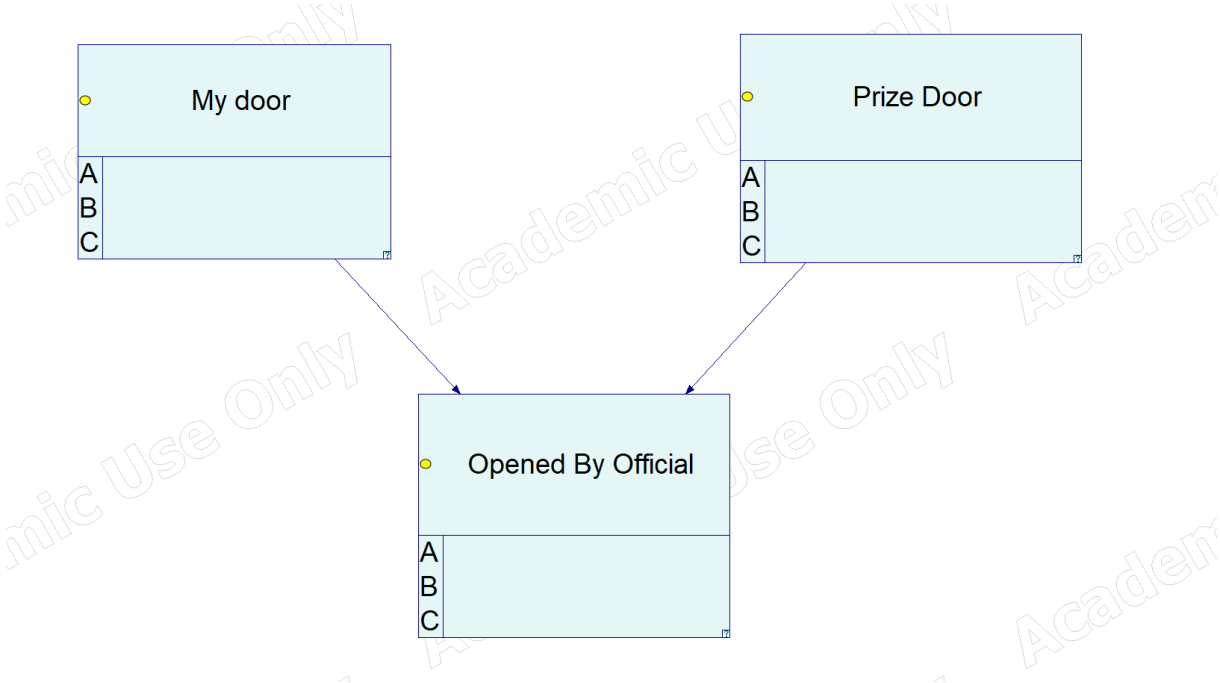
Assignment 2 – Jakub Rysiak

Assignment solved with GeNIe

First I constructed the nodes, where I concluded that it is mostly logical to let “My door” and “Prize Door” have a causal relationship to “Oppened By Official”, since that is the case in reality, although as we know it could be done differently as long as the probability tables would be correctly calculated.

I set the probability tables of The first “My door” and “Prize door” to be 1/3 for each door, since the probabilities are the same for each door in these two nodes.



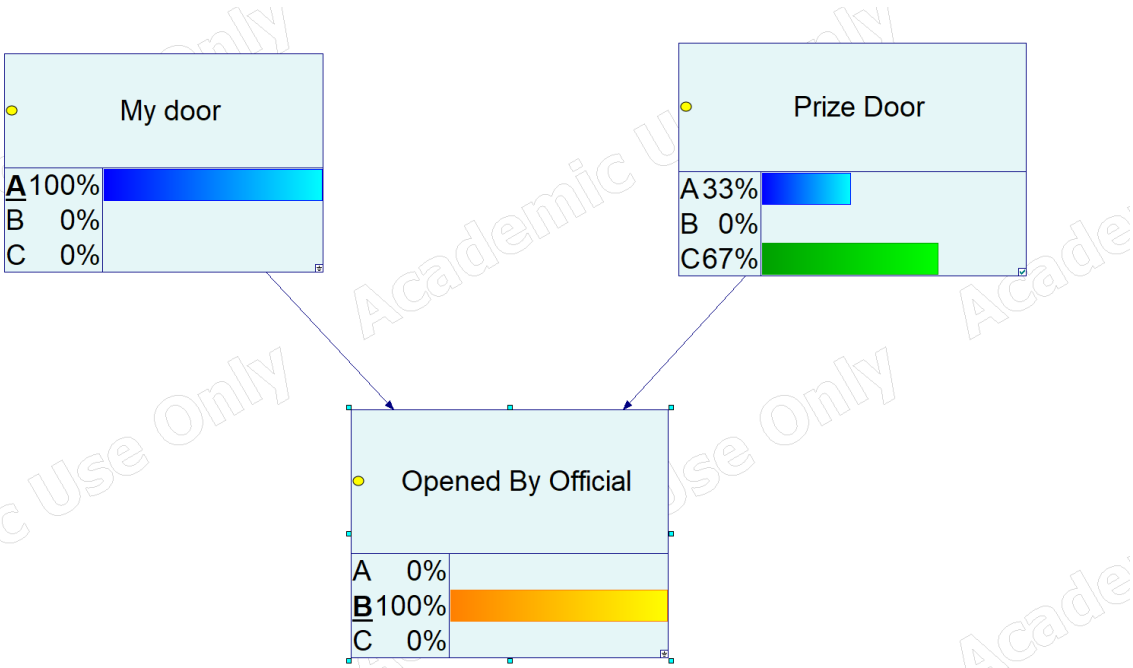
For the “Oppened By Official” node I put in the following CPT:

My door	A			B			C		
Prize Door	A	B	C	A	B	C	A	B	C
A	0	0	0	0	0.5	1	0	1	0.5
B	0.5	0	1	0	0	0	1	0	0.5
C	0.5	1	0	1	0.5	0	0	0	0

Which just says that its 50/50 between the two remaining doors if I have chosen the one with the prize, and if I have chosen an empty door, the official has only one option, which is the door without the price.

The Result

Having that set up, I can use the tool to show me which door has the biggest possibility of prize given the door I have chosen and the door opened by the official:



In this case I chose door A, The official chose door B, and the tool shows that choosing door C has a 67% chance of winning the prize. This shows that accepting the official's offer to change is statistically beneficial.

Another example with choosing A, and the official opening door C: