

# Week 8 Code Review

This code review was performed with ChatGPT on 23 Apr 2023 using tools made available as part of COMP90082. Please see below the code review for some comments and reflection on ChatGPT's code review.

ChatGPT code review pull request: [add show\\_shapes.py code for review #11](#)

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File for review: show\_shapes.py

```
#!/usr/bin/env python3

"""
display_shapes.py
This script displays shapes stored in a CSV file as matplotlib plots.
To run this script, pass the name of the CSV file containing the shapes as an argument.
Optionally, you can use the --no_clear flag to avoid clearing the display between shapes.
Usage:
    python3 display_shapes.py input_file.csv [--no_clear]
Args:
    input_file.csv: A string containing the name of the CSV file to read from.
Options:
    --no_clear: Don't clear the display (useful for viewing shapes in proportion to each other).
Requirements:
    - Python 3.x
    - Matplotlib
"""

import matplotlib.pyplot as plt
import numpy as np
import argparse
import csv
import time
from typing import List

def show_shapes(input_filename: str, no_clear: bool) -> None:
    """
    Displays shapes stored in a CSV file as matplotlib plots.
    :param input_filename: A string containing the name of the CSV file to read from.
    :param no_clear: A boolean flag indicating whether to clear the display between shapes.
    """
    plt.ion()

    with open(input_filename, 'r') as csv_file:
        csv_reader = csv.reader(csv_file, delimiter=',', quotechar='"')
        for row in csv_reader:
            _stroke: List[str] = row[2:]
            stroke: List[float] = [float(coordinate) for coordinate in _stroke]
            # The x- and y-coordinates of the shape
            x_shape, y_shape = stroke[:2], stroke[1:2]

            # If no_clear is false then clear plot before drawing next shape
            if not no_clear:
                plt.clf()

            plt.plot(np.asarray(x_shape), np.asarray(y_shape), linewidth=10)
            plt.draw()
            time.sleep(1.0)

if __name__ == '__main__':
    parser = argparse.ArgumentParser(description='Show shapes in csv file')
    parser.add_argument(
        'input', help='A string containing the name of the CSV file to read from.')
    parser.add_argument('--no_clear', action='store_true',
        help="Don't clear the display (useful for viewing shapes in proportion to each other).")
    args = parser.parse_args()

    show_shapes(args.input, args.no_clear)
```

ChatGPT review comment

#### ChatGPT review for show\_shapes.py:

1. Documentation Defects:
  - a. Naming: The software element names are clear and descriptive. No issues found.
  - b. Comment: The comments are clear and helpful. They explain the purpose of the code and the parameters of the functions. However, there is no comment explaining the purpose of the x\_shape and y\_shape variables.
2. Visual Representation Defects:
  - a. Bracket Usage: No issues found.
  - b. Indentation: The indentation is consistent and follows PEP 8 guidelines.
  - c. Long Line: No long code statements that hinder readability.
3. Structure Defects:
  - a. Dead Code: There is a problem with the placement of the if statement. It should be inside the for loop to apply to each shape. As it is, it only applies to the last shape in the CSV file.
  - b. Duplication: No duplicate code statements found.
4. New Functionality:
  - a. Use Standard Method: No single-purpose code statements found.
5. Resource Defects:
  - a. Variable Initialization: No issues found.
  - b. Memory Management: No issues found.
6. Check Defects:
  - a. Check User Input: No issues found.
7. Interface Defects:
  - a. Parameter: No incorrect or missing parameters found.
8. Logic Defects:
  - a. Compute: There is a problem with the placement of the if statement. It should be inside the for loop to apply to each shape. As it is, it only applies to the last shape in the CSV file.
  - b. Performance: No performance issues found.

#### Recommended changes:

- Move the if statement inside the for loop to apply to each shape.
- Add a comment explaining the purpose of the x\_shape and y\_shape variables.

## Comments and Reflection on ChatGPT's Code Review:

Before reflecting on the utility of ChatGPT code review, there are some numbered remarks which point out notable items from the review:

1. ChatGPT has misidentified a comment as an if statement; the if statement is within the scope of the for-loop, but the comment preceding the if statement has less indentation. Thus, the first recommended change is based on a misunderstanding of the code. However, it does draw attention to the fact that the misaligned indentation between the comment and code may hurt readability slightly.
2. The variables x\_shape and y\_shape are identified in a comment as the x- and y-coordinates of a shape. After they are defined, there is a short if-statement and then they are passed directly to a plotting function. Additionally, the docstring of the function makes it clear that the purpose of the function is to plot shapes. Adding additional comments to say that we are going to use x\_shape and y\_shape to generate a plot seems slightly gratuitous, but can't hurt.
3. ChatGPT has failed to notice several lines are in violation of PEP 8. For one, the docstring for show\_shapes should not contain lines longer than 72 characters, but both 'param' lines of the docstring are longer than this. Additionally, lines of code should not exceed 79 characters, but two lines in the 'if \_\_name == "\_\_main\_\_"' block exceed this number of characters.

Overall, the ChatGPT code review is not particularly good. Of the two recommended changes, the first is based on a misreading of the code and the second is of questionable value. Additionally, ChatGPT fails to pick up on several obvious violations of PEP 8. There is some utility in this process, but the utility is mostly in reviewing the comments and taking time to critically reflect on the code and the feedback, rather than in the feedback itself.

Following the code review, the following changes were made to the code:

- The comment containing 'if' was indented so as to align with the block of code it was commenting on, to enhance readability.
- A brief comment was added explaining that x\_ and y\_shape are used to plot the shape.
- The violations of PEP 8 noted in comment 3 were rectified.