Jackson Warren and Karson Fye

Karl Castleton

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Group Discussion of Processes for your chosen operating system

Fuchsia is a newer operating system, based off the new kernel called “Zircon”. When looking directly at the processes of Fuchsia and Linux, the two operating systems are actually quite similar. They both obviously serve the purpose of carrying out programs given a set of instructions that will be executed by one or more threads.

With Zircon, processes are natively created with the function zx\_process\_create and requires a job to run it. Jobs handle processes and a single process requires one job for it to run, while a job can run multiple processes at one time. In Zircon, a process is a container object for handles, virtual memory address regions, and threads. Handles used by Zircon serve as a connector for processes to particular kernel objects. To create a process, a handle is made that moves into the kernel space and creates a kernel object which is then linked back to the process in the user space with another handle. Zircon also utilizes virtual memory, like many operating systems. Virtual Memory Address Regions (VMARs) are virtualized address space that the process can use and reallocate for its uses. Both the kernelspace and userspace can use this to allocate memory given an address space. Lastly, Zircon uses threads, which is to be expected for operating systems these days. A thread in Zircon is also an object which is a representation for being able to utilize a share of the CPU for a process’s execution.

At a higher level, processes are owned by “jobs”, which serves as a process connector, creating a singular job composes of multiple processes. So, when it comes to structure, the system will have jobs, composed of one or more processes, composed of one or more threads.

Comparing this basic structure to Linux, Fuschia is quite similar when it comes to structure and use. They both have a similar hierarchy, as mentioned previously: Jobs – Processes – Threads. In addition, Linux and Fuschia mirror each other with how they operate handles, how they access memory, and their use of threads. Overall, they are very similar systems, including on the processing level.

References:

*Process |*. (2021). Fuchsia. https://fuchsia.dev/fuchsia-src/reference/kernel\_objects/process