Lab1 Report

Dmitriy Timokhin, Hanson Egbert,Charlie Lou

Bakery 1000

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Dmitriys-MacBook-Pro:CSC466 Dima$ python3 lab1Run.py 1000-out1.csv .018 .9 goods.csv Bakery
Set #  1   [["'Vanilla'-'Meringue'"], 0.047]
Set #  2   [["'Ganache'-'Cookie'"], 0.044]
Set #  3   [["'Chocolate'-'Croissant'"], 0.042]
Set #  4   [["'Vanilla'-'Eclair'"], 0.037]
Set #  5   [["'Almond'-'Croissant'"], 0.049]
Set #  6   [["'Almond'-'Tart'"], 0.041]
Set #  7   [["'Almond'-'Bear Claw'"], 0.026]
Set #  8   [["'Chocolate'-'Eclair'"], 0.034]
Set #  9   [["'Blueberry'-'Danish'"], 0.055]
Set #  10   [["'Apricot'-'Tart'"], 0.056]
Set #  11   [["'Chocolate'-'Meringue'"], 0.038]
Set #  12   [["'Pecan'-'Tart'"], 0.04]
Set #  13   [["'Strawberry'-'Cake'", "'Napoleon'-'Cake'"], 0.049]
Set #  14   [["'Opera'-'Cake'", "'Apricot'-'Danish'"], 0.039]
Set #  15   [["'Cherry'-'Tart'", "'Apricot'-'Danish'"], 0.046]
Set #  16   [["'Berry'-'Tart'", "'Bottled'-'Water'"], 0.034]
Set #  17   [["'Opera'-'Cake'", "'Cherry'-'Tart'"], 0.041]
Set #  18   [["'Lemon'-'Cake'", "'Lemon'-'Tart'"], 0.04]
Set #  19   [["'Cheese'-'Croissant'", "'Orange'-'Juice'"], 0.038]
Set #  20   [["'Truffle'-'Cake'", "'Gongolais'-'Cookie'"], 0.058]
Set #  21   [["'Marzipan'-'Cookie'", "'Tuile'-'Cookie'"], 0.053]
Set #  22   [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Cherry'-'Soda'"], 0.031]
Set #  23   [["'Coffee'-'Eclair'", "'Blackberry'-'Tart'", "'Single'-'Espresso'"], 0.023]
Set #  24   [["'Apple'-'Croissant'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.031]
Set #  25   [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'"], 0.028]
Set #  26   [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Lemon'-'Lemonade'"], 0.028]
Set #  27   [["'Chocolate'-'Tart'", "'Walnut'-'Cookie'", "'Vanilla'-'Frappuccino'"], 0.018]
Set #  28   [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Hot'-'Coffee'"], 0.024]
Set #  29   [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Apple'-'Danish'"], 0.04]
Set #  30   [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'"], 0.029]
Set #  31   [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Almond'-'Twist'"], 0.027]
Set #  32   [["'Chocolate'-'Cake'", "'Casino'-'Cake'", "'Chocolate'-'Coffee'"], 0.038]
Set #  33   [["'Apple'-'Tart'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.031]
Set #  34   [["'Blueberry'-'Tart'", "'Apricot'-'Croissant'", "'Hot'-'Coffee'"], 0.032]
Set #  35   [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Green'-'Tea'"], 0.019]
Set #  36   [["'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.019]
Set #  37   [["'Coffee'-'Eclair'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.024]
Set #  38   [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Green'-'Tea'"], 0.019]
Set #  39   [["'Apple'-'Pie'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.024]
Set #  40   [["'Raspberry'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"],
0.019]
*****************************************
Rule:  0    'Cherry'-'Soda','Apple'-'Croissant'  -->  'Apple'-'Tart'
```

Support: 0.031
Confidence: 0.9393939393939394
Rule: 1 'Single'-'Espresso','Blackberry'-'Tart' --> 'Coffee'-'Eclair'
Support: 0.023
Confidence: 0.9583333333333334
Rule: 2 'Single'-'Espresso','Coffee'-'Eclair' --> 'Blackberry'-'Tart'
Support: 0.023
Confidence: 0.9583333333333334
Rule: 3 'Cherry'-'Soda','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.031
Confidence: 0.9393939393939394
Rule: 4 'Cherry'-'Soda','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.031
Confidence: 0.9393939393939394
Rule: 5 'Lemon'-'Lemonade','Raspberry'-'Lemonade' --> 'Lemon'-'Cookie'
Support: 0.028
Confidence: 0.9655172413793104
Rule: 6 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Lemon'-'Lemonade'
Support: 0.028
Confidence: 0.9333333333333333
Rule: 7 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Lemonade'
Support: 0.028
Confidence: 0.9032258064516129
Rule: 8 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.028
Confidence: 0.9032258064516129
Rule: 9 'Lemon'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.028
Confidence: 0.9032258064516129
Rule: 10 'Walnut'-'Cookie','Vanilla'-'Frappuccino' --> 'Chocolate'-'Tart'
Support: 0.018
Confidence: 1.0
Rule: 11 'Chocolate'-'Tart','Walnut'-'Cookie' --> 'Vanilla'-'Frappuccino'
Support: 0.018
Confidence: 1.0
Rule: 12 'Hot'-'Coffee','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.024
Confidence: 0.9230769230769231
Rule: 13 'Apple'-'Danish','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.04
Confidence: 0.9523809523809523
Rule: 14 'Apple'-'Tart','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.04
Confidence: 0.975609756097561
Rule: 15 'Apple'-'Tart','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.04
Confidence: 0.9090909090909091
Rule: 16 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Raspberry'-'Cookie'

Support: 0.029
