A3.Q3
Dionysus Cho
999955160

```
C = Variable("C", ['True', 'False'])
FC = Factor("P(C)", [C])
FC.add_values(
    [['True', 0.25],
     ['False', 0.75]])

Y = Variable("Y", ['True', 'False'])
FY = Factor("P(Y|C)", [Y, C])
FY.add_values(
    [['True', 'True'  , 0.25],
     ['True', 'False' , 0.75],
     ['False', 'True' , 0.75],
     ['False', 'False', 0.25]])

A = Variable("A", ['True', 'False'])
FA = Factor("P(A | C)", [A, C])
FA.add_values(
    [['True', 'True'  , 0.45],
     ['True', 'False' , 0.65],
     ['False', 'True' , 0.55],
     ['False', 'False', 0.35]])
```

SEPARATION

P(A | C = True, Y = True)
[0.45, 0.55]

P(A | C = True)
[0.45, 0.55]

For A = ['True', 'False']

NOT SUFFICIENT

P(C | A = True, Y = True)
[0.07142857142857142, 0.9285714285714286]

P(C | A = True)
[0.18749999999999997, 0.8125]

For C = ['True', 'False']

C		A		Y		
c	P(C=c)	a	P(A=a)	y	P(Y=y)	P(A,C,Y)
T	0.25	T	0.45	T	0.25	0.028125
T	0.25	T	0.45	F	0.75	0.084375
T	0.25	F	0.55	T	0.25	0.034375
T	0.25	F	0.55	F	0.75	0.103125
F	0.75	T	0.65	T	0.75	0.365625
F	0.75	T	0.65	F	0.25	0.121875
F	0.75	F	0.35	T	0.75	0.196875
F	0.75	F	0.35	F	0.25	0.065625

A3.Q3
Dionysus Cho
999955160

```
A = Variable("A", ['True', 'False'])
FA = Factor("P(A)", [A])
FA.add_values(
    [['True', 0.25],
     ['False', 0.75]])

Y = Variable("Y", ['True', 'False'])
FY = Factor("P(Y|A)", [Y, A])
FY.add_values(
    [['True', 'True'  , 0.25],
     ['True', 'False' , 0.75],
     ['False', 'True' , 0.75],
     ['False', 'False', 0.25]])

C = Variable("C", ['True', 'False'])
FC = Factor("P(C | A)", [C, A])
FC.add_values(
    [['True', 'True'  , 0.45],
     ['True', 'False' , 0.65],
     ['False', 'True' , 0.55],
     ['False', 'False', 0.35]])
```

NOT SEPARATION

P(A | C = True, Y = True)
[0.07142857142857142, 0.9285714285714286]

P(A | C = True)
[0.18749999999999997, 0.8125]

For A = ['True', 'False']

SUFFICIENT

P(C | A = True, Y = True)
[0.45, 0.55]

P(C | A = True)
[0.45, 0.55]

For C = ['True', 'False']

A		C		Y		
a	P(A=a)	c	P(C=c)	y	P(Y=y)	P(A,C,Y)
T	0.25	T	0.45	T	0.25	0.028125
T	0.25	T	0.45	F	0.75	0.084375
T	0.25	F	0.55	T	0.25	0.034375
T	0.25	F	0.55	F	0.75	0.103125
F	0.75	T	0.65	T	0.75	0.365625
F	0.75	T	0.65	F	0.25	0.121875
F	0.75	F	0.35	T	0.75	0.196875
F	0.75	F	0.35	F	0.25	0.065625