items_add=frozenset({'frozen vegetables'}), confidence=0.3170731707317073, lift=3.3263858093126384)])
RelationRecord(items=frozenset({'frozen vegetables', 'chocolate', 'shrimp', 'mineral water'})), support=0.003199573390214638, ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen vegetables'}), items_add=frozenset({'chocolate', 'shrimp', 'mineral water'}), confidence=0.033566433566433566, lift=4.417224880382775), OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'frozen vegetables', 'chocolate', 'mineral water'}), confidence=0.04477611940298507, lift=4.600899611531384), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'chocolate'}), items_add=frozenset({'shrimp', 'mineral water'}), confidence=0.13953488372093026, lift=5.913283405597163), OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}), items_add=frozenset({'frozen vegetables', 'shrimp'}), confidence=0.06075949367088608, lift=3.6460556962025317), OrderedStatistic(items_base=frozenset({'chocolate', 'shrimp'}), items_add=frozenset({'frozen vegetables', 'mineral water'}), confidence=0.1777777777777778, lift=4.975787728026535), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}), items_add=frozenset({'chocolate', 'shrimp'}), confidence=0.08955223880597014, lift=4.975787728026535), OrderedStatistic(items_base=frozenset({'frozen

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items_add=frozenset({'frozen vegetables', 'chocolate'}),
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items_add=frozenset({'frozen vegetables'}), confidence=0.4210526315789474,
lift=4.417224880382776)])
RelationRecord(items=frozenset({'frozen vegetables', 'chocolate', 'mineral
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confidence=0.1802325581395349, lift=3.0176884343853825),
OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'chocolate'}),
confidence=0.06919642857142858, lift=3.0176884343853825)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'milk', 'mineral
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confidence=0.14450867052023122, lift=3.0109987154784847),
OrderedStatistic(items_base=frozenset({'milk', 'mineral water'}),
items_add=frozenset({'ground beef', 'chocolate'}),
confidence=0.06944444444444445, lift=3.0109987154784843)])
RelationRecord(items=frozenset({'olive oil', 'chocolate', 'mineral water',
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items_add=frozenset({'chocolate', 'mineral water', 'spaghetti'}),
confidence=0.058704453441295545, lift=3.700353825740822),
OrderedStatistic(items_base=frozenset({'chocolate', 'mineral water'}),
items_add=frozenset({'olive oil', 'spaghetti'}), confidence=0.07341772151898734,
lift=3.201780983220489), OrderedStatistic(items_base=frozenset({'olive oil',
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confidence=0.23577235772357724, lift=3.947608159117306),
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items_add=frozenset({'olive oil', 'mineral water'}),
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({'mineral
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confidence=0.06473214285714286, lift=3.947608159117306),
OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti'}),
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confidence=0.1686046511627907, lift=3.2017809832204884),

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RelationRecord(items=frozenset({'chocolate', 'spaghetti', 'mineral water',
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items_add=frozenset({'chocolate', 'mineral water', 'spaghetti'}),
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confidence=0.1925925925925926, lift=3.2246362433862434),
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confidence=0.05803571428571428, lift=3.2246362433862434),
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lift=3.0576006522011783)])
RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'mineral water',
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items_add=frozenset({'frozen vegetables', 'mineral water', 'eggs'}),
confidence=0.02880658436213992, lift=3.177620430888405),
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items_add=frozenset({'milk', 'mineral water'}), confidence=0.17177914110429446,
lift=3.5792092706203134), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.12121212121212122, lift=3.392582541836273),
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confidence=0.07329842931937172, lift=3.106279764545804),
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items_add=frozenset({'mineral water', 'eggs'}), confidence=0.1581920903954802,