Confidence: 0.9666666666666667
Rule: 17 'Raspberry'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.029
Confidence: 1.0
Rule: 18 'Apple'-'Pie','Almond'-'Twist' --> 'Coffee'-'Eclair'
Support: 0.027
Confidence: 0.9310344827586207
Rule: 19 'Almond'-'Twist','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.027
Confidence: 0.9
Rule: 20 'Casino'-'Cake','Chocolate'-'Coffee' --> 'Chocolate'-'Cake'
Support: 0.038
Confidence: 0.9743589743589743
Rule: 21 'Chocolate'-'Cake','Casino'-'Cake' --> 'Chocolate'-'Coffee'
Support: 0.038
Confidence: 0.95
Rule: 22 'Cherry'-'Soda','Apple'-'Danish' --> 'Apple'-'Tart'
Support: 0.031
Confidence: 0.9393939393939394
Rule: 23 'Apricot'-'Croissant','Hot'-'Coffee' --> 'Blueberry'-'Tart'
Support: 0.032
Confidence: 1.0
Rule: 24 'Blueberry'-'Tart','Hot'-'Coffee' --> 'Apricot'-'Croissant'
Support: 0.032
Confidence: 0.9696969696969697
Rule: 25 'Lemon'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.019
Confidence: 0.9047619047619048
Rule: 26 'Lemon'-'Cookie','Green'-'Tea' --> 'Lemon'-'Lemonade'
Support: 0.019
Confidence: 0.95
Rule: 27 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Lemonade'
Support: 0.019
Confidence: 0.95
Rule: 28 'Almond'-'Twist','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.024
Confidence: 0.96
Rule: 29 'Hot'-'Coffee','Coffee'-'Eclair' --> 'Almond'-'Twist'
Support: 0.024
Confidence: 0.9230769230769231
Rule: 30 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.019
Confidence: 0.95
Rule: 31 'Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.019
Confidence: 0.95
Rule: 32 'Almond'-'Twist','Hot'-'Coffee' --> 'Apple'-'Pie'

Support: 0.024
Confidence: 0.96
Rule: 33 'Lemon'-'Lemonade','Raspberry'-'Lemonade','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.019
Confidence: 1.0
Rule: 34 'Raspberry'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.019
Confidence: 1.0
Rule: 35 'Lemon'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.019
Confidence: 1.0

Bakery 5000

Set # 1 [["'Vanilla'-'Meringue'"], 0.0398]
Set # 2 [["'Ganache'-'Cookie'"], 0.0388]
Set # 3 [["'Chocolate'-'Croissant'"], 0.0432]
Set # 4 [["'Vanilla'-'Eclair'"], 0.046]
Set # 5 [["'Almond'-'Croissant'"], 0.0456]
Set # 6 [["'Almond'-'Tart'"], 0.0386]
Set # 7 [["'Almond'-'Bear Claw'"], 0.0428]
Set # 8 [["'Chocolate'-'Eclair'"], 0.0382]
Set # 9 [["'Blueberry'-'Danish'"], 0.04]
Set # 10 [["'Apricot'-'Tart'"], 0.0422]
Set # 11 [["'Chocolate'-'Meringue'"], 0.0452]
Set # 12 [["'Pecan'-'Tart'"], 0.0444]
Set # 13 [["'Strawberry'-'Cake'", "'Napoleon'-'Cake'"], 0.0422]
Set # 14 [["'Opera'-'Cake'", "'Apricot'-'Danish'"], 0.0432]
Set # 15 [["'Cherry'-'Tart'", "'Apricot'-'Danish'"], 0.0512]
Set # 16 [["'Berry'-'Tart'", "'Bottled'-'Water'"], 0.0366]
Set # 17 [["'Opera'-'Cake'", "'Cherry'-'Tart'"], 0.0436]
Set # 18 [["'Lemon'-'Cake'", "'Lemon'-'Tart'"], 0.0336]
Set # 19 [["'Cheese'-'Croissant'", "'Orange'-'Juice'"], 0.043]
Set # 20 [["'Truffle'-'Cake'", "'Gongolais'-'Cookie'"], 0.0472]
Set # 21 [["'Marzipan'-'Cookie'", "'Tuile'-'Cookie'"], 0.0496]
Set # 22 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Cherry'-'Soda'"], 0.023]
Set # 23 [["'Coffee'-'Eclair'", "'Blackberry'-'Tart'", "'Single'-'Espresso'"], 0.0286]
Set # 24 [["'Apple'-'Croissant'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.023]
Set # 25 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'"], 0.0264]
Set # 26 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Lemon'-'Lemonade'"], 0.0264]
Set # 27 [["'Chocolate'-'Tart'", "'Walnut'-'Cookie'", "'Vanilla'-'Frappuccino'"], 0.0266]
Set # 28 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Hot'-'Coffee'"], 0.0308]
Set # 29 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Apple'-'Danish'"], 0.0298]
Set # 30 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'"], 0.0262]

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Set # 31 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Almond'-'Twist'"], 0.0382]
Set # 32 [["'Chocolate'-'Cake'", "'Casino'-'Cake'", "'Chocolate'-'Coffee'"], 0.0312]
Set # 33 [["'Apple'-'Tart'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.0228]
Set # 34 [["'Blueberry'-'Tart'", "'Apricot'-'Croissant'", "'Hot'-'Coffee'"], 0.0328]
Set # 35 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Green'-'Tea'"], 0.0214]
Set # 36 [["'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.0212]
Set # 37 [["'Coffee'-'Eclair'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.0308]
Set # 38 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Green'-'Tea'"], 0.0214]
Set # 39 [["'Apple'-'Pie'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.0308]
Set # 40 [["'Raspberry'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.0212]

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Rule: 0 'Cherry'-'Soda','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.023
Confidence: 0.9126984126984127

Rule: 1 'Cherry'-'Soda','Apple'-'Tart' --> 'Apple'-'Croissant'
