

Assignment 1

79546 - Stephen K. Ng'etich

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1 Pre-requisite

1.1 Load packages

```
# Clear variables
rm(list=ls())
library(markovchain)
library(diagram)
```

2 Q1

2.1 Generate the transition probabilities

the Markov chain state space $S = H, D, Y$ where H represents Harvard, D for Dartmouth and y for Yale

```

states = c("H", "D", "Y")
trans_mat1 <- matrix(c(.6, 0, .4,
                      .3, .5, .2,
                      .35, .35, .3), nrow = 3, byrow = TRUE)

rownames(trans_mat1) = states
colnames(trans_mat1) = states
print(trans_mat1)

```

```

##      H      D      Y
## H 0.60 0.00 0.4
## D 0.30 0.50 0.2
## Y 0.35 0.35 0.3

```

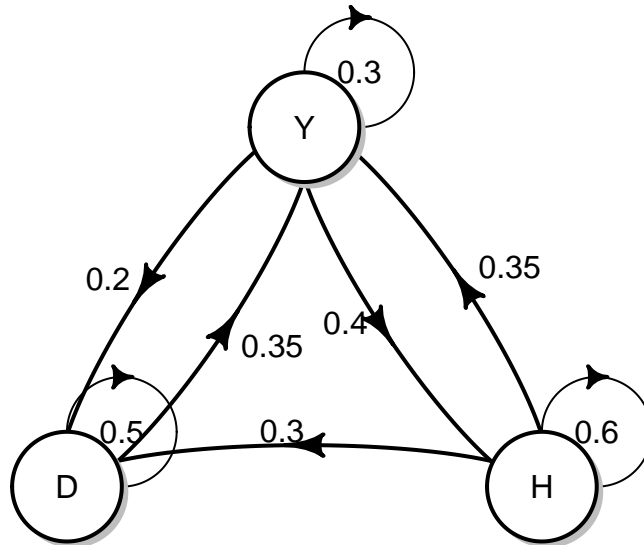
2.2 Draw the transition states with their respective probabilities

```

mk_chain1 = new("markovchain",
               states=states,
               transitionMatrix=trans_mat1,
               name="HDY",
               )

plotmat(trans_mat1, relsize = 0.75)

```



3 Q4

3.1 Stock market price data

Yes, Stock Market price is highly volatile

3.2 Appraisal of a Secondary school mathematics teacher

No,

3.3 Collaborative filtering on a database of movie reviews: for example, Netflix challenge: predict about how much someone is going to enjoy a movie based on their and other users' movie preferences

No, User rarely change their movie preferences

3.4 Daily weather forecast in Nairobi

Yes, the weather forecast of the a given day is related to the previous day ## Optical character recognition
Yes, when characters are observed in sequence they form words which have different meaning depending on the order. ## Cost of gemstones in Bangladesh
No,