

ABSTRACT

WRAPPER LIBRARY DESIGN FOR UNIX-LIKE SYSTEM SHELLS

by

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Despite the fact that the UNIX operating system family has a single standard/specification known as the Single UNIX Specification, UNIX-like operating systems implement their respective ideals. These differences in idealism have an impact on the environments provided by each operating system. As a result, in this research, the author designed a wrapper library for Bash and other popular shells which the author named "Bridge.sh" to bridge these differences in environment and implementation; because the arguments, environment variables, and parameters of core utilities in UNIX-like operating systems are not always compatible with one another. The author collects data using the observation method, designs using the top-down design method, implements using the DevOps method, and tests the system using the black-box method. Using top-down design, the author breaks down the wrapper library into several components. In each operating system compatibility module, the author adds a code layer (shim) that translates the non-native shell utility interface to native. The code layer is made up of wrappers for each utility. Each utility feature has its own overrides within the wrapper. The author has successfully designed and built the wrapper library. The design and construction process was lengthy and complicated. Aside from that, the author struggled to implement DevOps best practices. As a result, at this stage, the author can only pursue a minimum viable product (MVP) for this project. However, this wrapper library can eventually translate shell calls and allow the shell to perform additional utility functions that are available on other systems but not on the current one. In other words, this wrapper library has been shown to enable users to execute UNIX commands from one UNIX-like operating system on another.

Keywords : *compatibility layer, operating system, wrapper library, shell programming*