```
################################################
#####   SAPPLY() AS ALTERNATIVE TO LOOPS     #####
#####    INTRO TO PROGRAMMING EXERCISE       #####
################################################
```

One can use **`sapply()`** or **`lappy()`** as alternatives to loops. They take care of deciding what output to create and you don't need intermediate vector or matrix to store results.

Let's generate matrices of random numbers and determine the greatest correlation coefficient between any of the variables in the matrix.

Write a function (call it '**`maxcor()`**') that: (1) creates an n x m matrix (n rows and m columns) from a randomly generated normally distributed set of n x m numeric elements; (2) executes the **`cor()`** function against the matrix to determine all of the pairwise correlations among the matrix elements; (3) selects the maximum correlation value element (the highest pairwise correlation ***ignoring the self-correlations in the diagonal***) produced by **`cor()`** in the matrix; and (4) returns that maximum correlation value.

Then use the **`sapply()`** function to run your **`maxcor()`** function 1,000 times. Assign the resulting vector of 1,000 maximum correlation values to a variable "**`maxcors`**".

What is the expected value of the 1,000 maximum correlations? Does this result surprise you? Why or why not?