- Zip all your files and label the zip file as **[Roll number in lower case]_hw2.zip**
- The scripts will be executed and compared against the submitted PDF file.
- Submit a single zip file containing `.tex, .m, .pdf` and image files only.
- Generic instructions from previous homeworks stand.
- **This assignment is to be done entirely in Octave**

There are three data sets provided, `data1.txt, data2.txt` and `data3.txt` and the assignment involves performing a linear regression analysis to determine the nature of the data provided.

I. Gaussian Elimination

1. Write your own function to perform Gaussian-Elimination that takes in a matrix A and vector b, and returns the solution vector x (Method 1)
2. Ensure you can do the above using inbuilt functions `inv(A)*b` and `A\b`, Method 2 and Method 3, respectively.
3. Plot L_∞ norm of error between the Method 1 and Method 2, and Method 1 and Method 3 against matrix size n (Go upto 1,000 if possible).
4. Plot wall clock time against matrix size n for the three methods on a single plot.

II. Regression Analysis

1. Write a function that performs regression analysis on a given dataset.
2. Perform linear regression using $y = mx + c$, and for each of the three datasets, use only the first 50 points, 100 points, and 200 points, respectively.
3. Create a table for each data set where the rows are 50, 100 and 200, and the columns indicate the values of m and c, and based on the values, infer the nature of the data provided.
4. Do you think a better model would work instead of a linear curve? Which one? Why?
5. Plot the data on a scatter plot and a line for the model (line to be above the scatter data). Support your previous inference.