Support: 0.023
Confidence: 0.905511811023622

Rule: 2 'Single'-'Espresso','Blackberry'-'Tart' --> 'Coffee'-'Eclair'
Support: 0.0286
Confidence: 0.910828025477707

Rule: 3 'Single'-'Espresso','Coffee'-'Eclair' --> 'Blackberry'-'Tart'
Support: 0.0286
Confidence: 0.9662162162162162

Rule: 4 'Cherry'-'Soda','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.023
Confidence: 0.92

Rule: 5 'Cherry'-'Soda','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.023
Confidence: 0.9126984126984127

Rule: 6 'Lemon'-'Lemonade','Raspberry'-'Lemonade' --> 'Lemon'-'Cookie'
Support: 0.0264
Confidence: 0.9428571428571428

Rule: 7 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Lemon'-'Lemonade'
Support: 0.0264
Confidence: 0.9230769230769231

Rule: 8 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Lemonade'
Support: 0.0264
Confidence: 0.9428571428571428

Rule: 9 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.0264
Confidence: 0.9428571428571428

Rule: 10 'Lemon'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.0264
Confidence: 0.9496402877697842

Rule: 11 'Lemon'-'Cookie','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.0264
Confidence: 0.9295774647887324

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Rule: 12 'Chocolate'-'Tart','Walnut'-'Cookie' --> 'Vanilla'-'Frappuccino'
Support: 0.0266
Confidence: 0.9300699300699301
Rule: 13 'Apple'-'Pie','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.0308
Confidence: 0.9166666666666666
Rule: 14 'Hot'-'Coffee','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.0308
Confidence: 0.9112426035502958
Rule: 15 'Apple'-'Danish','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.0298
Confidence: 0.9030303030303031
Rule: 16 'Apple'-'Tart','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.0298
Confidence: 0.9197530864197531
Rule: 17 'Apple'-'Tart','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.0298
Confidence: 0.9430379746835443
Rule: 18 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.0262
Confidence: 0.916083916083916
Rule: 19 'Raspberry'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.0262
Confidence: 0.916083916083916
Rule: 20 'Lemon'-'Cookie','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.0262
Confidence: 0.9225352112676056
Rule: 21 'Apple'-'Pie','Almond'-'Twist' --> 'Coffee'-'Eclair'
Support: 0.0382
Confidence: 0.9695431472081218
Rule: 22 'Almond'-'Twist','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.0382
Confidence: 0.9271844660194175
Rule: 23 'Apple'-'Pie','Coffee'-'Eclair' --> 'Almond'-'Twist'
Support: 0.0382
Confidence: 0.9408866995073891
Rule: 24 'Casino'-'Cake','Chocolate'-'Coffee' --> 'Chocolate'-'Cake'
Support: 0.0312
Confidence: 0.9017341040462428
Rule: 25 'Chocolate'-'Cake','Casino'-'Cake' --> 'Chocolate'-'Coffee'
Support: 0.0312
Confidence: 0.9122807017543859
Rule: 26 'Cherry'-'Soda','Apple'-'Danish' --> 'Apple'-'Tart'
Support: 0.0228
Confidence: 0.912
Rule: 27 'Apricot'-'Croissant','Hot'-'Coffee' --> 'Blueberry'-'Tart'
Support: 0.0328
Confidence: 0.9425287356321839

Rule: 28 'Blueberry'-'Tart','Hot'-'Coffee' --> 'Apricot'-'Croissant'
Support: 0.0328
Confidence: 0.9371428571428572
Rule: 29 'Lemon'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.0214
Confidence: 0.9304347826086956
Rule: 30 'Almond'-'Twist','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.0308
Confidence: 0.9166666666666666
Rule: 31 'Hot'-'Coffee','Coffee'-'Eclair' --> 'Almond'-'Twist'
Support: 0.0308
Confidence: 0.9112426035502958
Rule: 32 'Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.0214
Confidence: 0.9224137931034483
Rule: 33 'Almond'-'Twist','Hot'-'Coffee' --> 'Apple'-'Pie'
Support: 0.0308
Confidence: 0.9166666666666666
Rule: 34 'Apple'-'Pie','Hot'-'Coffee' --> 'Almond'-'Twist'
Support: 0.0308
Confidence: 0.9166666666666666
Rule: 35 'Lemon'-'Lemonade','Raspberry'-'Lemonade','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.0212
Confidence: 1.0
Rule: 36 'Raspberry'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.0212
Confidence: 1.0
Rule: 37 'Lemon'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.0212
Confidence: 1.0

Bakery 20000

Dmitriys-MacBook-Pro:CSC466 Dima$ python3 lab1Run.py 20000-out1.csv .02 .9 goods.csv Bakery
Set # 1 [["'Vanilla'-'Meringue'"], 0.0424]
Set # 2 [["'Ganache'-'Cookie'"], 0.0433]
Set # 3 [["'Chocolate'-'Croissant'"], 0.0446]
Set # 4 [["'Vanilla'-'Eclair'"], 0.0427]
Set # 5 [["'Almond'-'Croissant'"], 0.04205]
Set # 6 [["'Almond'-'Tart'"], 0.04055]
Set # 7 [["'Almond'-'Bear Claw'"], 0.04425]
Set # 8 [["'Chocolate'-'Eclair'"], 0.0426]
Set # 9 [["'Blueberry'-'Danish'"], 0.04115]

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Set # 10 [["'Apricot'-'Tart'"], 0.04275]
Set # 11 [["'Chocolate'-'Meringue'"], 0.0445]
Set # 12 [["'Pecan'-'Tart'"], 0.04155]
Set # 13 [["'Strawberry'-'Cake'", "'Napoleon'-'Cake'"], 0.04455]
Set # 14 [["'Opera'-'Cake'", "'Apricot'-'Danish'"], 0.04335]
