Lab07_22

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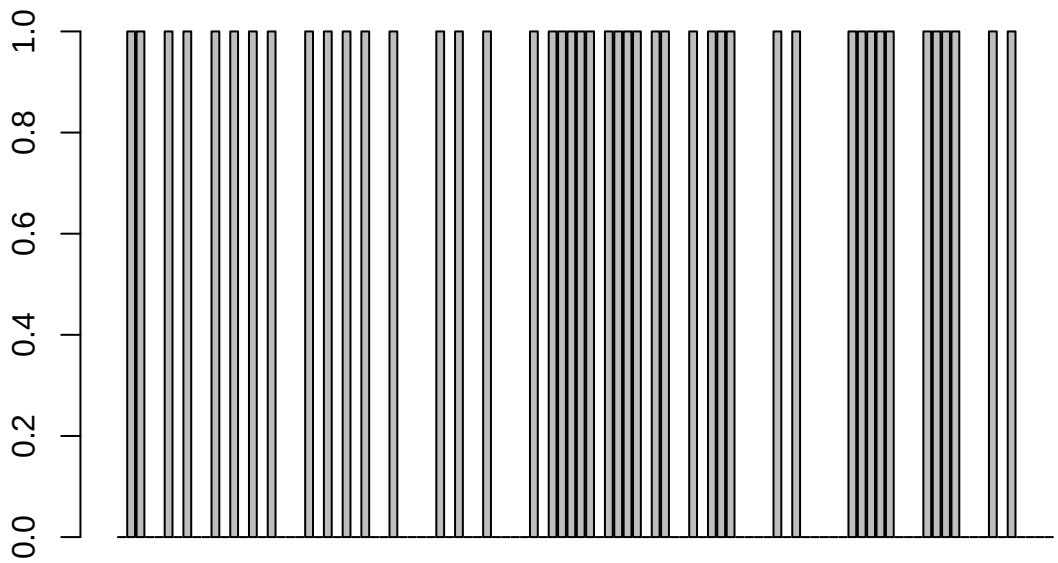
11/5/2022

```
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//Labora
#install.packages("metaheuR_0.3.tar.gz", repos=NULL,type="source")
library(metaheuR)
```

```
n <- 100

valor<-runif(n, 0, 100)
peso<-runif(n, 0, 100)

limite<-sum(peso)/2

knp<-knapsackProblem(peso,valor,limite)

sol0<-rep(F,n)
sol1 <- sample (c(T,F),n,replace=T)
barplot(sol1)
sol2 <- rep(T,n)


validacion <- knp$valid(sol1)
evaluacion <- knp$evaluate(sol1)
correccion <- knp$correct(sol1)

barplot(correccion)
```




```
solini <- sol1
solini
```

```
##   [1] FALSE  TRUE  TRUE FALSE FALSE  TRUE FALSE  TRUE FALSE FALSE  TRUE FALSE
##  [13]  TRUE FALSE  TRUE FALSE  TRUE FALSE FALSE FALSE  TRUE FALSE  TRUE FALSE
##  [25]  TRUE FALSE  TRUE FALSE FALSE  TRUE FALSE FALSE FALSE FALSE  TRUE FALSE
##  [37]  TRUE FALSE FALSE  TRUE FALSE FALSE FALSE FALSE  TRUE FALSE  TRUE  TRUE
##  [49]  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE FALSE
##  [61] FALSE  TRUE FALSE  TRUE  TRUE  TRUE FALSE FALSE FALSE FALSE  TRUE FALSE
##  [73]  TRUE FALSE FALSE FALSE FALSE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE
##  [85] FALSE FALSE  TRUE  TRUE  TRUE  TRUE FALSE FALSE FALSE  TRUE FALSE  TRUE
##  [97] FALSE FALSE FALSE FALSE
```

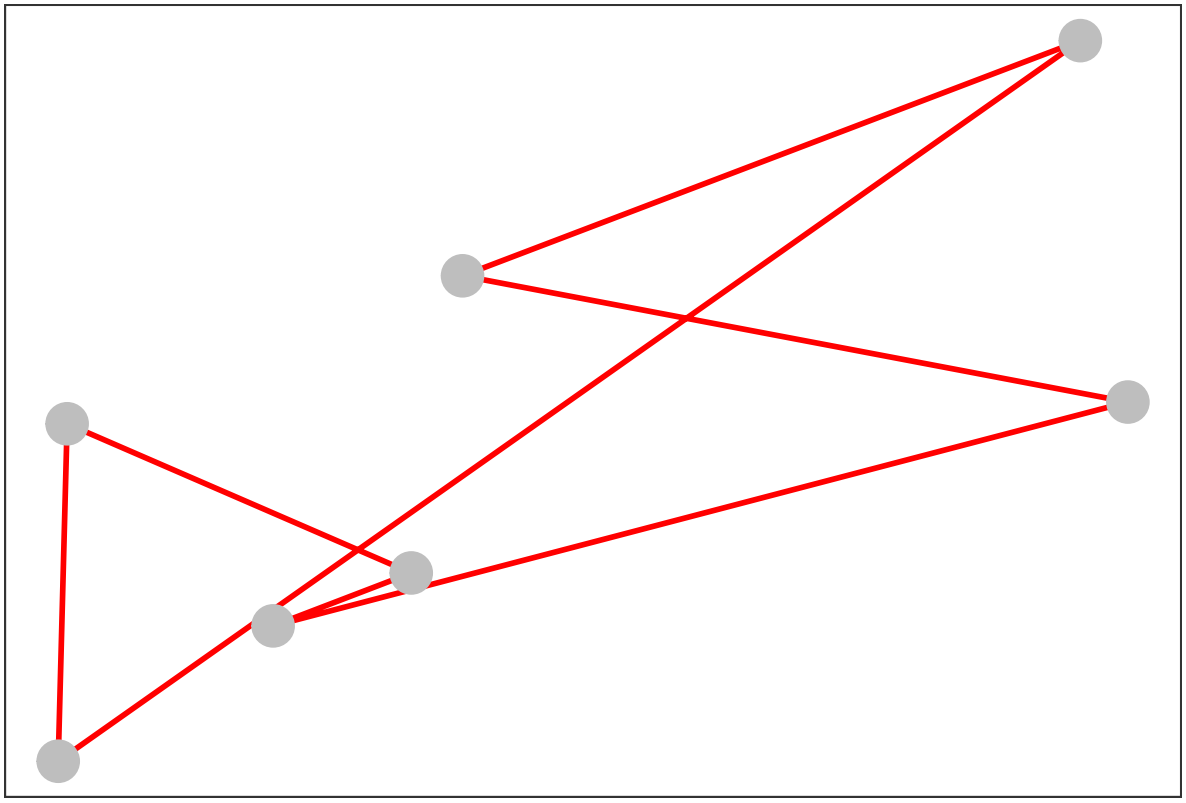
```
#buscar vecinos

if(knp$valid(solini)==F){    #Definir solución inicial
  solini <- knp$correct(solini) #hay que partir de una solución inicial válida
}
solopt <- solini
zopt <- abs(knp$evaluate(solopt))    #Calcular zopt

  aux <- solini
  z_opt <- abs(knp$evaluate(aux))

  for (j in 1:n){
```

```
    aux2 <- solini
    aux2[j] <- !aux2[j]

    if(knp$valid(aux)){
