Assignment 1

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Contents

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

```r
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
```
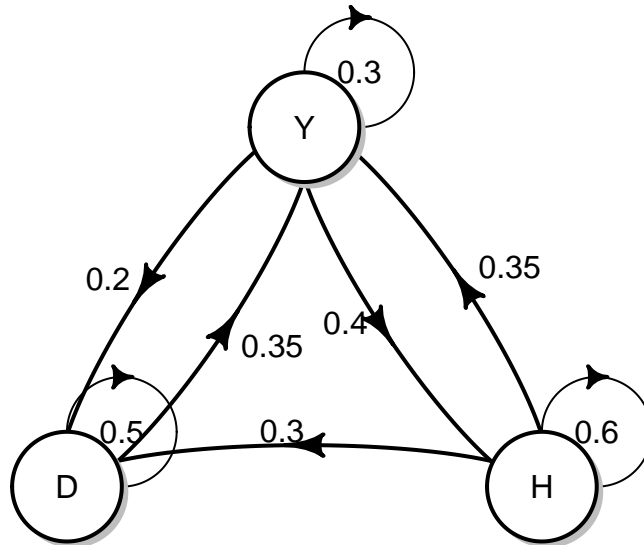
2.2   Draw the transition states with their respective probabilities

```r
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

3.5 Optical character recognition

3.6 Cost of gemstones in Bangladesh