Set # 15 [["'Cherry'-'Tart'", "'Apricot'-'Danish'"], 0.05255]
Set # 16 [["'Berry'-'Tart'", "'Bottled'-'Water'"], 0.0357]
Set # 17 [["'Opera'-'Cake'", "'Cherry'-'Tart'"], 0.04365]
Set # 18 [["'Lemon'-'Cake'", "'Lemon'-'Tart'"], 0.037]
Set # 19 [["'Cheese'-'Croissant'", "'Orange'-'Juice'"], 0.0439]
Set # 20 [["'Truffle'-'Cake'", "'Gongolais'-'Cookie'"], 0.04335]
Set # 21 [["'Marzipan'-'Cookie'", "'Tuile'-'Cookie'"], 0.04855]
Set # 22 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Cherry'-'Soda'"], 0.02115]
Set # 23 [["'Coffee'-'Eclair'", "'Blackberry'-'Tart'", "'Single'-'Espresso'"], 0.02695]
Set # 24 [["'Apple'-'Croissant'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.02125]
Set # 25 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'"], 0.0256]
Set # 26 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Lemon'-'Lemonade'"], 0.02555]
Set # 27 [["'Chocolate'-'Tart'", "'Walnut'-'Cookie'", "'Vanilla'-'Frappuccino'"], 0.02825]
Set # 28 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Hot'-'Coffee'"], 0.0282]
Set # 29 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Apple'-'Danish'"], 0.026]
Set # 30 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'"], 0.0256]
Set # 31 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Almond'-'Twist'"], 0.03415]
Set # 32 [["'Chocolate'-'Cake'", "'Casino'-'Cake'", "'Chocolate'-'Coffee'"], 0.0339]
Set # 33 [["'Apple'-'Tart'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.0211]
Set # 34 [["'Blueberry'-'Tart'", "'Apricot'-'Croissant'", "'Hot'-'Coffee'"], 0.0326]
Set # 35 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Green'-'Tea'"], 0.02055]
Set # 36 [["'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.02055]
Set # 37 [["'Coffee'-'Eclair'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.02815]
Set # 38 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Green'-'Tea'"], 0.02055]
Set # 39 [["'Apple'-'Pie'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.02825]
Set # 40 [["'Raspberry'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.02045]

****

Rule: 0 'Cherry'-'Soda','Apple'-'Tart' --> 'Apple'-'Croissant'
Support: 0.02115
Confidence: 0.9175704989154013

Rule: 1 'Single'-'Espresso','Coffee'-'Eclair' --> 'Blackberry'-'Tart'
Support: 0.02695
Confidence: 0.9197952218430034

Rule: 2 'Cherry'-'Soda','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.02125
Confidence: 0.9023354564755839

Rule: 3 'Lemon'-'Lemonade','Raspberry'-'Lemonade' --> 'Lemon'-'Cookie'
Support: 0.0256

Confidence: 0.9534450651769087
Rule: 4 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Lemon'-'Lemonade'
Support: 0.0256
Confidence: 0.9014084507042254
Rule: 5 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Lemonade'
Support: 0.0256
Confidence: 0.9225225225225225
Rule: 6 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.02555
Confidence: 0.9207207207207208
Rule: 7 'Lemon'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.02555
Confidence: 0.9141323792486583
Rule: 8 'Walnut'-'Cookie','Vanilla'-'Frappuccino' --> 'Chocolate'-'Tart'
Support: 0.02825
Confidence: 0.9127625201938611
Rule: 9 'Chocolate'-'Tart','Walnut'-'Cookie' --> 'Vanilla'-'Frappuccino'
Support: 0.02825
Confidence: 0.9247135842880524
Rule: 10 'Apple'-'Pie','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.0282
Confidence: 0.9141004862236629
Rule: 11 'Apple'-'Danish','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.026
Confidence: 0.9090909090909091
Rule: 12 'Apple'-'Tart','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.026
Confidence: 0.9252669039145908
Rule: 13 'Apple'-'Tart','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.026
Confidence: 0.9043478260869565
Rule: 14 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.0256
Confidence: 0.9014084507042254
Rule: 15 'Raspberry'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.0256
Confidence: 0.9225225225225225
Rule: 16 'Apple'-'Pie','Almond'-'Twist' --> 'Coffee'-'Eclair'
Support: 0.03415
Confidence: 0.9499304589707928
Rule: 17 'Almond'-'Twist','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.03415
Confidence: 0.9420689655172414
Rule: 18 'Apple'-'Pie','Coffee'-'Eclair' --> 'Almond'-'Twist'

Support: 0.03415
Confidence: 0.9167785234899329
Rule: 19 'Casino'-'Cake','Chocolate'-'Coffee' --> 'Chocolate'-'Cake'
Support: 0.0339
Confidence: 0.9495798319327731
Rule: 20 'Chocolate'-'Cake','Casino'-'Cake' --> 'Chocolate'-'Coffee'
Support: 0.0339
Confidence: 0.9456066945606695
Rule: 21 'Cherry'-'Soda','Apple'-'Tart' --> 'Apple'-'Danish'
Support: 0.0211
Confidence: 0.9154013015184381
Rule: 22 'Apricot'-'Croissant','Hot'-'Coffee' --> 'Blueberry'-'Tart'
Support: 0.0326
Confidence: 0.9287749287749287
Rule: 23 'Blueberry'-'Tart','Hot'-'Coffee' --> 'Apricot'-'Croissant'
Support: 0.0326
Confidence: 0.9131652661064426
Rule: 24 'Lemon'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.02055
Confidence: 0.9194630872483222
