# Author(s)

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# Description

Quash is a simple implementation of command shell in Linux environment. Quash is implemented in C and can execute some in-build commands as well as commands which require that a corresponding program be loaded and executed from the file system. Quash can also perform basic file output redirection.

# Design Choices

Quash is implemented completely in C.

Quash loops repeatedly, printing the current directory to prompt the user, taking a text input, and executing the command based off the input if applicable until the exit command is run or the terminal is closed. When the user types in a command, the input string is tokenized by separating the values by spaces, and the tokens are stored in an string array. The first token is the command while following tokens, if any, are arguments.

There are both in-built commands and commands which require that a corresponding program be loaded and executed from the file system.

## In-built Commands

In-built commands are directly executed in the process hosting Quash in most cases. In this version of Quash, flags are not implemented for in built commands.

There are six in-built commands in Quash as follows:

* cd <dir>: This changes the current working directory to the directory specified in <dir>.

Example:

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Description automatically generated

* pwd: This prints the current working directory to standard output.

Example:

* echo <string >: This prints the string as-is including any quotation marks to standard output, except for environment variables within the string which are indicated by starting with a $ symbol. In case of environment variables, the corresponding environment variable value replaces the variable in the printed string if it exists. If there is no environment variable named such, a null string is printed in its place.

Example:

* env OR env <variable name>: When not followed by a variable name, env commands prints out all environment variables in order to standard output. When followed by a variable name, env command prints only the corresponding value to that variable to standard output.

Example

* export <variable name>=<value> OR setenv <variable name>=<value>: export and setenv commands add a new environment variable with the given name and corresponding value if no such variable exists and overwrites the value if the variable already exists.

Example

* exit: This closes the Quash shell.

## Program Commands

Program commands are executed by forking off a process and passing in the command and arguments array to the execvp C command. This loads and executes the corresponding program from the file system. The parent process (in which the Quash loop is being executed) waits for the completion of the command before the

# Implementation Decisions

# Citations