# Device Driver Interface Details

SchedulerProgram controls a MockRobot through the interface described in this document, implemented by a Device Driver. The interface requires that each function returns either an empty string if the operation completed successfully, or a string with a description of an error that occurred during the function call.

Interface Methods:

1. OpenConnection(string IPAddress)
   1. When SchedulerProgram calls this function, it expects the Device Driver to establish a connection with the MockRobot onboard software.
   2. The parameter *IPAddress* is the address at which the MockRobot software is running.
2. Initialize()
   1. When SchedulerProgram calls this function, it expects that the Device Driver will put the MockRobot into an automation-ready (homed) state.
3. ExecuteOperation(string operation, string[] parameterNames, string[] parameterValues)
   1. When SchedulerProgram calls this function, it expects that the Device Driver will perform an operation determined by the parameter *operation.*
      1. For this challenge, valid operations include Pick, Place, and Transfer (a pick followed immediately by a place in a single operation).
   2. *parameterNames* is an array that contains the name of each parameter to be used for the given operation.
   3. *parameterValues* is an array that contains the value of each parameter to be used for the given operation.
   4. The parameters *parameterNames* and *parameterValues* are parallel, meaning that the name of a parameter and it’s value will be found at the same index of the two arrays.
      1. For this challenge, you can expect “Source Location” and “Destination Location” to be the parameters sent from SchedulerProgram, as needed by the MockRobot API.
      2. Examples of ExecuteOperation Calls:
         1. ExecuteOperation(“Pick”, [Source Location], [10])
         2. ExecuteOperation(“Transfer”, [Destination Location, Source Location], [5, 12])
         3. ExecuteOperation(“Transfer”, [ Source Location, Destination Location], [12,5])
            1. Note that 2 and 3 should result in the same behavior.
4. Abort()
   1. When SchedulerProgram calls this function, it expects that the Device Driver will terminate communication with the MockRobot.

During normal operation, Scheduler program would call Open Connection once, Initialize once, then ExecuteOperation any number of times, and abort could be called in between any of these calls. Be aware though that SchedulerProgram may act abnormally and make these calls in an incorrect order. Your driver design should have a way to handle this gracefully.

It is also possible that SchedulerProgram will send an invalid operation, or similarly parameterNames/Values may not contain the entries required for the MockRobot. Your driver design should be able to catch these situations as well.