

Keyboard Switches Self-Study:

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Part 2: Self-Study:

Idea:

When Wilson Leung and I first did our self-collected data analysis back in May 2023, we expected to leave the project there. However, I thought the project could be further improved, and had lots of potential to be even greater than it currently was. This was when I decided to self-collect data on myself, testing a bunch of different mechanical keyboard switches, and seeing if any of them had an impact on my words per minute and accuracy. This idea continued to lead me to pick up the ideas of the project and expand it, adding new skills I have acquired from various different statistics courses, and implement those techniques into this project.

Goal:

Do keyboard switches actually impact your typing performance?

Overview:

The project will be conducted on a singular keyboard, the Blade60. This will control variability in our scores. We attempt to achieve our goal by typing on a set of switches every day and recording those results into a Google Sheet. There will be multiple different Google Sheets that will hold different types of data (Descriptions, Summaries, Raw Data, Date Averages). We will create a testing procedure for testing each switch, and once all of the switches have been tested, we can move on to exploring/analyzing the data.

The project will consist of 3 different parts:

- 1) Data Collection
- 2) Data(base) exploration (SQL)
- 3) Data Analysis (Python)

Testing Procedure:

- 1) First, I will do 50 typing tests with my daily driver switch (Oil Kings) to determine my current WPM.
- 2) Decide the order of switches through a randomizer (Python)
- 3) Daily Process:
 - a) Every day, we will record 10 typing trials on the baseline switch (Oil Kings)
 - b) Change to the current switches that need to be tested that day

- c) Record a video of me talking about day-by-day updates, and a switch typing test for reference.
 - d) Take a 2-minute break. in-between every 10 trials.
 - e) Record statistics like accuracy, WPM, date, and switch id.
 - f) Record the pitch of switches by placing the phone near my keyboard and performing 10 typing tests, marking the average decibels.
 - g) Repeat steps d&e until all 50 iterations have been done.
 - h) Record average WPM for baseline switch, WPM/accuracy for switch of the day. Rate the switch 1-10. Finally, subtract WPM for the switch of the day from the baseline switch
- 4) Repeat the process until all switches have been completed.

Updated Testing Procedure:

1. First, I will do 50 typing tests with my daily driver switch (Oil Kings) to determine my current WPM.
2. Decide the order of switches through a randomizer (Python), while also running new iterations based on added switches/ switches that need retesting.
3. Record the pitch of switches by pressing each switch with a keycap on it close to my microphone. Perform 30 presses, and record the average.
4. Daily Process:
 - a. Every day, we will record 10 typing trials on the baseline switch (Oil Kings)
 - b. Change to the current switches that need to be tested that day
 - c. Record a video of me talking about day-by-day updates, and a switch typing test for reference.
 - d. Run trials for daily switch, taking a 2-minute break. in-between every 10 trials.
 - e. Record statistics like accuracy, WPM, date, and switch id.
 - f. Repeat steps d&e until all 50 iterations have been done.
 - g. Record average WPM for baseline switch, WPM/accuracy for switch of the day. Subtract WPM for the switch of the day from the baseline switch. Rate the switch on a scale of 1-10. Finally, write 2 words you would use to describe the daily switch.
 - h. Mark down the daily average WPM and accuracy across baseline and daily switch.
5. Repeat the process until all switches have been completed.

Deciding the Order:

- 1) We will obtain our order by using Python:
 - a) Create a list of switches
 - b) Shuffle the switches using the random library
 - c) Print the order.

Order:

1. Holy Panda
2. Kiwi
3. Xinhai
4. Type R
5. Tealios V2
6. Higanabana
7. Curry

New Order:

- Unfortunately, I lent the Kiwi Switches to a friend and do not know when I can get them back. For the sake of the experiment, we will swap the Kiwis for the curry switches.
- I was also able to order/borrow some switches from friends and others, making it so that I could add more switches to my list, but as a result, prioritize those switches first, because I want to return the switches asap.

- 1) Holy Panda
- 2) Curry
- 3) Banana Milk
- 4) Kiwi
- 5) Tealios V2
- 6) Higanbana
- 7) Brown
- 8) Type R
- 9) Xinhai

Final Order:

- I was able to purchase a few switches and borrow some of my friends'. For simplicity and to avoid ruining the current order, I decided to test the following switches after all the ones in my current line-up. The order was made through a random generator.

1. Holy Panda
2. Curry
3. Banana Milk
4. Kiwi
5. Tealios V2
6. Higanbana
7. Brown
8. Type R
9. Xinhai

10. Tangerine
11. Melodic
12. Sonja

Retesting:

I noticed a few switches performed much better or worse than others (Curry, Holy Panda, Tangerine). Because these switches performed so well/poorly, I wanted to check these statistics by rerunning tests for each of the following switches:

Order:

1. Tangerine
2. Holy Panda
3. Curry

Data Analysis

We will analyze data through Python, store the database, find summary stats, and create tables through SQL/Dbeaver. This is so that not only are we able to inspect the data, but also draw Exploratory Data Analysis from different schemas through Dbeaver, creating different tables and finding summary statistics through it.