

# Lab06\_22

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## INSTALACIÓN DE METAHEUR

```
library(ggplot2)
```

```
## Warning: package 'ggplot2' was built under R version 4.0.5
```

```
setwd("C://Users//diego//OneDrive//Escritorio//Universidad//2º Curso//2//Investigacion Operativa//Laboratorio")  
#install.packages("metaheuR_0.3.tar.gz", repos=NULL, type="source")  
library(metaheuR)
```

## PROBLEMA KSP (MOCHILA)

```
n <- 8  
peso <- runif(n, 0, 100)  
valores <- runif(n, 0, 100)  
p <- sum(peso)/2
```

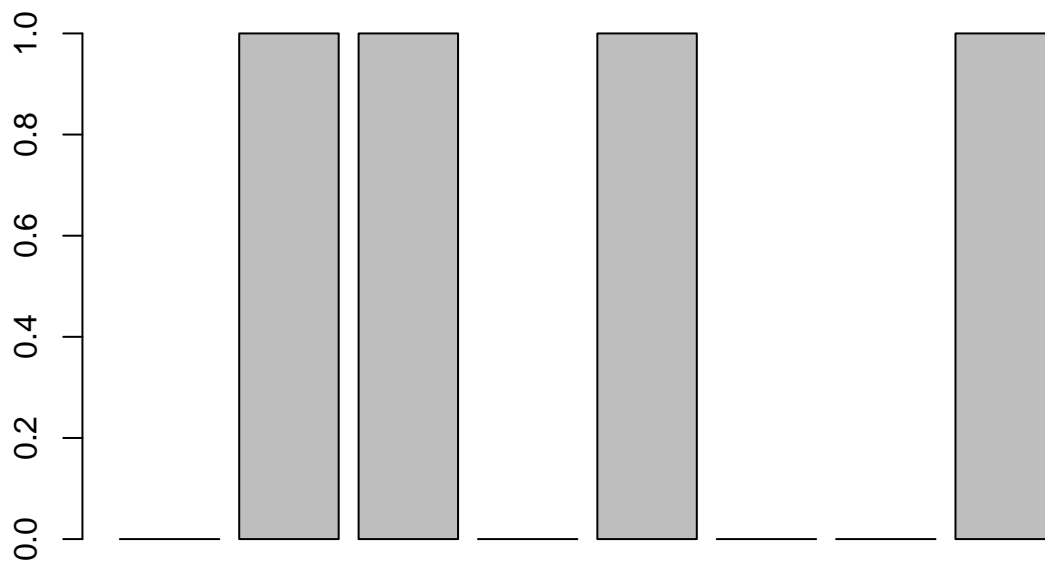
```
mochila <- knapsackProblem(peso, valores, p)
```

```
#SOLUCIONES
```

```
solu <- sample(c(TRUE, FALSE), n, replace = TRUE)  
solu
```

```
## [1] FALSE TRUE TRUE FALSE TRUE FALSE FALSE TRUE
```

```
barplot(solu)
```



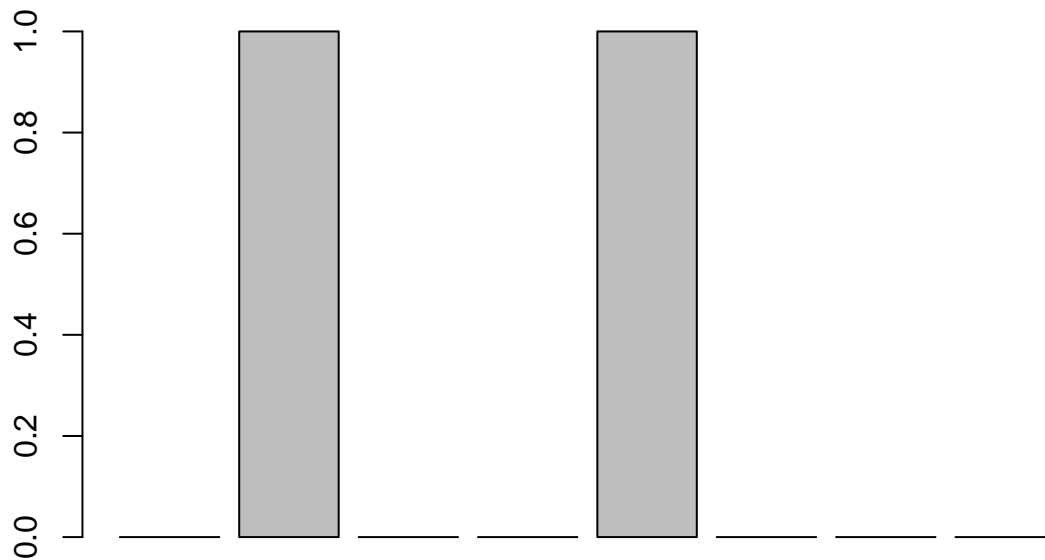
```
mochila$evaluate(solu)
```

```
## [1] -213.3375
```

```
mochila$valid(solu)
```

```
## [1] FALSE
```

```
mochila$correct(solu) -> b  
barplot(b)
```

