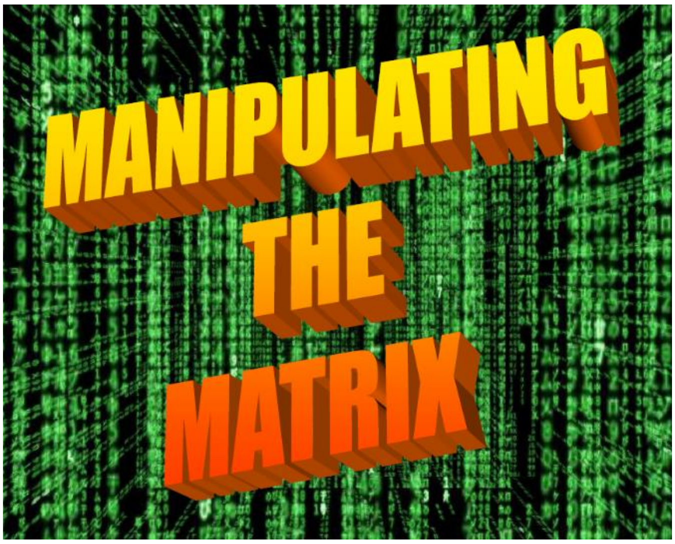
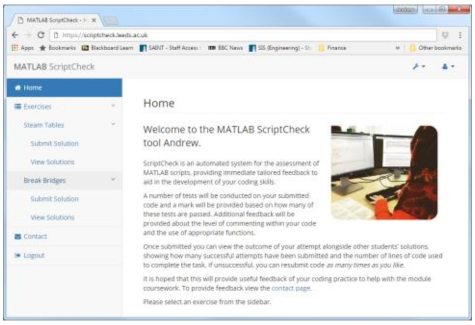
Self Study 1 – Manipulating the Matrix



Introduction

Being able to manipulate data in vectors and matrices in MATLAB is extremely important and is of course where MATLAB gets its name. We will do it repeatedly during this course and it essential for you to be successful in the coursework.

ScriptCheck



Home

Welcome to the MATLAB ScriptCheck tool Andrew.

ScriptCheck is an automated system for the assessment of MATLAB scripts, providing immediate tailored feedback to aid in the development of your coding skills.

A number of tests will be conducted on your submitted code and a mark will be provided based on how many of these tests are passed. Additional feedback will be provided about the level of commenting within your code and the use of appropriate functions.

Once submitted you can view the outcome of your attempt alongside other students' solutions, showing how many successful attempts have been submitted and the number of lines of code used to complete the task. If unsuccessful, you can resubmit code *as many times as you like*.

It is hoped that this will provide useful feedback of your coding practice to help with the module coursework. To provide feedback view the contact page.

Please select an exercise from the sidebar.

As you have no demonstrators for this exercise you normally would have no feedback on your work however we've created a system to help you called ScriptCheck.

ScriptCheck can help tell you if you are getting the right answer and some stats how you did but does not have much functionality to help you debug when your code fails to run for whatever reason so it is best to test on your own computer to get it working properly and then submit it to get feedback. Make sure you correctly spell the variable names in your code so scriptcheck can recognise them, if your code runs in MATLAB but you get 0% in scriptcheck, it is likely that you have spelled a variable name wrong, remember MATLAB is case sensitive.

Task Instructions

To test on your computer you will need to download `self_study_1.mat` from the VLE.

Follow the steps below to programmatically determine a single value (we've covered everything you need to complete this task):

1. Create a program .m file called `matrix_messing.m`. Don't forget to add a comment at the start of the script containing the file name and some useful comments describing what the file will do, i.e. manipulating matrices to find a single value.

2. In your script programmatically load the .mat file into the workspace.

3. The .mat file contains a matrix called `data`, and two scalars, `gain` and `offset`.

4. Programmatically determine the number of rows and columns in data and set the resulting row vector to a variable named `dimensions`.

5. Multiply data by the variable gain and add offset (both found in `self_study_1.mat`) to give a new matrix `scaled_data`.

6. Create a variable called `first_row` assigning it a vector containing the first row of `scaled_data`. Remember MATLAB is not zero indexed.

7. Remove the last row of `scaled_data`.

8. Replace the value in the 7th row of the 3rd column of `scaled_data` with the value 15.

9. Replace the 5th row in `scaled_data` with the vector `first_row`.

10. Create a variable called `middle_columns` assigning it a matrix containing the middle three columns of `scaled_data`.

11. Find the absolute values in `middle_columns` assigning to the variable `abs_middle_column`.

12. Find the sum of all values in the matrix `abs_middle_columns`, assigning it to the variable `total`.

If you wish to you can use the `disp` function to display what `total` is however when submitting to ScriptCheck this is not necessary.

ScriptCheck Instructions

Follow these steps to evaluate your solution:

1. When you have completed your code copy the whole of your script including all comments.
2. Open a web browser and go to scriptcheck.leeds.ac.uk.
3. From here you will need to logon. To do this enter your University e-mail address and the password is your student ID number.
4. Once logged on select *XJME1010* from the left hand menu and then *Manipulating the Matrix* followed by *Submit Solution*.
5. Paste your code into the text box and click *Submit.*
6. When the button appears, click *View Feedback.* This will present your results, letting you know how accurate your code is, number of lines of code and comments and will provide some feedback comments about your code.

7. You can then select *View Solutions* from the left hand menu and see your result against the results of the cohort.

8. If your code is incorrect, you can resubmit by going back to step 4.