

Operators and Times

Operador		Tempo
K	Pressionar uma tecla	Digitador experiente: 0,12 seg. Digitador mediano: 0,2 seg. Digitador médio: 0,28 seg. Usuário sem nenhuma experiência: 1,2 seg.
T(n)	Sequencia de caracteres do teclado, série do operador K	"n" * operador "K" N - número de teclas em sequencia
P	Apontar, mover o mouse	1,1 seg.
B	Pressionar o botão do mouse	0,1 seg.
BB	Pressionar o botão do mouse e segurar	0,2 seg.
H	Localizar mouse/teclado	0,4 seg.
M	Preparação mental para a ação	1,2 seg.
W(t)	Resposta do sistema	"t" tempo de retorno

The following are the standard operators and estimated times for each operator.

K - Keystroke (.12 - 1.2 sec; .28 recommended for most users). This operator is pressing a key or button on the keyboard. Pressing the SHIFT or CONTROL key counts as a separate keystroke. Different experience levels have different times for the K operator:

- Expert typist (90 wpm): .12 sec
- Average skilled typist (55 wpm): .20 sec
- Average nonsecretarial typist (40 wpm): .28 sec
- Worst typist (unfamiliar with keyboard): 1.2 sec

The average nonsecretarial typist (.28 sec) is a good design point for characterizing the typical computer user; these are people familiar enough with the keyboard to use it fluently, but are not professional-grade typists.

T(n) - Type a sequence of n characters on a keyboard ($n \times K$ sec). This operator is simply a shorthand for a series of K operators, and would normally be used only when the user is typing a string of characters that is a single "chunk," such as a filename.

P - Point with mouse to a target on the display (1.1 sec). This operator represents the action of moving the mouse to point the cursor to a desired place on the screen. The actual time required can be determined from Fitt's law. For typical situations, it ranges from .8 to 1.5 sec, with an average of 1.1 sec. If great accuracy is not required, or the movement distances or target sizes are not unusual, this average can be used instead of more precise times.

B - Press or release mouse button (.1 sec). This is a highly practiced, very rapid movement. Figure .1 sec for pushing the button down or letting it up.

BB - Click mouse button (.2 sec). Pushing and releasing the mouse button rapidly, as in a selection click, counts as two B operators, for a total of .2 sec.

H - Home hands to keyboard or mouse (.4 sec). Since the targets are pretty large, and the movement well practiced, moving the hand between keyboard and mouse, and vice-versa, is relatively fast.

M - Mental act of routine thinking or perception (.6 - 1.35 sec; use 1.2 sec). Of course, how long it takes to perform a mental act depends on what cognitive processes are involved, and is highly variable from situation to situation or person to person. This operator is based on the fact that when reasonably experienced users are engaged in routine operation of a computer, there are pauses in the stream of actions that are about a second long and that are associated with routine acts such as remembering a filename or finding something on the screen. The M operator is intended to represent this routine thinking, not complex, lengthy, problem-solving, racking the brain, or creative meditations. In a variety of routine computer usage tasks such as word processing and spreadsheet usage, these routine pauses are fairly uniform in length, justifying the simplifying assumption that all Ms take the same amount of time, around one sec.

Based on the available results (Olson & Olson, 1989), a good overall estimate for the duration of an M is 1.2 sec. Choosing how many Ms are involved, and where they appear, is the hardest part of using the KLM.

W(t) - Waiting for the system to respond (time t must be determined). This is the time that the user must wait on the system before he or she can proceed. Notice that it is not necessarily the same as the time required by the system, because the user may be able to overlap other activities while the system is working.

Fonte: <http://www.pitt.edu/~cmlewis/KSM.pdf>