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data = [
    ['T100', ['Bread', 'Butter', 'Chips']],
    ['T200', ['Butter', 'Milk']],
    ['T300', ['Butter', 'Cheese']],
    ['T400', ['Bread', 'Butter', 'Milk']],
    ['T500', ['Bread', 'Cheese']],
    ['T600', ['Butter', 'Cheese']],
    ['T700', ['Bread', 'Cheese']],
    ['T800', ['Bread', 'Butter', 'Cheese', 'Chips']],
    ['T900', ['Bread', 'Butter', 'Cheese']],
]

init = []
for i in data:
    for q in i[1]:
        if(q not in init):
            init.append(q)
init = sorted(init)
print(init)

sp = 0.5
s = int(sp*len(init))

from collections import Counter

c = Counter()
for i in init:
    for d in data:
        if(i in d[1]):
            c[i]+=1
print("C1:")
for i in c:
    print(str([i])+"": "+str(c[i]))
print()
l = Counter()
for i in c:
    if(c[i] >= s):
        l[frozenset([i])]+=c[i]
print("L1:")
for i in l:
    print(str(list(i))+"": "+str(l[i]))
print()
pl = l
pos = 1
for count in range (2,1000):
    nc = set()
    temp = list(pl)
    for i in range(0,len(temp)):

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        for j in range(i+1, len(temp)):
            t = temp[i].union(temp[j])
            if(len(t) == count):
                nc.add(temp[i].union(temp[j]))
nc = list(nc)
c = Counter()
for i in nc:
    c[i] = 0
    for q in data:
        temp = set(q[1])
        if(i.issubset(temp)):
            c[i]+=1
print("C"+str(count)+":")
for i in c:
    print(str(list(i))+": "+str(c[i]))
print()
l = Counter()
for i in c:
    if(c[i] >= s):
        l[i]+=c[i]
print("L"+str(count)+":")
for i in l:
    print(str(list(i))+": "+str(l[i]))
print()
if(len(l) == 0):
    break
p1 = l
pos = count
print("Result: ")
print("L"+str(pos)+":")
for i in p1:
    print(str(list(i))+": "+str(p1[i]))
print()

from itertools import combinations
for l in p1:
    c = [frozenset(q) for q in combinations(l, len(l)-1)]
    mmax = 0
    for a in c:
        b = l-a
        ab = l
        sab = 0
        sa = 0
        sb = 0
        for q in data:
            temp = set(q[1])
            if(a.issubset(temp)):
                sa+=1

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        if(b.issubset(temp)):
            sb+=1
        if(ab.issubset(temp)):
            sab+=1
    temp = sab/sa*100
    if(temp > mmax):
        mmax = temp
    temp = sab/sb*100
    if(temp > mmax):
        mmax = temp
    print(str(list(a))+" -> "+str(list(b))+" = "+str(sab/sa*100)+"%")
    print(str(list(b))+" -> "+str(list(a))+" = "+str(sab/sb*100)+"%")
curr = 1
print("choosing:", end=' ')
for a in c:
    b = 1-a
    ab = 1
    sab = 0
    sa = 0
    sb = 0
    for q in data:
        temp = set(q[1])
        if(a.issubset(temp)):
            sa+=1
        if(b.issubset(temp)):
            sb+=1
        if(ab.issubset(temp)):
            sab+=1
    temp = sab/sa*100
    if(temp == mmax):
        print(curr, end = ' ')
    curr += 1
    temp = sab/sb*100
    if(temp == mmax):
        print(curr, end = ' ')
    curr += 1
print()
print()

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PS C:\Users\Prajwal Dhule> python -u "c:\Users\Prajwal Dhule
['Bread', 'Butter', 'Cheese', 'Chips', 'Milk']
C1:
['Bread']: 6
['Butter']: 7
['Cheese']: 6
['Chips']: 2
['Milk']: 2

L1:
['Bread']: 6
['Butter']: 7
['Cheese']: 6
['Chips']: 2
['Milk']: 2

C2:
['Chips', 'Bread']: 2
['Milk', 'Bread']: 1
['Bread', 'Cheese']: 4
['Butter', 'Bread']: 4
['Milk', 'Cheese']: 0
['Chips', 'Cheese']: 1
['Milk', 'Chips']: 0
['Chips', 'Butter']: 2
['Milk', 'Butter']: 2
['Butter', 'Cheese']: 4
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L2:
['Chips', 'Bread']: 2
['Bread', 'Cheese']: 4
['Butter', 'Bread']: 4
['Chips', 'Butter']: 2
['Milk', 'Butter']: 2
['Butter', 'Cheese']: 4

C3:
['Milk', 'Butter', 'Cheese']: 0
['Chips', 'Butter', 'Cheese']: 1
['Butter', 'Bread', 'Cheese']: 2
['Butter', 'Milk', 'Bread']: 1
['Butter', 'Chips', 'Bread']: 2
['Chips', 'Bread', 'Cheese']: 1
['Milk', 'Chips', 'Butter']: 0

L3:
['Butter', 'Bread', 'Cheese']: 2
['Butter', 'Chips', 'Bread']: 2

C4:
['Bread', 'Chips', 'Butter', 'Cheese']: 1

L4:

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Result:
L3:
['Butter', 'Bread', 'Cheese']: 2
['Butter', 'Chips', 'Bread']: 2

['Bread', 'Butter'] -> ['Cheese'] = 50.0%
['Cheese'] -> ['Bread', 'Butter'] = 33.33333333333333%
['Butter', 'Cheese'] -> ['Bread'] = 50.0%
['Bread'] -> ['Butter', 'Cheese'] = 33.33333333333333%
['Bread', 'Cheese'] -> ['Butter'] = 50.0%
['Butter'] -> ['Bread', 'Cheese'] = 28.57142857142857%
choosing: 1 3 5

['Chips', 'Butter'] -> ['Bread'] = 100.0%
['Bread'] -> ['Chips', 'Butter'] = 33.33333333333333%
['Bread', 'Butter'] -> ['Chips'] = 50.0%
['Chips'] -> ['Bread', 'Butter'] = 100.0%
['Chips', 'Bread'] -> ['Butter'] = 100.0%
['Butter'] -> ['Chips', 'Bread'] = 28.57142857142857%
choosing: 1 4 5

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