Files needed today:
`high_quality_notebook.ipynb` [canvas]
`low_quality_notebook.ipynb` [canvas]

Telling a Story with Jupyter Notebooks

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Module 0 Lecture 3

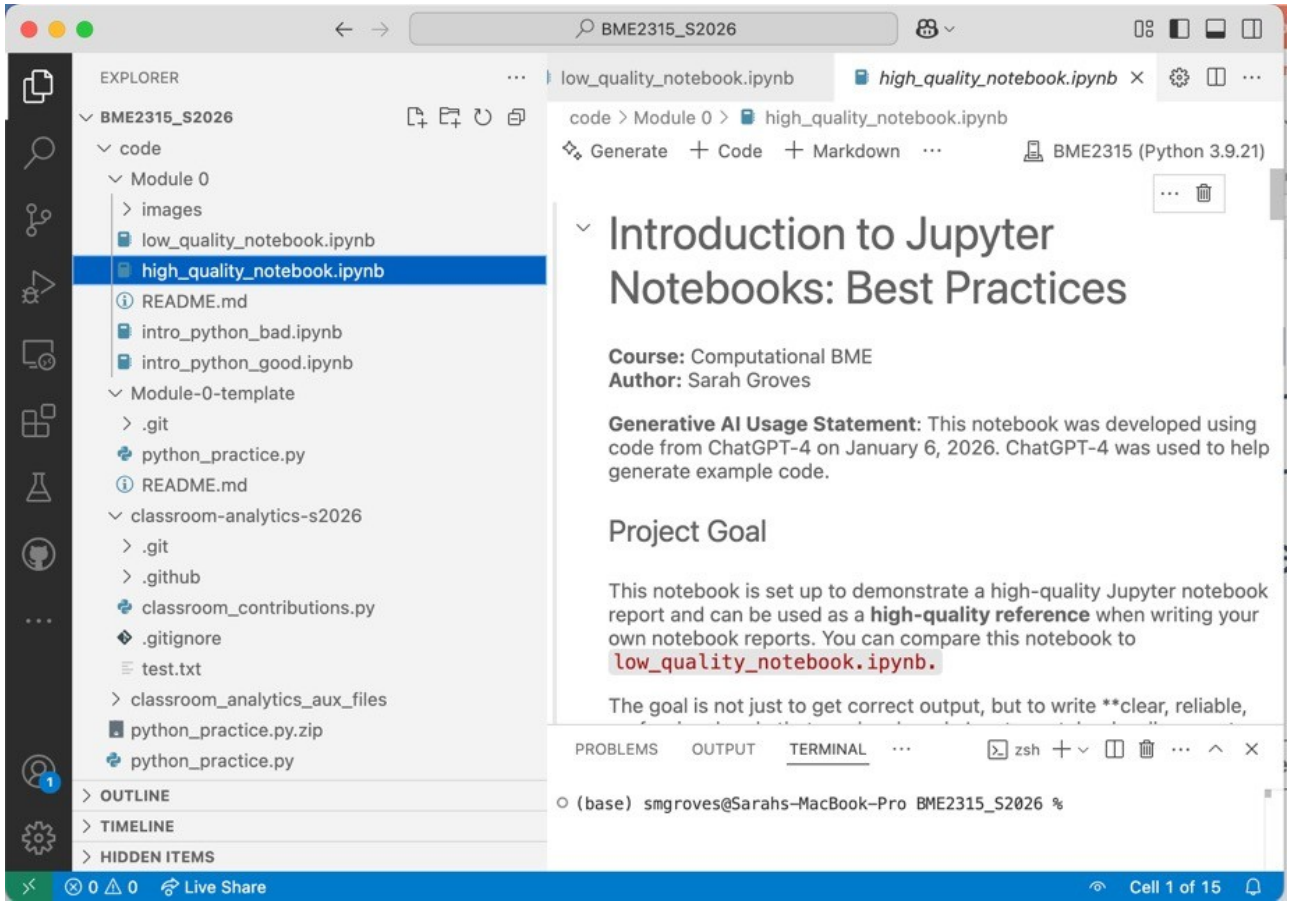
Learning objective: I can recognize what makes a Jupyter notebook high quality and can implement story-telling and visualization in my own notebooks.

Communicating results is a **key skill for engineers**

- What audience might you present a research project to?
- What are some considerations to effectively reach each audience?
- What makes an effective written presentation of research?

Getting started with Jupyter Notebooks

- We downloaded the Jupyter extension to run them in VS code
- We installed the ipykernel package
- File extension: .ipynb



LET'S PRACTICE!

Open

low_quality_notebook.ipynb

& write a list of problems with a partner

What does a high-quality notebook look like?

- Organized report
  - Headers
  - Markdown text explanations
  - Code snippets in several blocks
  - Can even add images!
- Tells a story
  - Clearly explains though process
  - Flow from one code block to the next is explained in words
- Visualizes results with plots
- Hides or minimizes “ugly” output
- Considers the audience of the report
  - In this class, the audience is your partner and your TAs/instructor!
  - In the future, this might be your employer, a client, a research journal, or other Python users

Example notebooks

High quality (exceeds expectations)

- Uses markdown to organize code blocks
  - Header: #, ##, ###, …
  - Bold: **text**
  - Italic: *text*
  - Code in MD: `code`
- Code blocks are separated by reasonable “chunks” or steps

Low quality (Meets or doesn’t meet expectations)

- All code in a single block
- No headers to orient reader
- No title/name

Example notebooks

High quality (exceeds expectations)

- Answers the following questions so reader can step through your notebook like reading a report:
  - What's the goal?
  - What steps were executed and why?
  - If something went wrong, how was it fixed?
  - What are the conclusions?

Low quality (Meets or doesn't meet expectations)

- Only code
- Doesn't explain reasoning
- Doesn't consider the audience

Example notebooks

High quality (exceeds expectations)

- Includes plots with titles, axis labels, and legends
- The plots are scaled so that everything is readable

Low quality (Meets or doesn’t meet expectations)

- No plots
- Plots without labels

Hides or minimizes “ugly” output

Example notebooks

High quality (exceeds expectations)

- Doesn’t print out any unnecessary code from development
- Print statements are clearly labeled when the output is useful to the reader
  - Print(“Correlation value: ”, corr_value)
- Imports auxillary functions from other files

Low quality (Meets or doesn’t meet expectations)

- Unnecessary print statements (e.g. print(dataframe) = prints the entire dataframe over many pages)
- Variable print statements used for troubleshooting/debugging
- Includes all the code written for the project, without hiding background functions

Homework due
Tuesday
January 27, 2026

- In Canvas, submit the Module 0 assignment with a link to your github repo
- Reference the rubric to see what will be expected:
  - Module 0 repo with
  - README file,
  - Another branch,
  - Python_practice.py pushed to that branch (maybe multiple times!)
  - A high-quality version of the low_quality_notebook.ipynb file
  - Pull request from your branch to main when done with developing
  - Write a review comment and accept the merge into the main branch