    zaux <- abs(knp$evaluate(aux2))
      if(zaux>z_opt){
      sol_opt <- aux2
      zopt <- zaux
      print(zopt)
      }
    }


  }
```

```
## [1] 2262.721
## [1] 2248.652
## [1] 2257.278
## [1] 2244.875
## [1] 2274.971
## [1] 2266.42
## [1] 2233.493
## [1] 2202.08
## [1] 2272.394
## [1] 2270.79
## [1] 2237.12
## [1] 2193.931
## [1] 2203.709
## [1] 2239.063
## [1] 2211.871
## [1] 2194.249
## [1] 2204.516
## [1] 2267.601
## [1] 2191.13
## [1] 2244.865
## [1] 2192.31
## [1] 2237.08
## [1] 2191.123
## [1] 2256.324
## [1] 2224.569
## [1] 2245.637
## [1] 2241.082
## [1] 2243.277
## [1] 2218.375
## [1] 2211.141
## [1] 2243.74
## [1] 2259.73
## [1] 2190.3
## [1] 2210.744
## [1] 2243.6
## [1] 2209.349
## [1] 2201.199
## [1] 2233.712
```

```
## [1] 2188.248
## [1] 2203.088
## [1] 2183.733
## [1] 2196.505
## [1] 2264.701
## [1] 2187.783
## [1] 2230.043
## [1] 2238.971
## [1] 2230.796
## [1] 2218.228
## [1] 2189.508
## [1] 2192.281
## [1] 2201.034
## [1] 2235.807
## [1] 2224.558
## [1] 2224.249
## [1] 2254.205
```

```r
n <- 7

matriz <- matrix(runif(n*n),n)

x <- runif(n)
y <- runif(n)

xy <- cbind(x,y)

objeto <- tspProblem(matriz,xy)

sol2 <- randomPermutation(n)

evaluacion2 <- objeto$evaluate(sol2)
objeto$plotSolution(sol2)
```



```
###VECINO MEJOR



solini <- sol2

vecino_mejor <- function(solini, primer){

  solopt <- solini

  zopt <- abs(objeto$evaluate(solopt))

  for(i in 1:(n-1)){

    for(j in (i+1):n){

      aux <- swap(solini,i,j)

      abs(objeto$evaluate(aux)) -> zaux

      if(zaux < zopt){

        solopt <- aux
        zopt <- zaux

        if(primer){
```

```
          return(solopt)
        }

      }
    }
  }

  return(solopt)
}


vecino <- vecino_mejor(solini, FALSE)

objeto$plotSolution(vecino)
```