

**Ateneo de Manila University**  
**Department of Quantitative Methods and Information Technology**

**Certificate of Authorship**

**Instructions**

- Accomplish the document completely
  - Save the document as a .pdf file with the following name format:  
<IDNumber>\_<RequirementTitle>\_COA (e.g. 12345\_Assignment1\_COA)
  - Attach this document to each course requirement submission unless otherwise specified by the Course Instructor
- 

**Certification**

I hereby certify that the submission described in this document abides by the principles stipulated in the student handbook.

I further certify that I am the author of this submission and that any assistance I received in its preparation is fully acknowledged and disclosed in the documentation.

I have also cited all sources from which I obtained data, ideas, or words that are directly copied or paraphrased in this document. Sources are properly credited according to accepted standards for professional publication.

I am aware that any potential case of plagiarism or cheating (similar code) regarding my submission merits a 0 for the requirement and a disciplinary case filed to the Discipline Committee of the Loyola Schools.

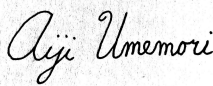
**Sources**

<https://pythonguides.com/put-legend-outside-plot-matplotlib/#:~:text=In%20Matplotlib%20C%20to%20set%20a,the%20bbox%20to%20anchor%20attribute%20to%20it.&text=We%20use%20the%20bbox%20to%20anchor%3D,the%20coordinates%20of%20the%20legend.>

[https://www.w3schools.com/python/pandas/ref\\_df\\_update.asp](https://www.w3schools.com/python/pandas/ref_df_update.asp)

<https://stackoverflow.com/questions/43401903/python-order-dataframe-alphabetically>

**Student and Course Information**

<b>Course Code &amp; Section</b>	ITMGT 25.03-C
<b>Course Instructor</b>	JOSE RAMON S. ILAGAN
<b>Student's Full Name</b>	AJI C. UMEMORI
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**Sources (cont.)**

<https://re-thought.com/how-to-change-or-update-a-cell-value-in-python-pandas-dataframe/>

<https://sparkbyexamples.com/pandas/pandas-get-cell-value-from-dataframe/>

<https://blog.hubspot.com/website/pandas-split-string>

<https://www.statology.org/pandas-merge-on-index/>

<https://www.statology.org/pandas-rename-columns/>

<https://www.javatpoint.com/how-to-create-a-dataframes-in-python>

<https://stackoverflow.com/questions/19377969/combine-two-columns-of-text-in-pandas-dataframe>

[https://theprogrammingexpert.com/remove-parentheses-from-string-python/#:~:text=Using%20strip\(\)%20to%20Remove,and%20end%20of%20a%20string.](https://theprogrammingexpert.com/remove-parentheses-from-string-python/#:~:text=Using%20strip()%20to%20Remove,and%20end%20of%20a%20string.)

<https://www.atmosera.com/blog/using-pandas-to-analyze-sales-data/>

<https://predictivehacks.com/pandas-how-to-assign-values-based-on-multiple-conditions-of-different-columns/>

<https://stackoverflow.com/questions/43401903/python-order-dataframe-alphabetically>

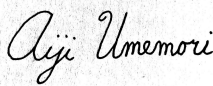
<https://stackoverflow.com/questions/28337117/how-to-pivot-a-dataframe-in-pandas>

<https://stackoverflow.com/questions/41815079/pandas-merge-join-two-data-frames-on-multiple-columns>

<https://predictivehacks.com/?all-tips=save-a-pandas-dataframe-as-an-image>

<https://www.geeksforgeeks.org/difference-between-and-and-in-python/>

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<https://www.askpython.com/python/examples/in-and-not-in-operators-in-python#:~:text=Python%E2%80%9Cnot%20in%E2%80%9D%20operator,that%20of%20the%20in%20operator.>

<https://stackoverflow.com/questions/5741372/syntax-in-python-t>

<https://www.codegrepper.com/code-examples/python/combine+two+line+graphs+matplotlib>

<https://stackoverflow.com/questions/9622163/save-plot-to-image-file-instead-of-displaying-it-using-matplotlib>

<https://stackoverflow.com/questions/31037298/pandas-get-column-average-mean>

<https://www.geeksforgeeks.org/different-ways-to-create-pandas-dataframe/>

<https://www.geeksforgeeks.org/calculate-the-average-variance-and-standard-deviation-in-python-using-numpy/>

<https://www.geeksforgeeks.org/how-to-create-pie-chart-from-pandas-dataframe/>

<https://www.codegrepper.com/code-examples/python/pandas+plot+disable+legend>

<https://pynative.com/pandas-set-index/>

<https://discuss.dizzycoding.com/why-is-my-xlabel-cut-off-in-my-matplotlib-plot/>

<https://stackoverflow.com/questions/26700598/matplotlib-showing-x-tick-labels-overlapping>

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