Assignment 1- Least Squares (6 Marks)

- This assignment is meant to familiarize solving Ax = b using QR decomposition.
- Additional test cases will be generated with matrix A and column vector b in final evaluation.
- The **check points** will be the values of matrices Q , R and the solution vector obtained

Instructions:

- DO NOT use any additional libraries (In other words, DO NOT use any additional **import** statements)
- Code for Gram-Schmidt orthogonalization to find Q Matrix and subsequently R Matrix
- Use Back-substitution method to solve for the final solution column vector
- The Q and R matrices are to be in the form of a list of lists of floats, with each inner list corresponding to a row in the matrix.
- The final solution column vector needs to be in the form of a list of floats.
- Fill the function `leastSquare(A , b) .` Do not modify `main` and `generate_dataset` functions. You may define additional functions if required.

Uploading the solution:

- Create a folder with your ID name (all caps letters, no spaces E.g. IMT20150001)
- Put the completed *.ipynb file inside the folder. No additional files should be put and DO NOT change file name.
- Final Folder Structure : your_roll_number /Least_Squares.ipynb
- Zip and upload the folder in LMS.