UNIVERSITÉ TOULOUSE 1 CAPITOLE

TSE
Toulouse School of Economics
École d'économie de Toulouse

Année Universitaire 2012-2013
SESSION 1

MASTER 1

STATISTICAL SOFTWARE
(durée 1h30)

Mardi 8 janvier 2013 ~ 14h00 –15h30

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Subjet

Exercise 1 (4 points)

Let the matrix M:

```
     [,1] [,2] [,3]
[1,]    4    3    1
[2,]    1   -1    3
[3,]    0    2    4
```

What is the result of the following instructions?

c) `M[,3]` b) `M[-2,]` c) `M[-1,c(1,3)]`

d) `apply(M,1,mean)` e) `apply(M,2,max)`

Exercise 2 (4points)

Write a function that takes as its argument two vectors, x and y, produces a scatterplot, and calculates the correlation coefficient (using cor(x,y)). Put the correlation coefficient on the graphics.

Exercise 3 (5 points)

Write a function that takes a vector x as its argument and displays both

$\sum_i x_i$ and $\sum_i x_i^2$

Exercise 4 (7points)

Using the function sort() (which sorts a vector), write a function that finds the median of the vector given as its argument.

Use your function in order to find the median of each column of a matrix M.