Introduction to R — Fall 2007
Homework Set # 2

Begin the homework session by executing the following command in *R*:

```
source("http://www.nd.edu/~steve/Rcourse/hmwrkData/hmwrk2Data.R")
```

This will define variables you are to use in the problems below. The variable names are `X, x1`. To see the value of the variable simply enter it at the prompt and type "Return".

To submit this homework save a transcript of the *R* session in which you complete it and e-mail to me. You must include your name as a comment on the first line and in the file name.

Exer. 2.1. The matrix `X` you've loaded is 4×4. Use the functions `rownames` and `colnames` to make the row names of `X`, "R1", "R2", "R3", "R4", and the column names "C1", "C2", "C3", "C4". Type `X` at the prompt to show this has been done. Now create the matrix `Y1` consisting of the elements in rows 3 and 4, and columns 3 and 4.

Exer. 2.2. Create the vector `y3` that is the fourth column of `X`. Ensure that it has names = the rownames of `X`. Let `y4` be the result of sorting `y3` in increasing order (smallest value first). (HINT: Remember the function `sort`.) What is the name coresponding to the smallest value? Let `y5` be the row of `X` with this corresponding name.

Exer. 2.3. Recall how subsetting by a logical expressions works for a matrix. Use this to calculate the number of entries in `X` that are > 0.

Exer. 2.4. Form `X1` that is the result of replacing each negative number in `X` by -1.

Exer. 2.5. Find the vector `z1` which contains the minimum value of each column in `X`.

Learning Set 2.A. Often you will need to combine two vectors (union) or find the elements that are in vector `x` and not in `y` (set difference), and perform other set-theoretical operations. Look up the help for `union, intersect, setdiff, unique`.

Exer. 2.6. Given the integer vector `x1`, form `w1` that consists of only the even numbers in `x1`. HINT: Use `intersect`. Then produce the vector `w2` that consists of the numbers in `x1` that aren't in `w1`.