Rule: 25 'Lemon'-'Cookie','Green'-'Tea' --> 'Lemon'-'Lemonade'
Support: 0.02055
Confidence: 0.92152466367713
Rule: 26 'Raspberry'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.02055
Confidence: 0.9194630872483222
Rule: 27 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Lemonade'
Support: 0.02055
Confidence: 0.92152466367713
Rule: 28 'Almond'-'Twist','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.02815
Confidence: 0.9124797406807131
Rule: 29 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.02055
Confidence: 0.92152466367713
Rule: 30 'Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.02055
Confidence: 0.9072847682119205
Rule: 31 'Almond'-'Twist','Hot'-'Coffee' --> 'Apple'-'Pie'
Support: 0.02825
Confidence: 0.9157212317666127
Rule: 32 'Apple'-'Pie','Hot'-'Coffee' --> 'Almond'-'Twist'
Support: 0.02825
Confidence: 0.9157212317666127

Rule: 33 'Lemon'-'Lemonade','Raspberry'-'Lemonade','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.02045
Confidence: 0.9951338199513382
Rule: 34 'Raspberry'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.02045
Confidence: 0.9975609756097561
Rule: 35 'Lemon'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.02045
Confidence: 0.9903147699757869

Bakery 75000

Dmitriys-MacBook-Pro:CSC466 Dima$ python3 lab1Run.py 75000-out1.csv .02 .9 goods.csv Bakery
Set # 1 [["'Vanilla'-'Meringue'"], 0.04238666666666667]
Set # 2 [["'Ganache'-'Cookie'"], 0.04324]
Set # 3 [["'Chocolate'-'Croissant'"], 0.04324]
Set # 4 [["'Vanilla'-'Eclair'"], 0.04252]
Set # 5 [["'Almond'-'Croissant'"], 0.04273333333333333]
Set # 6 [["'Almond'-'Tart'"], 0.04204]
Set # 7 [["'Almond'-'Bear Claw'"], 0.04244]
Set # 8 [["'Chocolate'-'Eclair'"], 0.04237333333333333]
Set # 9 [["'Blueberry'-'Danish'"], 0.04409333333333333]
Set # 10 [["'Apricot'-'Tart'"], 0.04236]
Set # 11 [["'Chocolate'-'Meringue'"], 0.041933333333333336]
Set # 12 [["'Pecan'-'Tart'"], 0.04337333333333333]
Set # 13 [["'Strawberry'-'Cake'", "'Napoleon'-'Cake'"], 0.043146666666666667]
Set # 14 [["'Opera'-'Cake'", "'Apricot'-'Danish'"], 0.043026666666666664]
Set # 15 [["'Cherry'-'Tart'", "'Apricot'-'Danish'"], 0.05309333333333333]
Set # 16 [["'Berry'-'Tart'", "'Bottled'-'Water'"], 0.0378]
Set # 17 [["'Opera'-'Cake'", "'Cherry'-'Tart'"], 0.04337333333333333]
Set # 18 [["'Lemon'-'Cake'", "'Lemon'-'Tart'"], 0.036853333333333335]
Set # 19 [["'Cheese'-'Croissant'", "'Orange'-'Juice'"], 0.04306666666666667]
Set # 20 [["'Truffle'-'Cake'", "'Gongolais'-'Cookie'"], 0.04392]
Set # 21 [["'Marzipan'-'Cookie'", "'Tuile'-'Cookie'"], 0.05092]
Set # 22 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Cherry'-'Soda'"], 0.020773333333333335]
Set # 23 [["'Coffee'-'Eclair'", "'Blackberry'-'Tart'", "'Single'-'Espresso'"], 0.0272]
Set # 24 [["'Apple'-'Croissant'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.0208]
Set # 25 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'"],
0.025626666666666666]
Set # 26 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Lemon'-'Lemonade'"], 0.02576]
Set # 27 [["'Chocolate'-'Tart'", "'Walnut'-'Cookie'", "'Vanilla'-'Frappuccino'"], 0.02676]
Set # 28 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Hot'-'Coffee'"], 0.028093333333333335]
Set # 29 [["'Apple'-'Tart'", "'Apple'-'Croissant'", "'Apple'-'Danish'"], 0.025506666666666667]

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Set # 30 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'"], 0.02568]
Set # 31 [["'Coffee'-'Eclair'", "'Apple'-'Pie'", "'Almond'-'Twist'"], 0.03432]
Set # 32 [["'Chocolate'-'Cake'", "'Casino'-'Cake'", "'Chocolate'-'Coffee'"], 0.03338666666666667]
Set # 33 [["'Apple'-'Tart'", "'Apple'-'Danish'", "'Cherry'-'Soda'"], 0.020733333333333333]
Set # 34 [["'Blueberry'-'Tart'", "'Apricot'-'Croissant'", "'Hot'-'Coffee'"], 0.032826666666666664]
Set # 35 [["'Lemon'-'Cookie'", "'Lemon'-'Lemonade'", "'Green'-'Tea'"], 0.020853333333333335]
Set # 36 [["'Lemon'-'Cookie'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.020933333333333335]
Set # 37 [["'Coffee'-'Eclair'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.02812]
Set # 38 [["'Raspberry'-'Cookie'", "'Lemon'-'Cookie'", "'Green'-'Tea'"], 0.020773333333333335]
Set # 39 [["'Apple'-'Pie'", "'Almond'-'Twist'", "'Hot'-'Coffee'"], 0.028053333333333333]
Set # 40 [["'Raspberry'-'Cookie'", "'Lemon'-'Lemonade'", "'Raspberry'-'Lemonade'", "'Green'-'Tea'"], 0.020746666666666667]
****

Rule: 0 'Cherry'-'Soda','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.020773333333333335
Confidence: 0.9073966220151427

Rule: 1 'Cherry'-'Soda','Apple'-'Tart' --> 'Apple'-'Croissant'
Support: 0.020773333333333335
Confidence: 0.9116442363955529

Rule: 2 'Single'-'Espresso','Blackberry'-'Tart' --> 'Coffee'-'Eclair'
Support: 0.0272
Confidence: 0.9230769230769231

Rule: 3 'Single'-'Espresso','Coffee'-'Eclair' --> 'Blackberry'-'Tart'
Support: 0.0272
Confidence: 0.9222423146473779

