##Social Network Analysis

library (igraph)

g <- graph(c(1,2))

plot(g)

g <-graph(c("Rab","Rak","Rak","Adi","Adi","Rab","Rab","Adi","Sho","Adi"))

plot(g,vertex.color="green",vertex.size=50,edge.color='red',edge.length=100,)

degree(g)

##Network Measures

degree(g, mode='all')

degree(g, mode='in')

degree(g, mode='out')

diameter(g, directed=F,weights=NA)

edge\_density(g,loops = F)

closeness(g,mode='all',weights = NA)

betweenness(g,directed = T,weights = NA)

reciprocity(g)

edge\_betweenness(g,directed = T,weights = NA)

##Read data file

data <- read.csv(file.choose(),header = T)

y <- data.frame(data$first,data$second)

##Create network

net <- graph.data.frame(y,directed = T)

V(net)

E(net)

V(net)$label <-V(net)$name

V(net)$degree <-degree(net)

##Histrogram of node degree

hist(V(net)$degree,

col='green',

main = 'Histogram of Node Degree',

ylab = 'Frequency',

xlab = 'Degree of Vertices')

##Network diagram

set.seed(222)

plot(net,

vertex.color='green',

vertext.siZe='2',

edge.arrow.size=0.2,

vertex.label.cex=-10)

##Highlites Degree

plot(net,

vertex.color=rainbow(52),

vertex.size= V(net)$degree\*.4,

edge.arrow.size=.4,

layout=layout.kamada.kawai)

##Community detection

net <-graph.data.frame(y,directed = F)

cnet <-cluster\_edge\_betweenness(net)

plot(cnet,

net,

vertex.size=10,

vertex.label.cex=.8)