UCL Institute of Cognitive Neuroscience Matlab Course

Lecture 3: Practical Exercise

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[1] Enter the following commands into the Matlab command window:

load handel

sound(y,Fs)

Next, generate a Matlab data file in your current folder called *music* that contains the variable *y*; extract the number of rows and columns in the variable *y* and store that information in your workspace; clear the variable *y* from your workspace; generate a variable called *z* which is the same size as *y* but is comprised of random numbers with a mean of zero and a standard deviation of one; add this new variable to the *music* data file; and, finally, execute the following command:

sound(z,Fs)

[2] Generate a 50 row x four column matrix of random integers between one and 20; export this variable to the first worksheet in an Excel spreadsheet called *DataSheet*, with the first entry (i.e. the top left corner of the matrix) appearing in entry C3; generate a *.csv file called *CSVFile* that contains the same data; generate a cell array with one row and four columns, containing text entries of *Score1*, *Score2*, *Score3* and *Score4*, respectively; add this text to the Excel spreadsheet you created above, with the first entry (i.e. the left hand side of the cell array) appearing in entry C2

[3] Write a script that first generates a 100 row x 101 column matrix named 'Data' containing random numbers that are normally distributed with a mean of 700 and a standard deviation of 100, and then completes the following steps:

   (a) Replace any values that are less than 500 with a value of 500
   (b) Add 100 to the 20th, 25th, 30th and 35th rows
   (c) Multiply the 90 to 100th rows by 1.5
   (d) Change the first column to the numbers 1 to 100
   (e) Compute the mean of each row, excluding the first column, and store it as a variable named 'MeanRT'
   (f) Generate a variable called 'Conditions' which consists of 100 random integers between 1 and 2 in a single column
   (g) Imagine that the 'MeanRT' variable contains mean reaction time data for 100 participants in a behavioural task who were divided into two conditions, corresponding to the two different values in 'Conditions'. Compute the standard error of the 'MeanRT' values for each condition separately and store them as variables named 'StdErr1' and 'StdErr2', respectively
   (h) Perform a two sample t-test comparing the values in 'MeanRT' between participants in each condition. Store the t-statistic as a variable named 't_stat' and the corresponding p value as a variable named 'p_value'