lift=3.106279764545804), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.10447761194029849, lift=3.3925825418362727),
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confidence=0.07777777777777778, lift=3.5792092706203134),
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lift=3.177620430888405)])
RelationRecord(items=frozenset({'ground beef', 'milk', 'mineral water',
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confidence=0.16666666666666669, lift=3.4726851851851857),
OrderedStatistic(items_base=frozenset({'milk', 'mineral water'}),
items_add=frozenset({'ground beef', 'eggs'}), confidence=0.06944444444444445,
lift=3.4726851851851857)])
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items_add=frozenset({'ground beef', 'eggs'}), confidence=0.06473214285714286,
lift=3.237038690476191)])
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confidence=0.22429906542056074, lift=3.7555073431241657),
OrderedStatistic(items_base=frozenset({'frozen smoothie', 'mineral water'}),
items_add=frozenset({'milk', 'spaghetti'}), confidence=0.15789473684210528,
lift=4.452512861100119), OrderedStatistic(items_base=frozenset({'frozen
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items_add=frozenset({'frozen smoothie', 'spaghetti'}),
confidence=0.06666666666666668, lift=4.274074074074075),
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confidence=0.09022556390977443, lift=4.452512861100119),
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OrderedStatistic(items_base=frozenset({'frozen smoothie', 'mineral water',
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confidence=0.3373493975903614, lift=3.539101861993428)])
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RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'olive oil',
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confidence=0.12077294685990338, lift=5.118180081334097),
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water'}), items_add=frozenset({'olive oil'}), confidence=0.301204819277710846,
lift=4.573557387444516), OrderedStatistic(items_base=frozenset({'frozen
vegetables', 'olive oil', 'mineral water'}), items_add=frozenset({'milk'}),
confidence=0.5102040816326531, lift=3.937284790459394),
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items_add=frozenset({'frozen vegetables'}), confidence=0.39062500000000006,
lift=4.098011363636364)])
RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'soup', 'mineral
water'}), support=0.0030662578322890282,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen
vegetables'}), items_add=frozenset({'milk', 'soup', 'mineral water'}),
confidence=0.03216783216783217, lift=3.7701704545454553),
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OrderedStatistic(items_base=frozenset({'milk'}), items_add=frozenset({'frozen vegetables', 'soup', 'mineral water'}), confidence=0.02366255144032922, lift=4.670863114576566), OrderedStatistic(items_base=frozenset({'mineral water'}), items_add=frozenset({'frozen vegetables', 'milk', 'soup'}), confidence=0.012863534675615214, lift=3.2163124533929905), OrderedStatistic(items_base=frozenset({'soup'}), items_add=frozenset({'frozen vegetables', 'milk', 'mineral water'}), confidence=0.06068601583113457, lift=5.484407286136632), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}), items_add=frozenset({'soup', 'mineral water'}), confidence=0.12994350282485875, lift=5.634139969302113), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}), items_add=frozenset({'milk', 'soup'}), confidence=0.08582089552238806, lift=5.646864362398533), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'soup'}), items_add=frozenset({'milk', 'mineral water'}), confidence=0.3833333333333333, lift=7.987175925925926), OrderedStatistic(items_base=frozenset({'milk', 'mineral water'}), items_add=frozenset({'frozen vegetables', 'soup'}), confidence=0.0638888888888889, lift=7.987175925925926), OrderedStatistic(items_base=frozenset({'milk', 'soup'}), items_add=frozenset({'frozen vegetables', 'mineral water'}), confidence=0.20175438596491227, lift=5.646864362398533), OrderedStatistic(items_base=frozenset({'soup', 'mineral water'}), items_add=frozenset({'frozen vegetables', 'milk'}), confidence=0.13294797687861273, lift=5.6341399693021135), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk', 'mineral water'}), items_add=frozenset({'soup'}), confidence=0.27710843373493976, lift=5.484407286136631), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk', 'soup'}), items_add=frozenset({'mineral water'}), confidence=0.7666666666666666, lift=3.21631245339299), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'soup', 'mineral water'}), items_add=frozenset({'milk'}), confidence=0.6052631578947368, lift=4.670863114576565), OrderedStatistic(items_base=frozenset({'milk', 'soup', 'mineral water'}), items_add=frozenset({'frozen vegetables'}), confidence=0.35937500000000006, lift=3.7701704545454553)])
