# Ex MDS

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2024-04-14

## Exercici 1

```
dat <- matrix(c(0, 7, 5, 9, 5, 7, 9,
                7, 0, 4, 6, 4, 6, 7,
                5, 4, 0, 3, 4, 5, 6,
                9, 6, 3, 0, 3, 2, 2,
                5, 4, 4, 3, 0, 5, 4,
                7, 6, 5, 2, 5, 0, 4,
                9, 7, 6, 2, 4, 4, 0), ncol=7)
all(dat == t(dat)) # to make sure I haven't made mistakes
```

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

### a) Construir la matriz B $= -\frac{1}{2}HD^{(2)}H$, donde $D^{(2)}$ es la matriz de distancias al cuadrado y $H$ es la matriz de centrado, y calcular sus valores propios. Observar si la matriz de distancias es euclídea.

Let's use some of the functions I've created.

```
source('../../funcs/sym.R')
require(ade4); require(matrixcalc)
```

```
## Loading required package: ade4
```

```
## Loading required package: matrixcalc
```

```
positive_definite(dat)
```

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

```
is.positive.semi.definite(dat)
```

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

```
is.euclid(as.dist(dat))
```

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