



UNLOCKING  
CONSCIOUSNESS



## **BRIAN MIND FORUM**

### **Appendix 042**

#### **Interaction of Operating Systems and Applications Programs**

This is a short description of the kind of programs that are part of the programs of a computer's operating system behind even the simple and basic action of one keystroke.

On many computers, especially the early desk-top, micro, or personal computers of the late seventies and early 1980's, there was only one central processor (CP) that executed all programs, but as processors became very much cheaper and speed became important a subsidiary processor was fitted to the keyboard, another to manage the screen and others to control the memory systems the 'bus' or linking system between all the principal components, the printer and in due course the connections to the internet. The main processor was then able just to contain and process the main applications programs. The principles of operation remained the same.

The keyboard program, either in its own micro-processor, or part of the central system is continuously monitoring all the keys on the keyboard to register any activity. Tapping a key is recognised by this monitoring program, and a timeout subroutine set in motion. The program holds a table of all the control keys like caps lock, number lock, delete, control, alternate and so forth. It holds a table of function keys. The first part of the recognition program sees if any of these control and function keys is to be changed. Let us take the easy route that this is a letter of the alphabet or numbers. The program checks if either caps lock or number lock has been set or if the upper case key is being used (two simultaneous keys held down).

Together with various other checks an 8 digit (bit) code is input to the 'keyboard buffer'. This might be upper case (capital) 'A' for instance. A check digit is computed and added as a ninth digit for security, and a message is sent to the central processor "character in keyboard buffer".

The program checks the time elapsed in the timeout subroutine to check if the key is being held down, which could mean the operator wants to input a string of 'A's or that the cat has sat on the keyboard.

The architecture of all central processors includes a queuing or 'stack' system. Processors can only execute one activity at a time. The moment a processor has completed one task, or part of a task, it adds an entry to the bottom of the stack and activates the instruction at the top of the stack. When the stack control comes to the entry 'character in keyboard buffer' various options

may be available according to the demands of the application program in central processor. For instance, if this is a simple word processor application the 9 bit character will be collected from the keyboard input buffer. The ninth bit will be checked and, if correct, the 8 bit capital 'A' will be added to the word string building up in the working memory of the central processor. A message will be sent to the screen processor if there is one, or a message will be added to the CP stack. The screen program, will amend its version of the screen layout and on the next occasion that it refreshes the screen the new capital 'A' will appear.

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