RelationRecord(items=frozenset({'frozen vegetables', 'milk', 'mineral water', 'spaghetti'}), support=0.004532728969470737, ordered_statistics=[OrderedStatistic(items_base=frozenset({'frozen vegetables'}), items_add=frozenset({'milk', 'mineral water', 'spaghetti'}), confidence=0.04755244755244755, lift=3.0228043143297376), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'milk'}), items_add=frozenset({'mineral water', 'spaghetti'}), confidence=0.19209039548022597, lift=3.216227804681194), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'mineral water'}), items_add=frozenset({'milk', 'spaghetti'}), confidence=0.12686567164179102, lift=3.5775165525754677), OrderedStatistic(items_base=frozenset({'frozen vegetables', 'spaghetti'}), items_add=frozenset({'milk', 'mineral water'}), confidence=0.16267942583732056, lift=3.389606592238171), OrderedStatistic(items_base=frozenset({'milk', 'mineral water'}),

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items_add=frozenset({'frozen vegetables', 'spaghetti'}),
confidence=0.09444444444444444, lift=3.389606592238171),
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items_add=frozenset({'frozen vegetables', 'mineral water'}),
confidence=0.12781954887218044, lift=3.577516552575468),
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items_add=frozenset({'frozen vegetables', 'milk'}),
confidence=0.07589285714285714, lift=3.216227804681194),
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items_add=frozenset({'frozen vegetables'}), confidence=0.28813559322033894,
lift=3.0228043143297376)])
RelationRecord(items=frozenset({'frozen vegetables', 'shrimp', 'mineral water',
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vegetables'}), items_add=frozenset({'shrimp', 'mineral water', 'spaghetti'}),
confidence=0.03496503496503497, lift=4.098011363636364),
OrderedStatistic(items_base=frozenset({'shrimp'}), items_add=frozenset({'frozen
vegetables', 'mineral water', 'spaghetti'}), confidence=0.046641791044776115,
lift=3.8873341625207294), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.09328358208955223, lift=4.400755655683844),
OrderedStatistic(items_base=frozenset({'frozen vegetables', 'shrimp'}),
items_add=frozenset({'mineral water', 'spaghetti'}), confidence=0.2,
lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'frozen
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confidence=0.11961722488038279, lift=5.069202281512719),
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items_add=frozenset({'frozen vegetables', 'spaghetti'}),
confidence=0.14124293785310735, lift=5.069202281512719),
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items_add=frozenset({'frozen vegetables', 'shrimp'}),
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),
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lift=3.8873341625207294), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.39062500000000006, lift=4.098011363636364)])
RelationRecord(items=frozenset({'frozen vegetables', 'tomatoes', 'mineral
water', 'spaghetti'}), support=0.00306625783228290282,
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vegetables'}), items_add=frozenset({'tomatoes', 'mineral water', 'spaghetti'}),
confidence=0.03216783216783217, lift=3.4470129870129873),
OrderedStatistic(items_base=frozenset({'spaghetti'}),
items_add=frozenset({'frozen vegetables', 'tomatoes', 'mineral water'}),
confidence=0.01761102603369066, lift=3.0022796881525826),
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items_add=frozenset({'frozen vegetables', 'mineral water', 'spaghetti'}),
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({'frozen
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confidence=0.11004784688995216, lift=4.510759013778858),
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items_add=frozenset({'mineral water', 'spaghetti'}),
confidence=0.1900826446280992, lift=3.1826114226682414),
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items_add=frozenset({'frozen vegetables', 'tomatoes'}),
confidence=0.05133928571428572, lift=3.1826114226682414),
