

Math Lab #1:

Midterm and Final Exam Visualization

Sunglok Choi, Assistant Professor, Ph.D.
Computer Science and Engineering Department, SEOULTECH
sunglok@seoultech.ac.kr | <https://mint-lab.github.io/>

Overview

- **Prerequisite**
 - Anacodna (Individual Edition)
- **Practice) Midterm and Final Exam Visualization**
 - The given data
 - Expected results
 - Practice with the skeleton code
 - Step #1) Plot midterm/final scores as points
 - Step #2) Plot total scores as a histogram
- **Assignment**
 - Mission: Complete the given skeleton code

Practice) Midterm and Final Exam Visualization

- The given data (file: data/class_score_en.csv)

midterm (max 125), final (max 100)

113, 86

104, 83

110, 78

101, 79

101, 77

103, 76

71, 94

102, 71

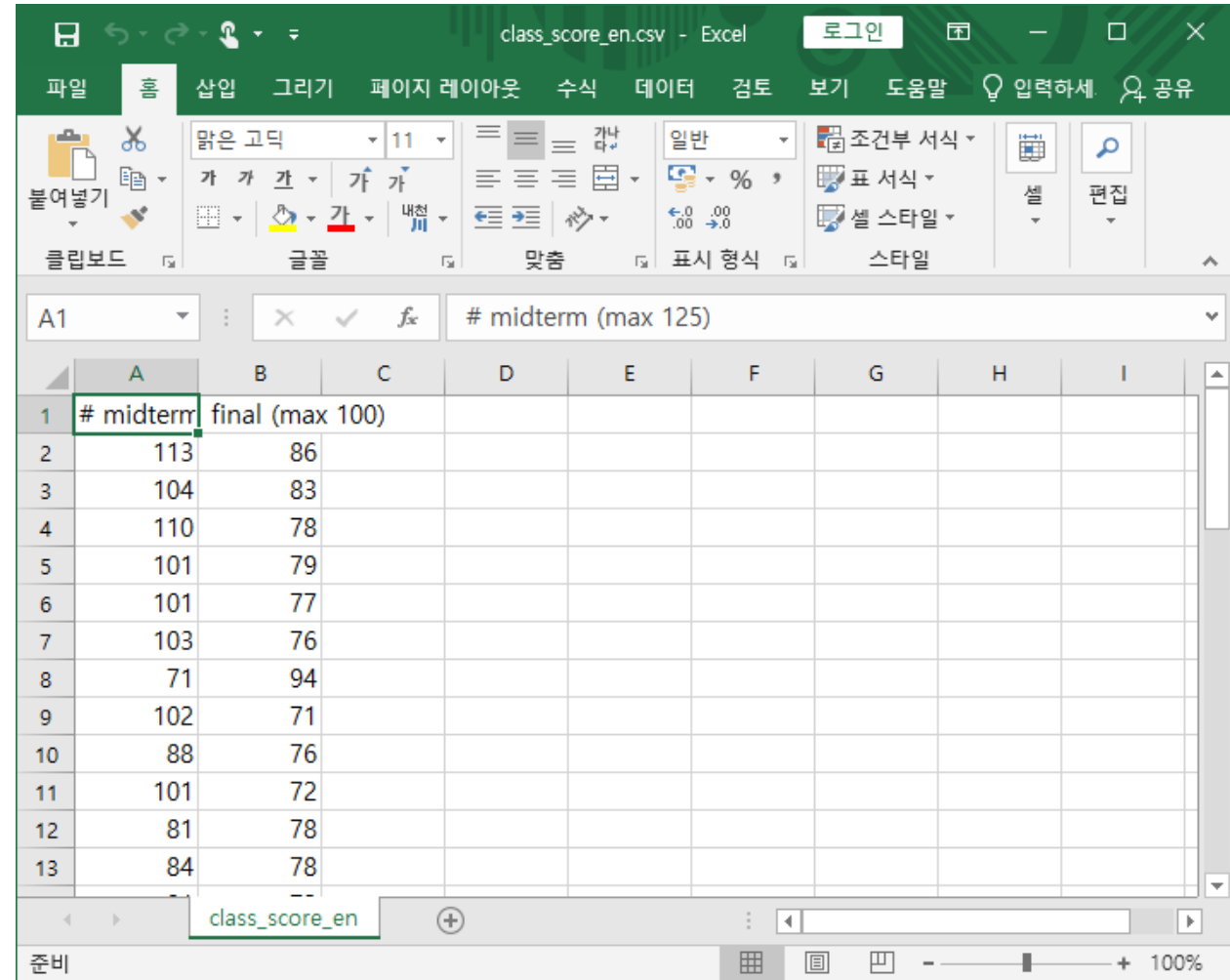
88, 76

101, 72

81, 78

84, 78

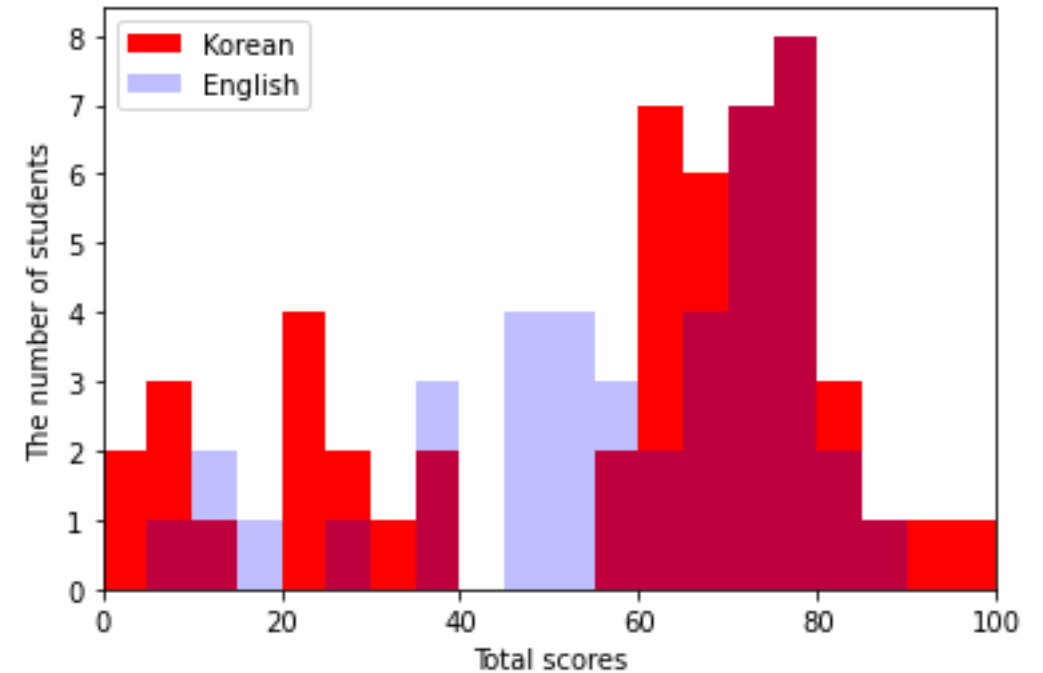
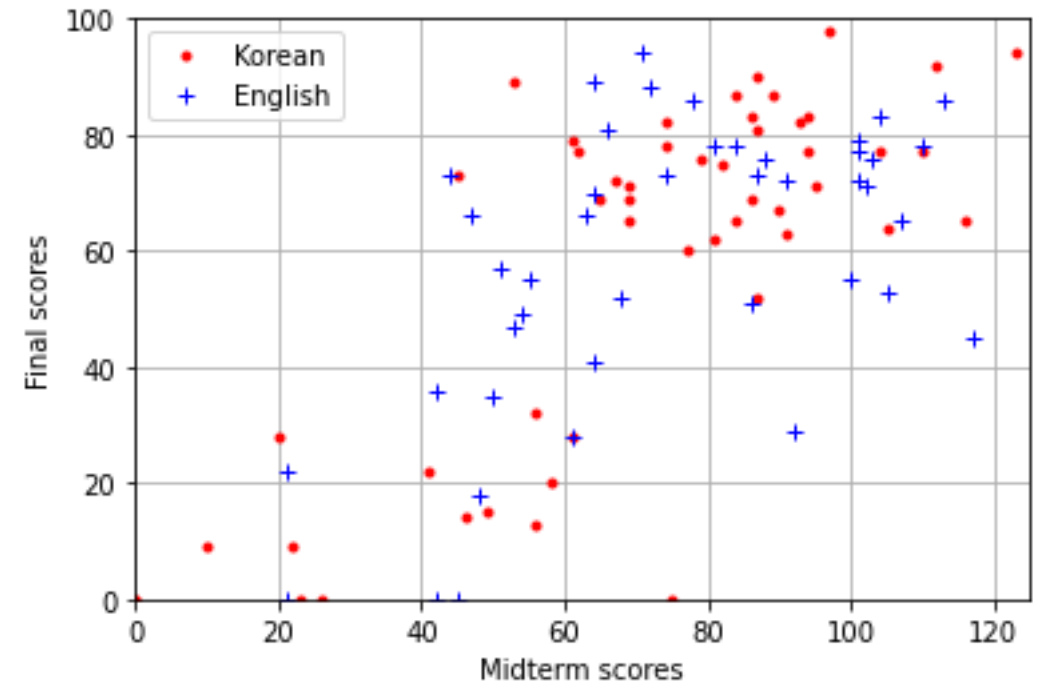
...



