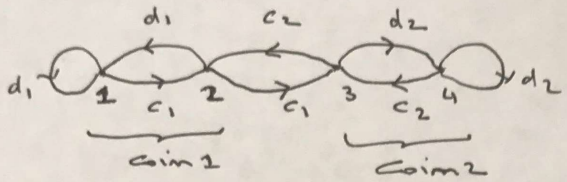
Problems : MC and HMM

(2)

1)



a) Find the transition matrix $P|_{4\times 4}$

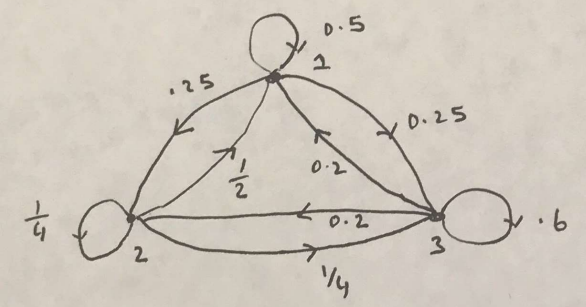
b) Compute p^* where $p^* = P^T p^*$

c) Set $d_1 = 0.8$ and $d_2 = 0.4$. Let $p(0) = (\frac{1}{4}, \frac{1}{4}, \frac{1}{4}, \frac{1}{4})^T$ and ~~iterate~~ iterate $p(k+1) = P^T p(k)$

Plot the components of $p(k)$ vs k for $k = 0$ to $k = 100$

d) Compare the limiting value of $p(k)$ with p^* found in (b)

2)



State	output distribution	
	a	b
1	3/4	1/4
2	1/2	1/2
3	1/4	3/4

From each state there can be two outputs: a and b. Distribution of output as a function of the state is given in Table above.

a) What is the probability output sequence a a b b ?

b) What is the most likely sequence of states corresponding to output a a b b ?