UCL Institute of Cognitive Neuroscience Matlab Course

Lecture 1: Practical Exercise

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[1] Generate three numeric variables - a, b and c - with values of 2, 3 and 4, respectively. Then compute the following sums:

$$x = \frac{a + c}{b}$$

$$y = \frac{b\left(a + \sqrt{c}\right)}{a}$$

$$z = \frac{x}{ab}$$

[2] Generate two 3 x 3 matrices (i.e. each with three rows and three columns) named mat1 and mat2, each containing arbitrary integer values (i.e. any set of whole numbers that you choose). Then compute both their element wise and matrix product, and store the output in variables called product1 and product2, respectively

[3] Generate a sequence of numbers from 60 to 3600 in steps of 60; generate a sequence of numbers from 10 to 1 in steps of -1; generate a sequence of numbers from 1 to 365 in steps of 7; generate a sequence of numbers from 365 in steps of 365 to 3650

[4] Change the first row of mat1 so that all entries are 5; change the first column of mat2 so that the entries are the numbers 1, 2 and 3; change the entry in the third row, third column of mat2 so that the entry is NaN

[5] Generate a cell array with your name, age, and place of birth as three separate entries in the first column; generate a structure called 'myData' with the same information placed in fields called name, age and place_of_birth, respectively

[6] Compute the mean of each row and column in mat1, and place the results in new variables called row_mean and col_mean, respectively; compute the standard deviation of all entries (i.e. from all rows and all columns) in mat1; compute the mean of all entries (i.e. from all rows and all columns) in mat2, ignoring the NaN value

[7] Generate a 10 x 5 matrix (i.e. one with ten rows and five columns) of random numbers, uniformly distributed between 0 and 1; generate another matrix of the same size, but in this case containing random numbers that are normally distributed with a mean of 0 and a standard deviation of 1; generate another matrix of the same size, but in this case containing random numbers that are normally distributed with a mean of 0 and a standard deviation of 2.