PERI INSTITUTE OF TECHNOLOGY
DEPARTMENT OF ECE

Two days National Workshop On

Communication & Image Processing Using Matlab "CIPM 2017"

MATLAB EXERCISE -4

1. Write a function that returns the two roots of a quadratic equation, given the three arguments a, b and c. Test the function from the command line
2. Write a function that returns the mean and standard deviation of a vector of numbers (input vector). While Matlab supplies the mean() and std() functions, try just using the sum() and length() functions.
3. Write a function that reverses the order of letters in a string, and returns the new string.
4. Use the eval() Matlab function to evaluate strings such as:
   - exp1 = '5*6 + 7';
   - Note this, and feval(), is very useful for dynamic programming
5. Use a cell array to store a list of expressions, stored as strings. Then use eval() and a for loop to iterate over the expressions and evaluate them.
6. Create two simple data structures to modify your solution to (1). Use one data structure to pack the parameters of the quadratic equation into a single variable, and use another to return the roots inside a single data structure
7. Create the vector 0:pi/20:2*pi and use it to sample the sin() function. Plot the results and edit the figure window to put labels on the figure. Save the figure (.fig) and export a .jpg file.
8. Use the meshgrid() function to sample a 2 dimensional input space between 0 and 2p, then use the data to sample the function $\sin(x_1)*\cos(x_2)$. Plot the results using the mesh() function.
9. Create a GUI that prompts the user for a number and then displays double that number next to the entered value.
10. Start Simulink and using a sin() **source** and a **scope sink**, view the signal over 10 seconds.
11. Change the frequency of the sin() source and again compare the results. Next change the simulation length.
12. Build the first order system H(s) = 1/(1+3s) in the model and pass a sin() signal through the system. Make sure you run the simulation for a long enough time for the transients to die down and the system to settle.
13. Replace the first order system in (6) with the second order system, what is the difference when the system settles down H(s) = 1/(1+2s+s^2).