Build a MATLAB function script that performs the following process:

#0. Create a function file with matrix *A* and vector *b* of the form below as input and matrix *E* from problem #9 as output **(+10 points)**.

Input conditions:

One matrix (= *A[i,j]*) and one vector (= *b[1,k]* or *b[k,1]*).

where *i* = row index of matrix (*i* =1 ,2 ,3 , ...m)

j = column index of matrix (*j* = 1, 2, 3, ...m)

k = index of vector size (*k* = 1, 2, 3, ...l)

where *l* > *m*

condition:

#1. Column-wise interchange in the matrix **(+10 points)**

- Exchange the first column *(j=1)* with the last column *(j=m)* of the matrix *A*.

#2. Sort the odd rows *(i= 1,3,5...)* elements of the matrix *A* in ascending order by each row **(+10 points)**

#3. Add ones to all diagonal terms in matrix **(+5 points)**

#4. Using loop statement(for loop, or while loop), calculate inner product of the input matrix.

(i.e., *B* = <*A* , *A*>). **(+20 points)**

#5. Create a new vector *u* in the form of *m×1* by performing sampling without replacement from the elements of vector *b*. **(+10 points)**

#6. Create a new vector *t* by dot product of matrices *A* and *u*. **(+5 points)**

#7. Concatenate vectors *t* and *u* to create a matrix C of the form m×2. **(+10 points)**

#8. Create a matrix *D* of the form m×m using inner product of vectors *t* and *u*.**(+10 points)**

#9. Calculate the element-wise power between matrices *B* and *D* to create matrix *E*. **(+10 points)**

- You can use MATLAB built-in functions.

Reference functions: *sort*, *randperm*

* Print the results from **#1** to **#9** in the command window in order.

* Input matrix *A* is a square matrix (=mxm matrix).

-The size of matrix (and vector) will vary, but, for testing, I will not test extreme cases

-I will try up to 100 indices (i.e. *A[100,100]* and *b[100,1]* or *b[1,100]*)

*the calculation process should be in order and each output in command window must be numbered. (use disp function)

- otherwise I will rank in order (i.e. first output is for condition1)

*You must add the comments(brief explanation) about your script at the beginning (See the MATLAB tutorial). **(-5 points, if you didn't do)**

* Name the function file **'assign_학번'** and compress the script file as .zip and submit it in the form of **'이름_학번.zip'.**

Total score: 100 points

*If the code is not executed, you will receive 0 points.

*Late submissions are not accepted.