	# midterm (max 125)	final (max 100)
1	# midterm (max 125)	
2	113	86
3	104	83
4	110	78
5	101	79
6	101	77
7	103	76
8	71	94
9	102	71
10	88	76
11	101	72
12	81	78
13	84	78

Practice) Midterm and Final Exam Visualization

- Expected results
 - Scatter plot
 - Data: Midterm scores (X) and final scores (Y)
 - X/Y range: [0, 125] and [0, 100] with grid
 - Note) [plt.plot\(\)](#) or [plt.scatter\(\)](#)
 - Histogram
 - Data: Total scores
 - Histogram range: [0, 100] with bin width 5
 - Note) [plt.hist\(\)](#)
 - Common
 - X/Y labels
 - Legends



Practice) Midterm and Final Exam Visualization

- The given skeleton code (class_score_plot_skeleton.py)
 - Step #0) Prepare midterm, final, and total scores for Korean and English classes
 - Step #1) Plot midterm/final scores as points
 - Step #2) Plot total scores as a histogram

```
import matplotlib.pyplot as plt

def read_data(filename):
    # ...
    return data

if __name__ == '__main__':
    # Load score data
    class_kr = read_data('data/class_score_kr.csv')
    class_en = read_data('data/class_score_en.csv')

    # TODO) Prepare midterm, final, and total scores
    midterm_kr, final_kr = zip(*class_kr)
    total_kr = [40/125*midterm + 60/100*final for (midterm, final) in class_kr]
    midterm_en, final_en = [0, 0]
    total_en = [0]

    # TODO) Plot midterm/final scores as points

    # TODO) Plot total scores as a histogram
```

Assignment

- Mission
 - Complete the given skeleton code (`class_score_plot_skeleton.py`)
 - Submit your code (`class_score_plot.py`) and its two figures (`class_score_scatter.png`, `class_score_hist.png`)
- Condition
 - Please follow the above filename convention.
 - You **can** start from scratch (without using the given skeleton code).
 - However, you **should** use the given data.
 - You **can** freely change the given skeleton code if necessary.
- Submission
 - Deadline: **October 9, 2024 23:59** (**firm deadline**; no extension)
 - Where: e-Class > Assignments
 - Score: Max 10 points