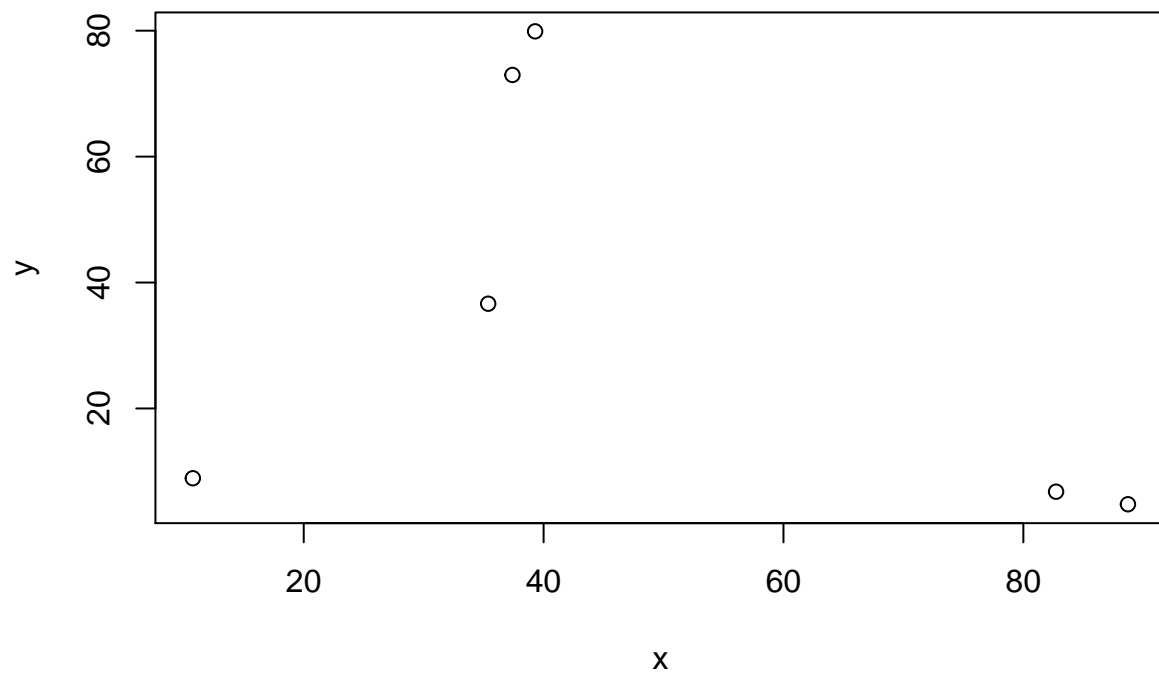


## PROBLEMA TSP (AGENTE VIAJERO)

```
n <- 6 #n ciudades
M <- matrix(runif(n*n, 0, 100), n)
M
```

```
##      [,1]    [,2]    [,3]    [,4]    [,5]    [,6]
## [1,] 41.31732 24.91999  3.657180 13.55643 92.7861073 97.75520
## [2,] 48.73707 73.34339 61.741429 94.34787 32.5215483 35.76025
## [3,] 18.43307 11.80641  9.541433 74.15558 29.9725371 69.04415
## [4,] 18.07556 55.47216 37.877770 51.29108 60.6290767 12.65328
## [5,] 68.46707 82.36703 82.904900 31.89216 47.3104342 54.43642
## [6,] 99.28134 94.75389 19.306735 58.41351  0.5232186 76.66298
```

```
x <- runif(n, 0, 100)
y <- runif(n, 0, 100)
plot(x,y)
```



