

# Assignment 01

## Reinforcement Learning

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## 1 Paper Based

### 1.1 Question 01

#### 1.1.1 Symbol Definition

Status:

*Appreciating*  $\rightarrow A$  (1)

*Depreciating*  $\rightarrow D$  (2)

*Stable*  $\rightarrow S$  (3)

#### 1.1.2 Transition Matrix

Current — next	A	D	S
A	25%	40%	35%
D	30%	50%	20%
S	33.333%	33.333%	33.333%

Table 1: Transition Matrix of Question 1

#### 1.1.3 Markov Chain

The previous Transition Matrix can be modeled as Markov chain as in Figure 1

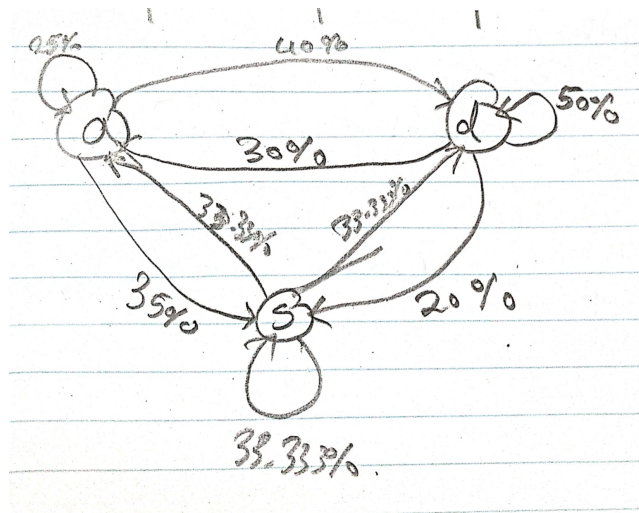


Figure 1: Markov Chain Handwritten

## 1.2 Question 02

### 1.2.1 Transition Matrix

As defined in 2

Current — next	1	2	3	4
1	25%	35%	40%	0%
2	55%	0%	0%	45%
3	0%	20%	60%	20%
4	30%	30%	20%	20%

Table 2: Transition Matrix of Question 2

### 1.2.2 Written Question

1. 20%
2. 25%
3. 60%

## 2 Implementation

### 2.1 Transition Matrix

The transition matrix is as defined as in transition Table 2

### 2.2 After Large number of Transitions

Current — next	1	2	3	4
1	23.89827	21.35726	34.17216	20.57231
2	23.88496	21.38767	34.18412	20.54325
3	23.89613	21.36379	34.17396	20.56612
4	23.89642	21.36231	34.17426	20.56701

Table 3: Transition Matrix after 3 Transitions

### 2.3 Implementation in Networkx

Kindly take a look at the file main.py and the graph is in figure 2

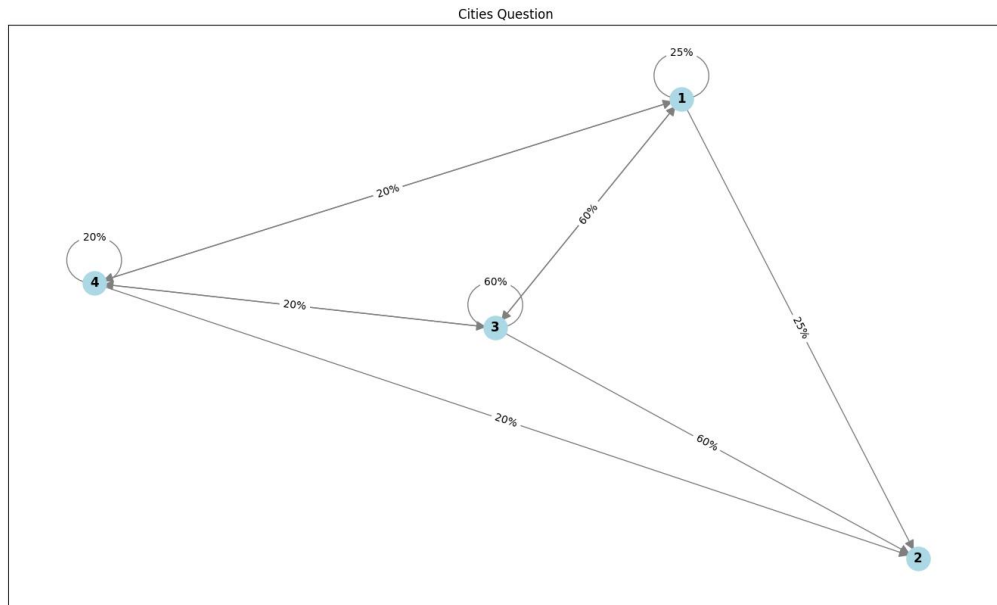


Figure 2: Implementation of the graph of Question 1