README

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1 Keyboard Layout Heatmap and Finger Travel Analysis

This notebook allows you to generate a heatmap showing key usage frequency and calculate finger travel distance based on different keyboard layouts. Follow the instructions below to run the code and analyze your typing patterns.

2 How to Run the Code

2.1 Download the Notebook

Download the Jupyter notebook (`.ipynb` file) to your local machine.

2.2 Install Necessary Libraries

Ensure that you have the following libraries installed in your environment:

- `matplotlib`
- `numpy`
- `Pillow`
- `math`

To install these libraries, run the following commands in your terminal or notebook:

```
pip install matplotlib numpy pillow math
```

2.3 Input Your Desired Keyboard Layout

You can input any keyboard layout, but make sure the layout dictionaries are named `keys` and `characters` as follows:

- **`keys`**: A dictionary that defines the key positions on the keyboard.
- **`characters`**: A dictionary mapping keys to their corresponding character sequence (including Shift usage).

Make sure your layout matches this structure before running the cells.

2.4 Ensure Home Row Matches the QWERTY Indices

Make sure the home row keys (for both hands) in your layout match the indices as those of the QWERTY layout:

- **Left hand home row**: keys `a`, `s`, `d`, `f` (indices 28-31)

- **Right hand home row**: keys `j`, `k`, `l`, `;` (indices 34-37)

These are critical for calculating finger travel distances accurately.

2.5 Run Each Cell

Run each cell in the notebook sequentially to ensure that all necessary data is processed and functions are initialized.

2.6 Enable Spacebar Usage (Optional)

The spacebar has been disabled by default to avoid dominating the heatmap. To enable spacebar usage:

- Uncomment the line in the heatmap generation code:

```
# heat_data[int(y), 3:8] += usage / 5  # Divide usage across 5 columns for the spacebar
```

2.7 Input Any Text to Generate the Heatmap

In the last cell of the notebook, input any text you'd like to analyze. The heatmap and finger travel distance will be generated based on your input text.