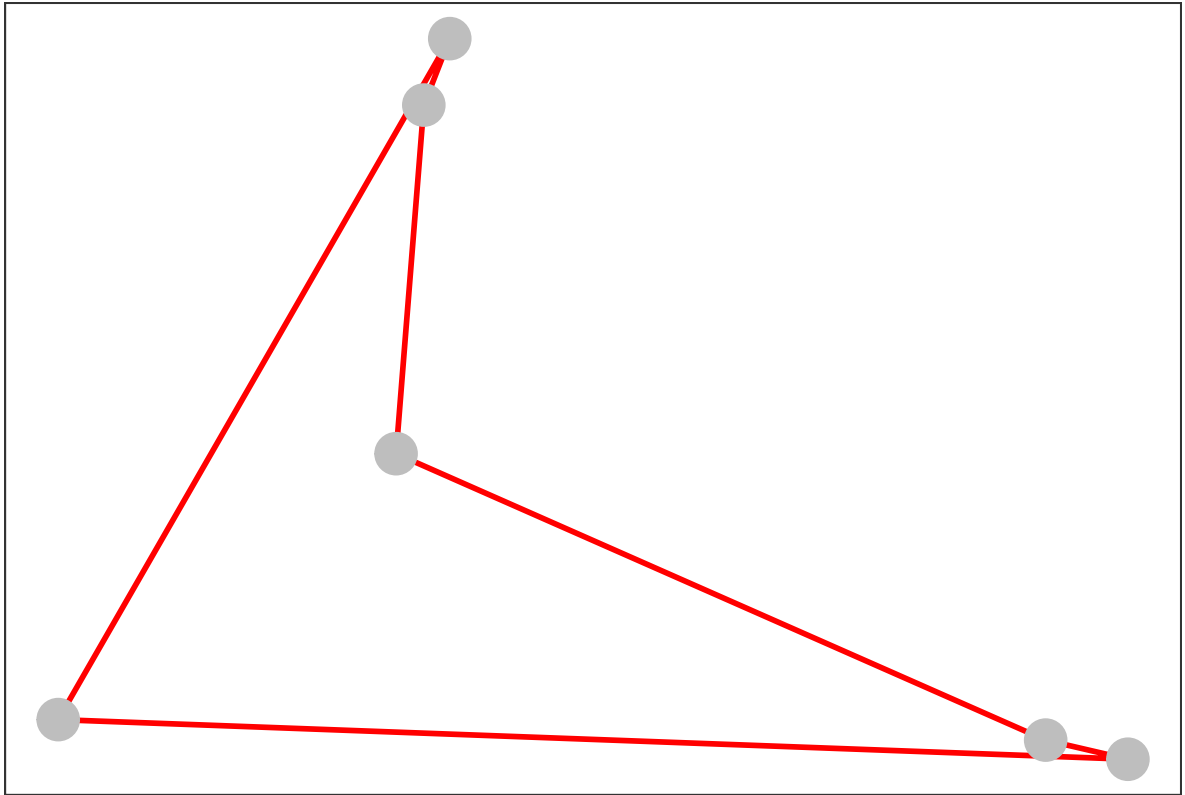
```
tspProblem(M,cbind(x,y)) -> tspP
```

```
#solution
```

```
permutation(1:n) ->a  
randomPermutation(n) ->b  
tspP$evaluate(a)
```

```
## [1] 375.1638
```

