**Bakery 1000**

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]

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]

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

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

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]

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]

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]

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]

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]