Social networking
Introduction

Install and load the package igraph
```
install.packages("igraph")
library(igraph)
```

Create an undirected network and visualize the graph with two items
```
g=make_graph(c(1,2),directed = F)
plot(g)
```

Create a directed network and visualize the graph with two items
```
g=make_graph(c(1,2),directed = T)
plot(g)
plot(g,vertex.color="red",vertex.size=30,edge.color="blue")
```

Create an undirected network and visualize the graph and the network matrix
```
g=make_graph(c(1,2,2,3,3,4,4,1),directed = F)
plot(g, vertex.color="red",vertex.size=30,edge.color="blue")
g[]
```

Network Measures
Undirected Network

Create an undirected network and visualize the graph and the network matrix

```r
g=make_graph(c("Andy","Ben","Ben","Cloe","Cloe","Andy",
"Dany","Cloe"),directed=F)
plot(g, vertex.color="red",vertex.size=30,edge.color="blue"
)
g[]
```

Count the number of nodes (vertices) and the number of edges
```r
vcount(g)
ecount(g)
```

Find the degree for each node (or vertex)
```r
degree(g)
```

Find the diameter of the network
```r
diameter(g)
get_diameter(g)
farthest_vertices(g)
```

Find the average distance
```r
mean_distance(g)
```

Find the density of the network
```r
edge_density(g)
```

Find the closeness of each node
```r
closeness(g)
```

Find the betweeness of each node
```r
betweenness(g)
```

Network Measures
Directed Network

Create an undirected network and visualize the graph and the network matrix

```
g=make_graph(c("Andy","Ben","Ben","Cloe","Cloe","Andy",
"Andy","Cloe","Dany","Cloe"),directed=T)
plot(g, vertex.color="red",vertex.size=30,edge.color="blue"
)
g[]
```

Count the number of nodes (vertices) and the number of edges
```
vcount(g)
ecount(g)
```

Find the degree for each node (or vertex), distinguishing the incoming and the outcoming relations
```
degree(g)
degree(g, mode="in")
degree(g, mode="out")
```

Find the diameter of the network
```
diameter(g)
get_diameter(g)
farthest_vertices(g)
```

Find the average distance
```
mean_distance(g)
```

Find the density of the network
```
edge_density(g)
```

Find the closeness of each node
```
closeness(g,mode="all")
```

Find the betweeness of each node
```
betweenness(g)
```