OrderedStatistic(items_base=frozenset({'tomatoes', 'mineral water'}),
items_add=frozenset({'frozen vegetables', 'spaghetti'}),
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),
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confidence=0.32857142857142857, lift=3.447012987012987)])
RelationRecord(items=frozenset({'ground beef', 'milk', 'mineral water',
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef',
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lift=3.3486607142857148), OrderedStatistic(items_base=frozenset({'ground beef',
'mineral water'}), items_add=frozenset({'milk', 'spaghetti'}),
confidence=0.10749185667752444, lift=3.0311895373613185),
OrderedStatistic(items_base=frozenset({'milk', 'spaghetti'}),
items_add=frozenset({'ground beef', 'mineral water'}),
confidence=0.12406015037593984, lift=3.0311895373613185),
OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}),
items_add=frozenset({'ground beef', 'milk'}), confidence=0.07366071428571429,
lift=3.3486607142857148)])
RelationRecord(items=frozenset({'ground beef', 'olive oil', 'mineral water',
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}),
items_add=frozenset({'olive oil', 'mineral water', 'spaghetti'}),
confidence=0.03120759837177748, lift=3.040106433593544),
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lift=3.267233542913416), OrderedStatistic(items_base=frozenset({'ground beef', 'olive oil'}), items_add=frozenset({'mineral water', 'spaghetti'}), confidence=0.2169811320754717, lift=3.63298096361186), OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}), items_add=frozenset({'ground beef', 'olive oil'}), confidence=0.05133928571428572, lift=3.63298096361186), OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti'}), items_add=frozenset({'ground beef', 'mineral water'}), confidence=0.13372093023255816, lift=3.267233542913416), OrderedStatistic(items_base=frozenset({'olive oil', 'mineral water', 'spaghetti'}), items_add=frozenset({'ground beef'}), confidence=0.2987012987012987, lift=3.0401064335935435)])
RelationRecord(items=frozenset({'ground beef', 'pancakes', 'mineral water', 'spaghetti'}), support=0.0030662578322890282, ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef', 'pancakes'}), items_add=frozenset({'mineral water', 'spaghetti'}), confidence=0.21100917431192662, lift=3.532990661861075), OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}), items_add=frozenset({'ground beef', 'pancakes'}), confidence=0.05133928571428572, lift=3.532990661861075)])
RelationRecord(items=frozenset({'ground beef', 'tomatoes', 'mineral water', 'spaghetti'}), support=0.0030662578322890282, ordered_statistics=[OrderedStatistic(items_base=frozenset({'ground beef'}), items_add=frozenset({'tomatoes', 'mineral water', 'spaghetti'}), confidence=0.03120759837177748, lift=3.344117076952898), OrderedStatistic(items_base=frozenset({'spaghetti'}), items_add=frozenset({'ground beef', 'tomatoes', 'mineral water'}), confidence=0.01761102603369066, lift=3.221958689724723), 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', 'spaghetti'}), items_add=frozenset({'tomatoes', 'mineral water'}), confidence=0.0782312925170068, lift=3.2066280063938146), OrderedStatistic(items_base=frozenset({'ground beef', 'tomatoes'}), items_add=frozenset({'mineral water', 'spaghetti'}), confidence=0.26136363636363635, lift=4.3760907061688314), OrderedStatistic(items_base=frozenset({'mineral water', 'spaghetti'}), 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'}), 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', 'tomatoes', 'mineral water'}), items_add=frozenset({'spaghetti'}), confidence=0.5609756097560976, lift=3.221958689724723), OrderedStatistic(items_base=frozenset({'tomatoes',

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confidence=0.32857142857142857, lift=3.344117076952898)])
RelationRecord(items=frozenset({'olive oil', 'milk', 'mineral water',
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confidence=0.05060728744939272, lift=3.216993755575379),
OrderedStatistic(items_base=frozenset({'milk', 'mineral water'}),
items_add=frozenset({'olive oil', 'spaghetti'}), 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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items_add=frozenset({'olive oil', 'mineral water'}),
confidence=0.09398496240601503, lift=3.4057062947223127),
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items_add=frozenset({'milk', 'spaghetti'}), confidence=0.12077294685990338,
