

MATH36032 Project 3 - deadline 14th May 2021, time 1100hrs.

For this project you will need to download the *Bananas.csv* file on Blackboard, and it will be located in the Projects folder in the Project 3 section. This is a very large datafile with almost 12000 entries, so do not try to print the file! The first few lines of the file are as shown in figure 1. The *Origin* denotes the country or region of origin of the bananas. The *Date*

	Origin	Date	Price	Units
1	'belize'	2021-01-15	0.8600	'£/kg'
2	'costa_rica'	2021-01-15	0.8700	'£/kg'
3	'dominican_...	2021-01-15	0.5500	'£/kg'
4	'ecuador'	2021-01-15	0.8300	'£/kg'
5	'guatemala'	2021-01-15	0.7700	'£/kg'

Figure 1: The first few lines of the *Bananas.csv* file.

The header shows the date and the *Price* column the cost in pounds sterling for a kilogram of bananas. You will notice that there are entries with the country of origin as '*all_bananas*' which is an average of the collective data for that date.

You need to process the file using MATLAB to answer the following questions:

1. From the data produce a list of the distinct entries under the *Origin* header (for example something like

<i>belize</i>	<i>costa_rica</i>	<i>dominican_republic</i>	<i>edudaor</i>	<i>guatamala</i>
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for the sample in Figure 1).

2. Banana prices fluctuate a lot during the year. From which three countries is the average price lowest over the last 5 years of the data for that country, and for which three countries the average price highest over the last 5 years of data for that country. The average here is defined as the mean of the prices taken over the last 5 years of the data for that country. You may ignore the '*all_bananas*' entries here.
3. Produce a plot comparing the variation of the prices of bananas with countries of origin '*costa_rica*', '*windward_isles*' and '*ecuador*'. On the same plot also plot the data for '*all_bananas*'.
4. Produce a plot comparing the variation of the prices of bananas with countries of origin '*costa_rica*', '*windward_isles*' and '*ecuador*' over the time period from 2016-01-01 to 2020-12-31. On the same plot also plot the data for '*all_bananas*'. Comment on any seasonal trends that you spot.

Outputs required You are required to submit a report (maximum 8 pages including any appendices) in pdf form via the submission box on Blackboard. Additionally you need to submit your m-files used for the MATLAB codes.

Additional information and guidelines

1. All coding must be done in MATLAB.
2. Keep to the page length not exceeding eight A4 pages, and there is no need for a title page or abstract for a relative short report like this. Font sizes should be no smaller than 11 point, and page margins no smaller than 2cm.
3. List the complete code of the whole function at the end of each question, or in an appendix. Make your source code more readable, by keeping the indentation and stylistic features, and can be copied from your submitted. Your published results should be reproducible from the code attached.
4. Have a look at the generic rubric about how your report will be marked, and also the intended learning outcomes about what you are expected to achieve in the end.
5. Avoid copying (too many) sentences directly from the project description, and try to restate the problem with your own words or examples if possible.
6. You may use your report in the future as evidences of written work, so take it seriously.
7. Your target audience is a fellow student on your course: explain the questions so that the report can be understood without this project description and your approach could be implemented in another computer language like Python. The report should indicate to the reader how well you understand the problem and the approach you took. Your goal will be to communicate your solutions to another person rather than to show you've completed the assignment.
8. Balance the explanation of the approach and the comments in the code. Avoid under-commenting and over-commenting.
9. Aim for precision and clarity of writing.
10. Since there is no final exam, you are advised to spend at least 15 hours on each project, with additional self-study if you are less experience with computer programming. Remember for a 10 credit module like this one, you are expect to spend $100 = 10 \times 10$ hours in total (including lectures, labs, self-study and coursework).
11. Please do not put any personal information on the report, only your student ID number.
12. The submission for each project will be open two weeks before the deadline. Only your last submission will be marked, and anything submitted after the deadline will be treated late and any penalty will be applied by the Teaching and Learning Office in June according to the Undergraduate Student Handbook.