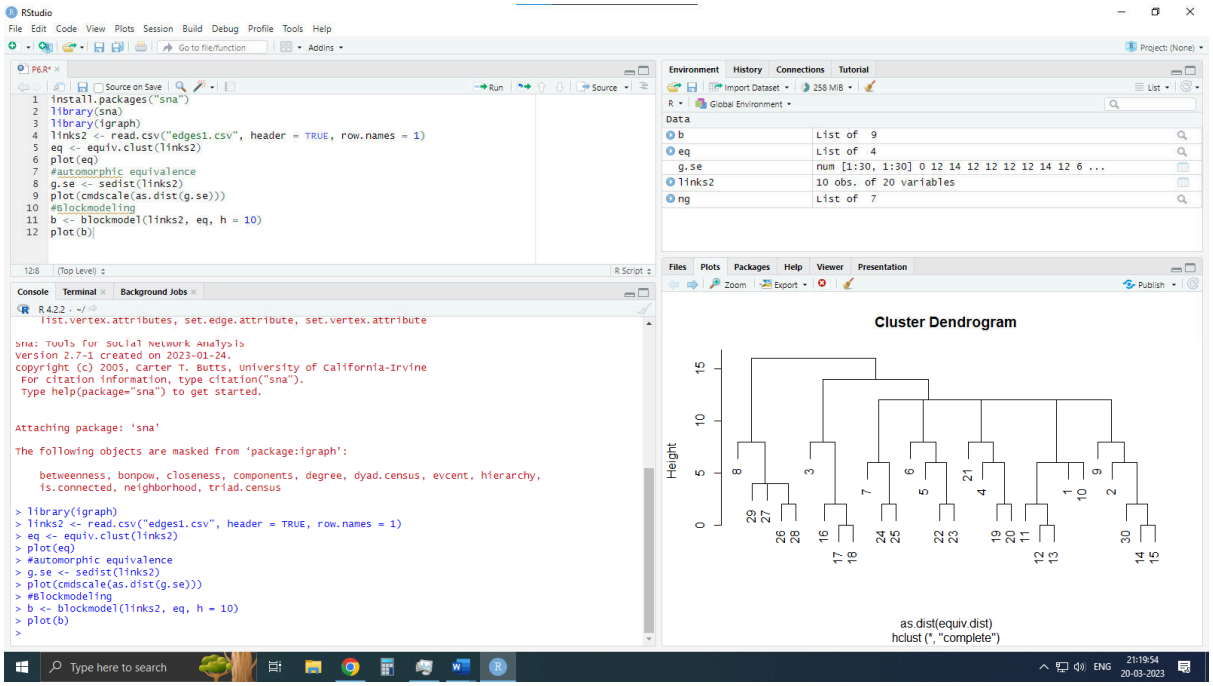
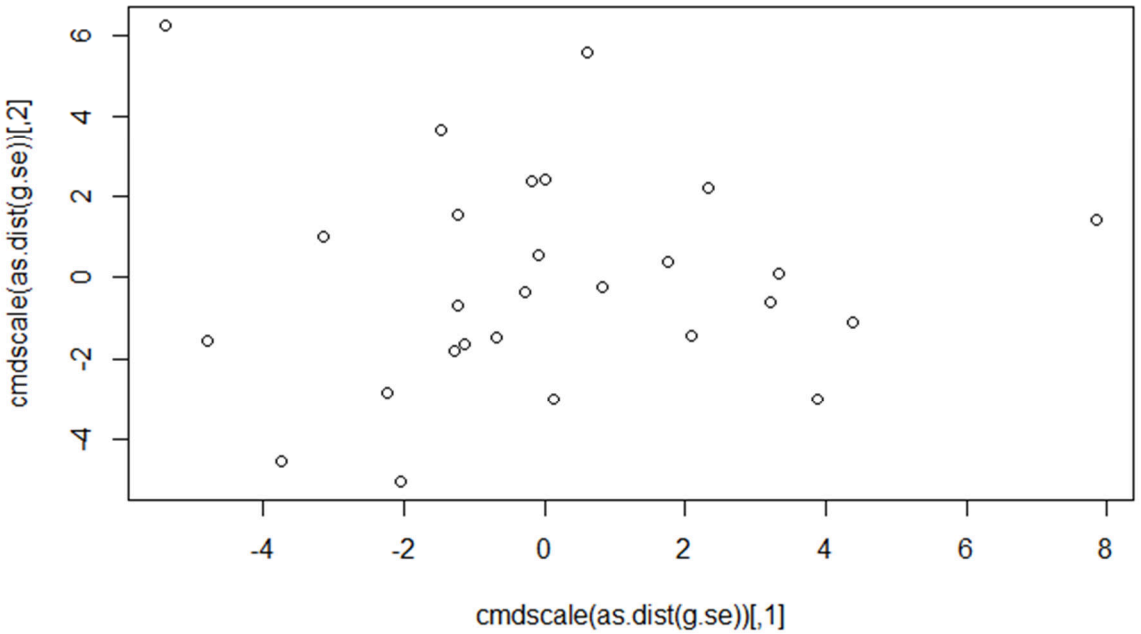
Practical 6: Write a program to exhibit structural equivalence, automorphic equivalence, and regular equivalence from a network.

