

Lab Two

Andrew Giardina

Andrew.Giardina1@Marist.edu

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MAIN QUESTION

How is our console like the ancient TTY subsystem in Unix?

Our operating system console shares several similarities with the TTY subsystem, one of which involves user convenience. So far, our console provides features such as deleting input via the Backspace key, recalling commands using the Up & Down arrows, and clearing the entire CLI using the 'cls' command. TTYs had these functions as well, being implemented either within its line discipline's cooked mode, or through the actual application running on the system. Another, more important feature comparable to the TTY is how inputs and interrupts are handled. Both have specific programs, our Keyboard Driver and the UART Driver, that handle how characters, numbers, and other text symbols should act and be displayed. Both share the concept of hosting an interrupt queue, in which when an interrupt occurs, is handled by the respective driver before being delivered to the shell once the special Enter key is pressed. The shell determines whether what it received is even valid, and if so, assesses the command accordingly. As noted in the article ¹, "*TTY driver is a passive object. It has some data fields and some methods, but the only way it can actually do something is when one of its methods gets called from the context of a process or a kernel interrupt handler.*" We can see this same relationship in the physical layout of our OS project, where the only time the Keyboard Driver is in use or active is at the will of the kernel. Finally, something to prospect for the future of our project (without looking ahead!) is whether our OS will be able to handle multiple user processes at once. The TTY article addresses session management, accessing each running program, and halting & terminating them if need be. These are properties supplied by the TTY Driver. While I am sure any programs the user will write in our OS (User input textarea) can be manipulated or ran in the background, I wonder if we will be building out the ability to have several programs ran, tracked, and managed in the background in conjunction with one another!

¹Article Referenced: <https://www.linusakesson.net/programming/tty/>