Rule: 4 'Cherry'-'Soda','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.0208
Confidence: 0.9085614443797321

Rule: 5 'Lemon'-'Lemonade','Raspberry'-'Lemonade' --> 'Lemon'-'Cookie'
Support: 0.025626666666666666
Confidence: 0.9204980842911877

Rule: 6 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Lemon'-'Lemonade'
Support: 0.025626666666666666
Confidence: 0.920939147101102

Rule: 7 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Lemonade'
Support: 0.025626666666666666
Confidence: 0.9213806327900288

Rule: 8 'Lemon'-'Cookie','Lemon'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.02576
Confidence: 0.9261744966442953

Rule: 9 'Lemon'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.02576
Confidence: 0.9195621132793907

Rule: 10 'Lemon'-'Cookie','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.02576
Confidence: 0.9257307139434595

Rule: 11 'Walnut'-'Cookie','Vanilla'-'Frappuccino' --> 'Chocolate'-'Tart'
Support: 0.02676

Confidence: 0.9396067415730337
Rule: 12 'Chocolate'-'Tart','Walnut'-'Cookie' --> 'Vanilla'-'Frappuccino'
Support: 0.02676
Confidence: 0.9369747899159664
Rule: 13 'Apple'-'Pie','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.028093333333333335
Confidence: 0.9054576708207993
Rule: 14 'Apple'-'Danish','Apple'-'Croissant' --> 'Apple'-'Tart'
Support: 0.025506666666666667
Confidence: 0.9144359464627151
Rule: 15 'Apple'-'Tart','Apple'-'Danish' --> 'Apple'-'Croissant'
Support: 0.025506666666666667
Confidence: 0.9157491622786021
Rule: 16 'Apple'-'Tart','Apple'-'Croissant' --> 'Apple'-'Danish'
Support: 0.025506666666666667
Confidence: 0.9161877394636015
Rule: 17 'Lemon'-'Cookie','Raspberry'-'Lemonade' --> 'Raspberry'-'Cookie'
Support: 0.02568
Confidence: 0.9228557738380451
Rule: 18 'Raspberry'-'Lemonade','Raspberry'-'Cookie' --> 'Lemon'-'Cookie'
Support: 0.02568
Confidence: 0.9264069264069265
Rule: 19 'Lemon'-'Cookie','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.02568
Confidence: 0.9228557738380451
Rule: 20 'Apple'-'Pie','Almond'-'Twist' --> 'Coffee'-'Eclair'
Support: 0.03432
Confidence: 0.935659760087241
Rule: 21 'Almond'-'Twist','Coffee'-'Eclair' --> 'Apple'-'Pie'
Support: 0.03432
Confidence: 0.9245689655172413
Rule: 22 'Apple'-'Pie','Coffee'-'Eclair' --> 'Almond'-'Twist'
Support: 0.03432
Confidence: 0.9209302325581395
Rule: 23 'Casino'-'Cake','Chocolate'-'Coffee' --> 'Chocolate'-'Cake'
Support: 0.03338666666666667
Confidence: 0.9474082482027999
Rule: 24 'Chocolate'-'Cake','Casino'-'Cake' --> 'Chocolate'-'Coffee'
Support: 0.03338666666666667
Confidence: 0.9395872420262664
Rule: 25 'Cherry'-'Soda','Apple'-'Tart' --> 'Apple'-'Danish'
Support: 0.020733333333333333
Confidence: 0.9098888238736103
Rule: 26 'Apricot'-'Croissant','Hot'-'Coffee' --> 'Blueberry'-'Tart'
Support: 0.032826666666666664
Confidence: 0.9280060309084056
Rule: 27 'Blueberry'-'Tart','Hot'-'Coffee' --> 'Apricot'-'Croissant'
Support: 0.032826666666666664

Confidence: 0.936834094368341
Rule: 28 'Lemon'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.020853333333333335
Confidence: 0.9056166763173132
Rule: 29 'Lemon'-'Cookie','Green'-'Tea' --> 'Lemon'-'Lemonade'
Support: 0.020853333333333335
Confidence: 0.903523974581167
Rule: 30 'Raspberry'-'Lemonade','Green'-'Tea' --> 'Lemon'-'Cookie'
Support: 0.020933333333333335
Confidence: 0.9133216986620128
Rule: 31 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Lemonade'
Support: 0.020933333333333335
Confidence: 0.9069901790872328
Rule: 32 'Almond'-'Twist','Hot'-'Coffee' --> 'Coffee'-'Eclair'
Support: 0.02812
Confidence: 0.9094437257438551
Rule: 33 'Lemon'-'Cookie','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.020773333333333335
Confidence: 0.9000577700751011
Rule: 34 'Almond'-'Twist','Hot'-'Coffee' --> 'Apple'-'Pie'
Support: 0.028053333333333333
Confidence: 0.9072876239758516
Rule: 35 'Apple'-'Pie','Hot'-'Coffee' --> 'Almond'-'Twist'
Support: 0.028053333333333333
Confidence: 0.904168457241083
Rule: 36 'Lemon'-'Lemonade','Raspberry'-'Lemonade','Green'-'Tea' --> 'Raspberry'-'Cookie'
Support: 0.020746666666666667
Confidence: 0.9974358974358974
Rule: 37 'Raspberry'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Lemon'-'Lemonade'
Support: 0.020746666666666667
Confidence: 0.9948849104859335
Rule: 38 'Lemon'-'Lemonade','Green'-'Tea','Raspberry'-'Cookie' --> 'Raspberry'-'Lemonade'
Support: 0.020746666666666667
Confidence: 0.9942492012779552

Bingo

This dataset contained a few interesting frequent item sets. As you can see Set # 24 has a support of .2 which is really high compared to the other market baskets of size two. Furthermore, Brandon Sanderson and Josiah Bancroft appeared a decent amount of the time, so that makes me think that a lot of people read both of those authors. These two authors appeared in every frequent item set of size two. Also it looks like a lot of authors read Robin Hobb/Megan Lindolm but they didn't seem to have any association with any other authors.

