

## Assignment 1: Berkley Timesharing System

In the 60s a majority of computers only allowed one user at a time with no interactivity. The Berkeley Timesharing System was an avant-garde from 1964 to 1967 in the area of timesharing operating systems. The first commercial timesharing operating system was part of Project Genie, from UC Berkeley, and used in the SDS 940 computer system made by Scientific Data Systems. The implementation of the operating system began in 1964 along with the introduction of the SDS 930. It was not intended to be sold as a product at first. Demand was perceived to be low but as more customers began to show interest, commercial a product became available. Commercial sales were in full swing by late 1967 as the SDS 940.<sup>[1]</sup> This increased demand from smaller businesses and institutions created a timesharing market. Project Genie developed hardware and software used by many of these new companies, including Tymshare.<sup>[3]</sup>

The main parts of this system were the Monitor, Executive, and subsystems.<sup>[2]</sup> For simplicity the Monitor can be thought of as a kernel and the Executive can be thought of as a command-line interface.<sup>[1]</sup> The SDS system was able to link the CPU with up to thirty-two remote terminals. The monitor was executed in "monitor mode" and the Executive along with the subsystems were executed in "user mode". The monitor was in charge of scheduling, input/output operations, interrupt processing, memory allocation, swapping of programs and data from disc and RAD to and from core memory, and control of active programs. The Executive works in between the Monitor and a user; It is in charge of the command language through which a user can control the system from a "teletype," identification of the various users, the specification of the limits of each user's access to the system, control of the directory of symbolic file names, and backup storage for these files, and requests for a subsystem. Subsystems are important processors like FORTRAN II, CAL, and QED. These subsystems are programs with an indefinite connection to the main system that perform specialized functions.<sup>[2]</sup>

This operating system was unique because it was the first to allow for general purpose programming. It sold around sixty units which at the time was a decent amount and a decent part of Scientific Data Systems' revenue. At the time other timesharing operating systems were usually limited to running one application.<sup>[1]</sup> As time went on people gradually moved to newer technologies built on top of the many hardware and software techniques created by Project Genie. These concepts influenced TENEX and UNIX.

### References

1. [Berkeley Timesharing System. Wikipedia](#). Retrieved February 1, 2016.
2. [SDS 940 Time-Sharing System Technical Manual](#) (PDF). *SDS 90 11 16A* (Santa Monica, California: Scientific Data Systems). November 1967. Retrieved February 1, 2016.
3. ["Timesharing as a Business". Computer History Museum](#). Retrieved February 1, 2016. (includes pictures)