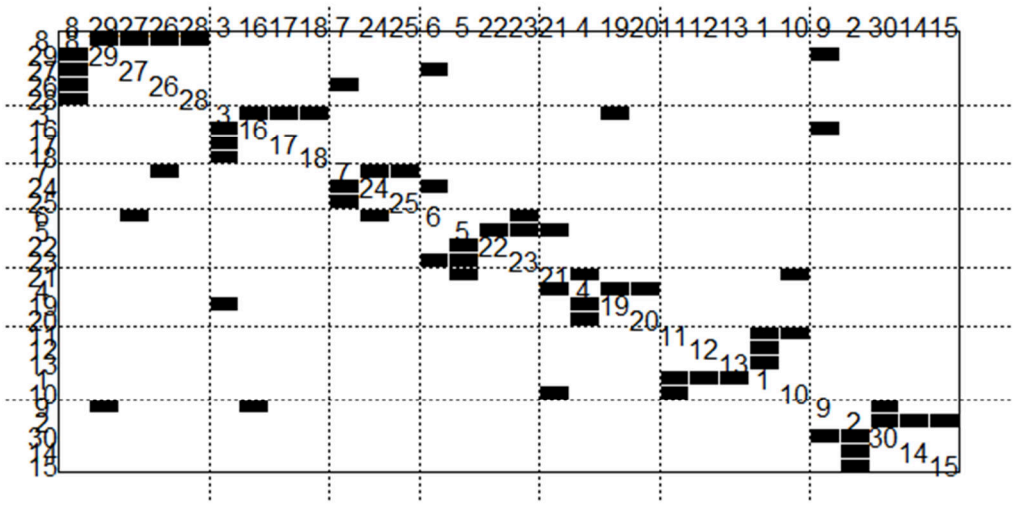
Codes:

```
# Install and load necessary packages
install.packages("sna")
library(sna)
library(igraph)

# Read data from file
links2 <- read.csv("edges1.csv", header = TRUE, row.names = 1)

# Equivalence clustering
eq <- equiv.clust(links2)
plot(eq)

# Automorphic equivalence
g.se <- sedist(links2)
plot(cmdscale(as.dist(g.se)))

# Blockmodeling
b <- blockmodel(links2, eq, h = 10)
plot(b)
```

OUTPUT


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
install.packages("sna")
library(sna)
library(igraph)
links2 <- read.csv("edges1.csv", header = TRUE, row.names = 1)
eq <- equiv.clust(links2)
plot(eq)
#automorphic equivalence
g.se <- sedist(links2)
plot(cmdscale(as.dist(g.se)))
#Blockmodeling
b <- blockmodel(links2, eq, h = 10)
plot(b)
Environment History Connections Tutorial
Data
b List of 9
eq List of 4
g.se num [1:30, 1:30] 0 12 14 12 12 12 12 14 12 6 ...
links2 10 obs. of 20 variables
ng List of 7
Files Plots Packages Help Viewer Presentation
Cluster Dendrogram
Height
as.dist(equiv.dist)
hclust (*, "complete")
Console Terminal Background Jobs
R 4.2.2 · ~/
sna: Tools for Social Network Analysis
Version 2.7-1 created on 2023-01-24.
copyright (c) 2005, Carter T. Butts, University of California-Irvine
For citation information, type citation("sna").
Type help(package="sna") to get started.
Attaching package: 'sna'
The following objects are masked from 'package:igraph':
betweenness, bonpow, closeness, components, degree, dyad.census, evcent, hierarchy,
is.connected, neighborhood, triad.census
> library(igraph)
> links2 <- read.csv("edges1.csv", header = TRUE, row.names = 1)
> eq <- equiv.clust(links2)
> plot(eq)
> #automorphic equivalence
> g.se <- sedist(links2)
> plot(cmdscale(as.dist(g.se)))
> #Blockmodeling
> b <- blockmodel(links2, eq, h = 10)
> plot(b)
Type here to search
ENG
21:19:54
20-03-2023


cmdscale(as.dist(g.se))[,2]
cmdscale(as.dist(g.se))[,1]


Relation - 1