Dmitriys-MacBook-Pro:CSC466 Dima$ python3 lab1Run.py bingoBaskets.csv .15 .9 authors.psv Bingo
Set # 1 [[' Lynch, Scott'], 0.19753086419753085]
Set # 2 [[' Rowe, Andrew'], 0.24279835390946503]

Set # 3 [[' Mieville, China'], 0.25925925925925924]
Set # 4 [[' Chambers, Becky'], 0.205761316872428]
Set # 5 [[' Brennan, Marie'], 0.2757201646090535]
Set # 6 [[' Eames, Nicholas'], 0.26337448559670784]
Set # 7 [[' Addison, Katherine / Monette, Sarah'], 0.24691358024691357]
Set # 8 [[' Hobb, Robin / Lindholm, Megan'], 0.2839506172839506]
Set # 9 [[' Novik, Naomi'], 0.26337448559670784]
Set # 10 [[' Schafer, Courtney'], 0.16049382716049382]
Set # 11 [[' VanderMeer, Jeff'], 0.2345679012345679]
Set # 12 [[' McClellan, Brian'], 0.1728395061728395]
Set # 13 [[' Gladstone, Max'], 0.18106995884773663]
Set # 14 [[' Valente, Catherynne M.'], 0.205761316872428]
Set # 15 [[' Arden, Katherine'], 0.205761316872428]
Set # 16 [[' Ball, Krista D. / Ball, K.'], 0.20164609053497942]
Set # 17 [[' King, Stephen'], 0.18106995884773663]
Set # 18 [[' Sullivan, Michael J.'], 0.23045267489711935]
Set # 19 [[' Aaron, Rachel / Bach, Rachel'], 0.2345679012345679]
Set # 20 [[' Butcher, Jim'], 0.16049382716049382]
Set # 21 [[' Le Guin, Ursula K.'], 0.2345679012345679]
Set # 22 [[' Abercrombie, Joe'], 0.18106995884773663]
Set # 23 [[' Lawrence, Mark', ' Sanderson, Brandon'], 0.16049382716049382]
Set # 24 [[' Bancroft, Josiah', ' Sanderson, Brandon'], 0.205761316872428]
Set # 25 [[' Gaiman, Neil', ' Sanderson, Brandon'], 0.1522633744855967]
Set # 26 [[' Bancroft, Josiah', ' Lawrence, Mark'], 0.1728395061728395]
Set # 27 [[' Bancroft, Josiah', ' Pratchett, Terry'], 0.1646090534979424]
Set # 28 [[' Jemisin, N. K.', ' Sanderson, Brandon'], 0.16872427983539096]

Transcription

We decided to treat each combination of transcription factor and its occurrence count as a unique item in each market basket. Using solely transcription factors proved to be extremely slow. This result is interesting nonetheless with all the items proving to be (transcription factor, 1) with occurrence one. Furthermore, all of them had a support of about .393. There were approximately 270 association rules for this output of frequent item sets. All with a confidence of approximately one.

