

# CASE STUDY RUBRIC

**Due:** 12/34/5678 by 9:99 PM

**Submission format:** Upload PDF and link to GitHub repository to Canvas.

**General Description:** Submit to Canvas PDF and link to GitHub repository.

## Why am I doing this?

This case study provides you the opportunity to demonstrate your proficiency in both technical and conceptual abilities within a cohesive multiple-part project. The case study will play as a simulation to projects often encountered in academic coursework and professional settings, thus preparing you for the tasks often completed by data scientist students and employees alike. It does so by allowing you to work with past climate data to then perform various statistical analyses to predict future weather, letting you work with real world data.

## What am I going to do?

1. The GitHub repository for this case is [https://github.com/ejb6f/DS4002\\_CS3/tree/main](https://github.com/ejb6f/DS4002_CS3/tree/main).
2. Download the CSV files under the "DATA" folder under the GitHub repository.
  - a. Gathered from National Centers for Environmental Information.
  - b. Each file contains a different weather parameter.
3. Select a parameter you wish to predict by seeing its relationship to independent variables.
4. Form a hypothesis, describing which variables you expect to have the biggest effect upon the researched dependent variable.
5. Checked the dataset for NA values, remove duplicate variables, merge datasets into one.
6. Perform a multivariate regression analysis on the dependent variable of your interest.
  - a. Find the p-value of each independent variable.
  - b. Compare the p-values to observe which independent variable has the largest effect on studied dependent parameter.
7. Create numerous plots to illustrate the relationship between the dependent variable and all of the independent variables, respectively.
  - a. This could be used to support the above findings obtained from the p-value.
8. State whether or not your hypothesis was supported and explain why in the Write-up.

## The deliverable will include:

- GitHub Repository containing the following files and/or folders:
  - Read me file
  - Write-up
  - Charts & Plots
  - Scripts
  - References

**Tips for success:**

- Take your time with the project. Plan to spend multiple hours on it, not just one sitting.
- Be ready to debug your code when necessary. Keep your cool when encountering them.
- If you are unfamiliar with p-values or multivariable regressions, make sure to research these statistical concepts to more accurately use them on this project.

**How will I know I have succeeded?**

You will meet expectations on this case study by following the criteria in the rubric below.

Spec. Category	Spec. Details
<b>Formatting</b>	<ul style="list-style-type: none"><li>• One GitHub repository (submitted via link on Canvas)<ul style="list-style-type: none"><li>○ Read me file</li><li>○ Write-up</li><li>○ Charts &amp; Plots</li><li>○ Scripts</li><li>○ References file</li></ul></li></ul>
<b>Read me file</b>	<ul style="list-style-type: none"><li>• Brief summary of what you have produced for the case study.</li><li>• Does not have to be lengthy or very detailed, but rather provide only sufficient detail to orient people who may be viewing your repository.</li></ul>
<b>Write-up</b>	<ul style="list-style-type: none"><li>• Include title, name, course, semester and year.</li><li>• Write two paragraphs guiding an audience through the project.<ul style="list-style-type: none"><li>○ One paragraph detailing the steps you took for the project.</li><li>○ One paragraph explaining your findings and conclusions.</li></ul></li></ul>
<b>Charts &amp; Plots</b>	<ul style="list-style-type: none"><li>• Folder where you will upload all of the charts and plots produced to support the findings and conclusions you made.</li><li>• Also serves as references for replication of your results.</li></ul>
<b>Scripts</b>	<ul style="list-style-type: none"><li>• Attach the programming files of whatever programming language (Python or R recommended) utilized throughout the project.</li><li>• Document file(s) well, leaving guideful annotations and comments.</li><li>• Assure that each file is reproducible for others; specify which coding parts should be replaced with their information.</li><li>• For more detailed steps, see “<u>What am I going to do?</u>” above.</li></ul>
<b>References</b>	<ul style="list-style-type: none"><li>• Markdown file citing all resources referenced and utilized for the creation of your project, in IEEE Documentation style. Include brief annotations under each citation detailing how each reference informed or assisted you for the case study.</li></ul>