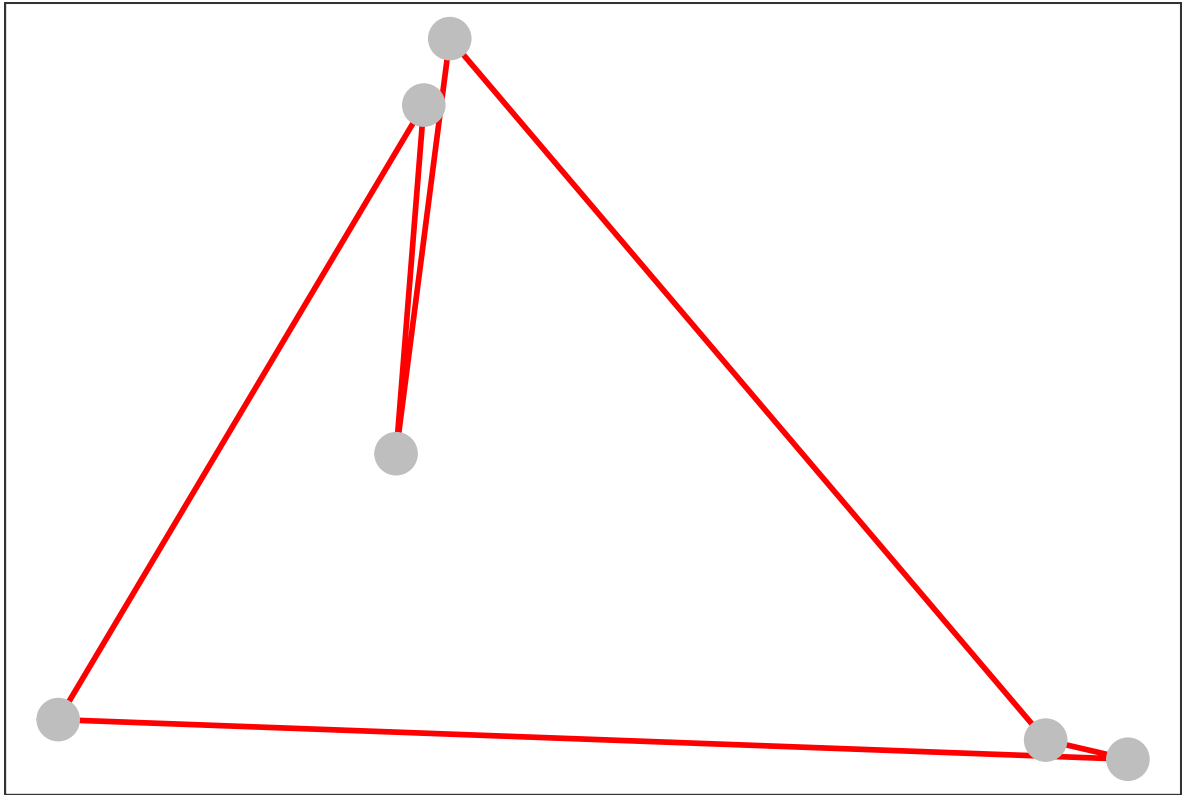
```
tspP$plotSolution(a)
```



```
tspP$evaluate(b)
```

```
## [1] 306.8415
```

```
tspP$plotSolution(b)
```



```
#
# read.table("xyz.txt")->xyz
# n<- nrow(xyz)
# x<- xyz[,1]
# y<- xyz[,2]
#
#
# costes<-read.table( "costes.txt")
#
# TSP <- tspProblem(costes, xyz)
# k<- n
#
# #elegir k ciudades
#
# k<- n
#
# ruta <- sample(1:n,k)
# TSP <- tspProblem(costes[ruta,ruta], xyz[ruta,])
#
# print(TSP$plotSolution(permutation(1:k),plot.names = TRUE))
# print(TSP$evaluate(permutation(1:k)))
#
#
# sol_ini <- 1:k
# sol_ini <- sample(k)
# z_ini <- TSP$evaluate(permutation(sol_ini))
```

```
# print(paste("valor inicial",z_ini))
#
# print(TSP$plotSolution(permutation(sol_ini),plot.names = TRUE))
```

## PROBLEMA GCP (COLOREADO DE GRAFOS)

```
library(igraph)
```

```
## Warning: package 'igraph' was built under R version 4.0.5
```

```
##
```

```
## Attaching package: 'igraph'
```

```
## The following objects are masked from 'package:stats':
```

```
##
```

```
##      decompose, spectrum
```

```
## The following object is masked from 'package:base':
```

```
##
```

```
##      union
```

```
n <- 8
```

```
p <- 0.5
```

```
grafo <- random.graph.game(n, p)
```

```
grafo
```

```
## IGRAPH 67d7657 U--- 8 14 -- Erdos renyi (gnp) graph
```

```
## + attr: name (g/c), type (g/c), loops (g/l), p (g/n)
```

```
## + edges from 67d7657:
```

```
## [1] 1--2 3--4 2--5 3--5 4--5 1--6 3--7 4--7 6--7 2--8 3--8 4--8 5--8 6--8
```

```
colores <- graphColoringProblem(grafo)
```

```
#soluciones
```

```
vector <- sample(1:n, n, replace=T)
```

```
sol <- factor(vector)
```

```
colores$evaluate(sol)
```

```
## [1] 5
```

```
colores$valid(sol)
```

```
## [1] FALSE
```

```
colores$correct(sol)
```

```
## [1] 8 1 6 1 3 3 5 8  
## Levels: 1 3 5 6 8
```

```
colores$plot(sol)
```