lift=3.4057062947223127), OrderedStatistic(items_base=frozenset({'mineral
water', 'spaghetti'}), items_add=frozenset({'olive oil', 'milk'}),
confidence=0.05580357142857143, lift=3.2701764787946432),
OrderedStatistic(items_base=frozenset({'olive oil', 'spaghetti'}),
items_add=frozenset({'milk', 'mineral water'}), confidence=0.14534883720930233,
lift=3.0285045219638245), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.211864406779661, lift=3.216993755575379)])
RelationRecord(items=frozenset({'milk', 'shrimp', 'mineral water',
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ordered_statistics=[OrderedStatistic(items_base=frozenset({'milk', 'mineral
water'}), items_add=frozenset({'shrimp', 'spaghetti'}),
confidence=0.0638888888888889, lift=3.014028651292803),
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items_add=frozenset({'shrimp', 'mineral water'}),
confidence=0.08646616541353383, lift=3.6643090777791936),
OrderedStatistic(items_base=frozenset({'shrimp', 'mineral water'}),
items_add=frozenset({'milk', 'spaghetti'}), confidence=0.12994350282485875,
lift=3.6643090777791936), OrderedStatistic(items_base=frozenset({'shrimp',
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confidence=0.14465408805031446, lift=3.014028651292802)])
RelationRecord(items=frozenset({'tomatoes', 'milk', 'mineral water',
'spaghetti'}), support=0.003332888948140248,
ordered_statistics=[OrderedStatistic(items_base=frozenset({'tomatoes'}),
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confidence=0.04873294346978558, lift=3.097845838702217),
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items_add=frozenset({'tomatoes', 'spaghetti'}), confidence=0.06944444444444445,
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items_add=frozenset({'mineral water', 'spaghetti'}),
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lift=3.3178520877565467), OrderedStatistic(items_base=frozenset({'milk',
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confidence=0.211864406779661, lift=3.0978458387022165)])
RelationRecord(items=frozenset({'ground beef', 'chocolate', 'eggs', 'mineral
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items_add=frozenset({'chocolate', 'mineral water', '0'}),
confidence=0.20000000000000004, lift=3.7979746835443047),
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confidence=0.07853403141361257, lift=3.405108494991375),
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confidence=0.29702970297029707, lift=3.023093354111531)])
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confidence=0.14450867052023122, lift=4.044625140194979),
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confidence=0.39062500000000006, lift=4.098011363636364)])
RelationRecord(items=frozenset({'tomatoes', 'mineral water', 'frozen
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confidence=0.04483430799220273, lift=3.736690491661252),
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items_add=frozenset({'milk', '0', 'spaghetti'}), confidence=0.10749185667752444,
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confidence=0.12406015037593984, lift=3.0311895373613185),
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confidence=0.07366071428571429, lift=3.3486607142857148),
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items_add=frozenset({'ground beef', 'pancakes'}),
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confidence=0.08646616541353383, lift=3.6851290157211207),
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lift=3.6643090777791936), OrderedStatistic(items_base=frozenset({'shrimp',
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items_add=frozenset({'milk', 'mineral water', 'spaghetti'}),
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items_add=frozenset({'tomatoes', '0', 'spaghetti'}),
confidence=0.06944444444444445, lift=3.3178520877565467),
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items_add=frozenset({'tomatoes', 'mineral water', '0'}),
confidence=0.09398496240601503, lift=3.8523563005875343),
OrderedStatistic(items_base=frozenset({'tomatoes', 'milk'}),
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confidence=0.2380952380952381, lift=3.9865008503401365),
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items_add=frozenset({'tomatoes', 'milk', '0'}), confidence=0.05580357142857143,
lift=3.9865008503401365), OrderedStatistic(items_base=frozenset({'tomatoes',
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lift=3.0978458387022165)])
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