Dmitriys-MacBook-Pro:CSC466 Dima$ python3 lab1Run.py factor_baskets_sparse.csv .39 .8 factors.csv Transcription
Set # 1 [[('NF-1', 1)], 0.391304347826087]
Set # 2 [[('CTF', 1)], 0.391304347826087]
Set # 3 [[('Myf-5', 1)], 0.391304347826087]
Set # 4 [[('CBF-A', 1), ('CBF-B', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 5 [[('CBF-B', 1), ('NF-Y', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 6 [[('CBF-A', 1), ('CP1C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 7 [[('CBF-B', 1), ('NF-YC', 1), ('CP1A', 1)], 0.391304347826087]
Set # 8 [[('CBF-B', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 9 [[('CBF-A', 1), ('CBF-B', 1), ('CP1C', 1)], 0.391304347826087]

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Set # 10 [[('NF-YC', 1), ('CP1A', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 11 [[('CBF-A', 1), ('NF-YC', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 12 [[('CBF-B', 1), ('NF-YC', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 13 [[('CBF-B', 1), ('CP1C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 14 [[('CBF-A', 1), ('NF-YC', 1), ('CP1A', 1)], 0.391304347826087]
Set # 15 [[('CBF-B', 1), ('NF-YC', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 16 [[('NF-YB', 1), ('CP1A', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 17 [[('CP1A', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 18 [[('CBF-C', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 19 [[('CBF-A', 1), ('CBF-C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 20 [[('CP1A', 1), ('CP1C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 21 [[('CBF-A', 1), ('NF-Y', 1), ('CP1C', 1)], 0.391304347826087]
Set # 22 [[('CBF-A', 1), ('CP1A', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 23 [[('CBF-A', 1), ('NF-Y', 1), ('CP1A', 1)], 0.391304347826087]
Set # 24 [[('CP1A', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 25 [[('CBF-A', 1), ('NF-Y', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 26 [[('CBF-A', 1), ('CP1C', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 27 [[('CBF-A', 1), ('CBF-B', 1), ('NF-YB', 1)], 0.391304347826087]
Set # 28 [[('CP1C', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 29 [[('CBF-A', 1), ('NF-YB', 1), ('CP1A', 1)], 0.391304347826087]
Set # 30 [[('CBF-A', 1), ('CBF-B', 1), ('NF-Y', 1)], 0.391304347826087]
Set # 31 [[('NF-Y', 1), ('CP1A', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 32 [[('NF-YC', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 33 [[('NF-YB', 1), ('NF-YC', 1), ('CP1A', 1)], 0.391304347826087]
Set # 34 [[('CBF-A', 1), ('CBF-B', 1), ('CP1A', 1)], 0.391304347826087]
Set # 35 [[('NF-Y', 1), ('CP1C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 36 [[('CP1A', 1), ('CBF-C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 37 [[('CBF-A', 1), ('NF-YC', 1), ('CP1C', 1)], 0.391304347826087]
Set # 38 [[('NF-YB', 1), ('CP1A', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 39 [[('NF-YC', 1), ('CP1A', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 40 [[('CBF-A', 1), ('NF-YC', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 41 [[('CBF-B', 1), ('CP1A', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 42 [[('CP1A', 1), ('CP1C', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 43 [[('NF-YC', 1), ('CP1A', 1), ('CP1C', 1)], 0.391304347826087]
Set # 44 [[('NF-YC', 1), ('CP1A', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 45 [[('CBF-B', 1), ('CP1A', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 46 [[('NF-YC', 1), ('CP1C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 47 [[('CBF-B', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 48 [[('CBF-A', 1), ('CP1A', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 49 [[('CBF-A', 1), ('CBF-B', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 50 [[('NF-Y', 1), ('NF-YC', 1), ('CP1A', 1)], 0.391304347826087]
Set # 51 [[('CBF-A', 1), ('CBF-B', 1), ('NF-YC', 1)], 0.391304347826087]
Set # 52 [[('NF-Y', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 53 [[('NF-Y', 1), ('CP1A', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 54 [[('CBF-B', 1), ('NF-YB', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 55 [[('CBF-A', 1), ('NF-YB', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 56 [[('CBF-A', 1), ('CP1A', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 57 [[('CP1C', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]

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Set # 58 [[('NF-YB', 1), ('NF-YA', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 59 [[('CBF-A', 1), ('NF-YB', 1), ('CP1C', 1)], 0.391304347826087]
Set # 60 [[('CBF-A', 1), ('CP1A', 1), ('CP1C', 1)], 0.391304347826087]
Set # 61 [[('NF-YB', 1), ('CP1C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 62 [[('CBF-B', 1), ('NF-Y', 1), ('NF-YB', 1), ('CP1A', 1)], 0.391304347826087]
Set # 63 [[('CBF-B', 1), ('NF-YB', 1), ('CP1A', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 64 [[('NF-Y', 1), ('NF-YB', 1), ('NF-YC', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 65 [[('CBF-A', 1), ('NF-Y', 1), ('NF-YB', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 66 [[('CBF-B', 1), ('NF-Y', 1), ('CP1A', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 67 [[('CBF-A', 1), ('NF-Y', 1), ('NF-YB', 1), ('NF-YC', 1)], 0.391304347826087]
Set # 68 [[('CBF-A', 1), ('NF-YB', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 69 [[('CBF-A', 1), ('NF-Y', 1), ('NF-YC', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 70 [[('NF-Y', 1), ('NF-YB', 1), ('CP1A', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 71 [[('NF-YB', 1), ('CP1A', 1), ('CP1C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 72 [[('NF-Y', 1), ('CP1A', 1), ('CP1C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 73 [[('CBF-A', 1), ('NF-Y', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 74 [[('CBF-A', 1), ('NF-Y', 1), ('NF-YB', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 75 [[('CBF-B', 1), ('NF-Y', 1), ('CP1A', 1), ('CP1C', 1)], 0.391304347826087]
Set # 76 [[('NF-Y', 1), ('NF-YC', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 77 [[('NF-Y', 1), ('NF-YB', 1), ('CP1A', 1), ('CP1C', 1)], 0.391304347826087]
Set # 78 [[('CBF-B', 1), ('NF-YB', 1), ('CP1A', 1), ('CP1C', 1)], 0.391304347826087]
Set # 79 [[('CBF-A', 1), ('NF-YB', 1), ('NF-YC', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 80 [[('NF-Y', 1), ('NF-YB', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 81 [[('NF-YB', 1), ('NF-YC', 1), ('CBF-C', 1), ('NF-YA', 1)], 0.391304347826087]
Set # 82 [[('CBF-B', 1), ('NF-Y', 1), ('NF-YB', 1), ('CBF-C', 1), ('CBF_(2)', 1)], 0.391304347826087]
Set # 83 [[('CBF-B', 1), ('NF-Y', 1), ('NF-YB', 1), ('NF-YC', 1), ('CP1C', 1), ('CBF-C', 1)], 0.391304347826087]
Set # 84 [[('NF-Y', 1), ('NF-YB', 1), ('NF-YC', 1), ('CP1C', 1), ('CBF-C', 1), ('CBF_(2)', 1)], 0.391304347826087]