人机交互 作业2

计83 李天勤 2018080106

Why QWERTY?

The QWERTY, named after its first five alphabetic keys located under the numbers on a standard keyboard, also known Sholes keyboard, was invented by Christopher Sholes. Sholes received a patent for a typewriter on July 14, 1868. There are many theories about why the QWERTY layout was chosen over, perhaps an alphabetical one, other keyboards. Two of them are introduced below:

1. At the time, typewriters' mechanical strikers would often lock up if adjacent keys were pressed too quickly in succession. These specific keys are often high on the Bigram Frequency (the tracking of how often a character occurs in text) of usage. Thus, the keys were placed in a format as to separate the most common sequences or common letting pairings, such as th, and he, to be able to prevent the most amount of mechanical lockups. This is perhaps the most popular theory. On the other hand, this theory is often questioned due to the E, R, keys forming the 4th most and 6th most common pairings "er" and "re", respectively. It was also questioned because this problem of mechanical lockups only arrived later when more "touch typists" (users who could memorize the keyboard layout) arrived.
2. Considering the contradictions of the above theory, the keyboard layout may have also been influenced by the use of Morse Code. Researchers from Kyoto University have concluded that other keyboards, such as the original alphabetic layout, would be too confusing for translating Morse code. For example,

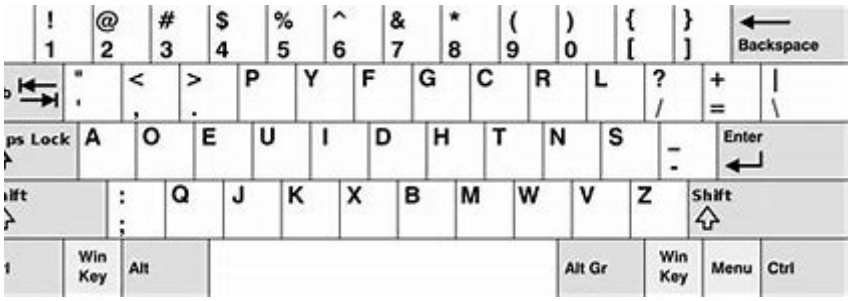
   > ""The code represents Z as '· · ·' which is often confused with the digram SE, more frequently-used than Z. Sometimes Morse receivers in United States cannot determine whether Z or SE is applicable, especially in the first letter(s) of a word, before they receive following letters. Thus S ought to be placed near by both Z and E on the keyboard for Morse receivers to type them quickly" [1]

   The layout would allow users to more quickly, and more easily decipher Morse Code.

Are there faster or more comfortable solutions?

Perhaps the two most popular alternatives are the Dvorak and Colemak keyboard.

The Dvorak keyboard, patented by Dr. August Dvorak in 1936, was designed to place the most commonly used characters in the home row for ease of access, and the least used characters on the bottom row because they are hardest to reach. Only 30 percent of keystrokes was made on the home row while using a QWERTY keyboard, while that number reaches 70 percent for the Dvorak. It is optimized to minimize the amount of row transfers that need to be taken while typing the English language.

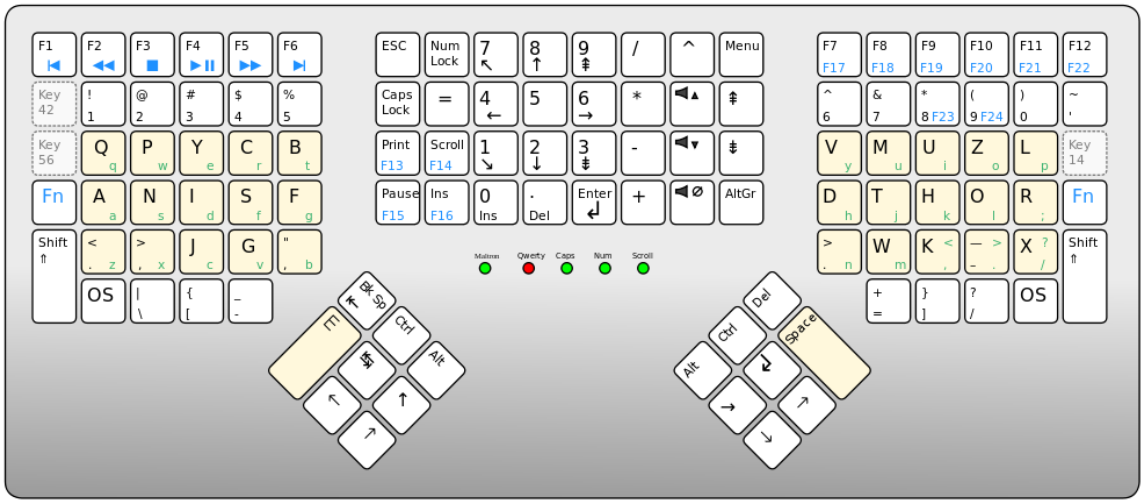


It also takes into consideration that since most users are right handed, the Dvorak keyboard prioritizes the use of the right hand, while QWERTY prioritizes left handed. The Dvorak keyboard is also much easier to learn as the as it users can learning to type right away, lessening the need to practice awkward physical motions that Qwerty sometimes require. As a kid, I remember practicing typing nonsensical phrases such as "fff" and 'jjj'. For example, in this teaching software for typing, one of the first practices is,

