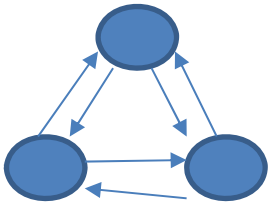
Markov Analysis Probability

A gas station owner is concerned about changing consumer patterns. She knows that Castleton Corners currently holds 20% of the gas business while Blue Cat hold 30% and Dunkin Do Gas has 50%. Additional market research has determined that since last month, 40% of Castleton Corners customers have switch to Blue cat and 40% have switched to Dunkin Do Gas. Of Blue Cat customers, 30% switch to Castleton Corners and 40% to Dunkin Do Gas. 20% of Dunkin Do Gas customers have switched to Castleton Corners and 20% have switched to Blue Cat.

Initial State (Market Share)

CC	20%
BC	30%
DD	50%

1. Draw state diagram from information above.



2. Using the probability method, write out equation for Dunkin Do Gas.
    a. P(DD)1 = P(DD|DD)*P(DD) + P(CC|DD)*P(DD) + P(BC|DD)*P(DD)
    b. P(DD)1 = P(DD|DD)*P(DD) + P(DD|CC)*P(CC) + P(DD|BC)*P(BC)
    c. P(DD)1 = P(DD|DD)*P(DD) + P(CC|DD)*P(CC) + P(BC|DD)*P(BC)
3. What will each gas station's market share be next period (month)? Please write out all equations.
    a. CC = 20%, BC = 30%, DD = 50%
    b. CC = 40%, BC = 33%, DD= 27%
    c. CC = 23%, BC = 27%, DD= 50%
    d. CC = 22.7%, BC = 26.1%, DD= 43.7%