First Lab Assignment (Due by 3pm on Feb. 18)

Reference MATLAB tutorial and MATLAB lab demonstrations.

Lab assignments

Assignment 1 Please complete following sequence of problems in MATLAB:

- create a matrix A with 5 rows and 3 columns, filled with random variables between 0 and 10
- create an identity matrix B with the size of 3 times 3
- get the submatrix C of A by extracting the elements of the last three rows
- perform element-wise multiplication between matrix B and matrix C. The result is denoted as the matrix D
- concatenate A and D to form matrix E, whose first 5 rows are from A and the last 3 rows are from D
- plot a histogram of each column of matrix E, what can you tell about the distribution of values in columns? (Please label the axes and add a title. You should also specify other properties such as the line width, the font size and the color. Please save the figure as .png)
- write a **function** to calculate intersection between two sets $A = 1 : 5 : 200$ and $B = 1 : 3 : 190$.

Please submit both of your MATLAB codes and the plotted figure.

Assignment 2 Plot the figure (Textbook Fig. 3.1, p. 29): However, the probability of $P(B_n)$ should be probability of no three coincident birthdays for $n = 1, 2, ..., 100$.

You should:

- implement a function (e.g., threeBirthdaysProblem(n)) to compute the probability of no coincident birthdays in a group of n arbitrarily chosen people. This function takes one input argument, n and return the computed probability
- plot the figure of $P(B_n)$ for $n = 1, 2, ..., 100$ similar to the one demonstrated in the lab 3. In order to plot the probabilities you have to call defined function (e.g., threeBirthdaysProblem) to compute the probability for different values of n.

Please submit both of your MATLAB codes and the plotted figure.

Assignment 3 For a given probability mass function please calculate and plot in MATLAB proper distribution function.

a	-1	0	1	2	3
$p(a)$	1/24	1/2	1/4	1/6	1/24

Please label the axes and add a title. You should also specify other properties such as the line width, the font size and the color. Please save the figure as .png. Submit both of your MATLAB codes and the plotted figure.