Although claims that Dvorak typists could reach higher typing speeds more quickly than if using a QWERTY keyboard can be debated, the Dvorak keyboard is certainly more ergonomic for users. Thus, there would be less stress perhaps on the wrists and forearms when typing for long periods of time. They are even versions of Dvorak that are specifically for made for programming.

Another popular alternative to Qwerty is the Colemak, which is extremely similar to QWERTY, but with 17 changes to key layout, while removing the Caps Lock Key, and adding another backspace.

The weirdest, perhaps most daunting alternative is the Maltron keyboard. It splits the usual rectangular keyboard into two square sets of letters, with a number pad in the middle.



A lot of other keyboards are designed specifically to improve efficiency in typing in other languages. They are listed below:

1. AZERTY: used mainly in French-speaking countries. compared to the QWERTY keyboard, where the numbers on the top row are used primarily as numbers, the number row in the AZERTY keyboard is mainly used for accents.

2. QWERTZ: used mainly in central Europe, has different variations based on a countries particular linguistic nuances
3. JCUKEN: used mainly in Russia

The fastest keyboard is perhaps those used by Stenographers, which have 22 keys and are capable of typng at the speed of speech, which is 180 words per minute.

Why do we still use the QWERTY keyboard layout?

We no longer need to consider the mechanical striker lock-up problem, so why do we still use the QWERTY keyboard layout? And there are various studies prove how messy the QWERTY keyboard is, and that there are alternatives, such as the Dvorak that are as or perhaps more efficient. Why do we still use it.

The reason is simple, it is in our DNA. Okay, maybe not in our DNA, but it is certainly ingrained in minds. Since the release of the first generation of QWERTY keyboards, the Remington company trained individuals, mostly women at the time, to transfer from "hunt and peck" to "touch typing." This "touch typing" utilized the QWERTY keyboard, and the memorization skill dramatically increased the typing speed of typists, by allowing for faster finger movement. Those whom participated in programs by Remington were trained in a way that it would be almost impossible to use any other keyboard. Similar to installing software, the QWERTY layout was programmed into our heads, and moving from QWERTY to another keyboard would take hundreds of hours. In turn, this insured that the majority of typists entering the expanding office market would demand the use of the Remington typewriters. Soon, as the typewriting technology became increasingly available, there was a shift of marketing and sales to the user, rather than businesses. Thus, due to the early Remington training courses, effective marketing, and mechanical considerations (prevent mechanical striker lockup), the momentum of this layout could not be stopped.

In our generation, we start typing at a very young age. I remember that by age 10, I had already mastered "touch typing" and could type up to 50 wpm with high accuracy. I have, as well as a vast majority of people, assimilated the QWERTY layout so much that it is extremely hard to see ourselves using any other layout. Due to some research test done in the late 1950's, a study was conducted in which

> school children in Alaska using a sequential alphabetical keyboard on a modified Remington, they equaled the efficiency and speed of QWERTY typists. The tests had to stop when parents discovered their children were “damaged” and could not type QWERTY easily and it took some a year to “deprogram” the keyboard they memorized

Moving a few keys on a QWERTY keyboard could cause most users noticeable trauma or angst. Words, phrases, and sentences that we have already established correlations with certain hand movements that we have formed in our hand would be disrupted. To a typist, it would be as if we couldn't match up words that we wanted to say with our mouth movements. Recent additions of using soft keyboards are also slowly rewiring the way we think.

Perhaps in the future we could do away from the keyboard all together. Already, advanced recognition systems can be found in almost all smartphones and computer systems. Or maybe not? A professor at the University of West of England states, [3]

> "Human computer interface research has shown recently that people actually like to think and type, not think and speak. When people are given the option to speak they have a much harder time organizing their thoughts,"

Despites QWERTY's many faults, it will be around for a long time.

Sources

[1] https://www.tested.com/tech/concepts/455257-qwerty-layout-may-have-come-morse-code/

[2] https://www.forbes.com/sites/quora/2019/01/10/why-was-the-qwerty-keyboard-layout-invented/#48a0f95157ae

[3] https://www.bbc.com/news/technology-10925456