This file will define all the functions that will be called on by the parent. These functions will hide the low level details of performing the program’s tasks. These functions will NOT be called on by the child processes.

To validate command line

If number of arguments is not valid,

return error

Initialize argIndex to 1

While argIndex is less than or equal to the number of arguments

parse argument at index argIndex into int

If argument isn’t an integer

return error

If number is not within the range

return error

If the argument is the same as any of the previous arguments

return error

To request shared memory

Store memory ID from shmget() function

If request fails

Return error

To attach shared memory

Store memory pointer from shmat() function

If attachment fails

Return error

To fill shared memory

Store all arguments in shared memory

To display shared memory

Store all elements in a buffer

Display the elements using write() function

To fork child processes

While process number is less than or equal to the number of arguments

Fork a process

If fork fails

Return error

If fork id is 0

Perform function for child process

Return no error

To store all process IDs and exit codes

While child process are still running

Wait for a process to terminate

Store process ID and exit code in an array of structs

To display process ID information

Output the process IDs and exit codes in the order in which they exited

To detach shared memory

Use the shared memory pointer as a paramater in shmdt() function

To remove shared memory

Use memory ID number in shmctl() function