# Device Driver Interface Details

The User Interface program allows a user to control a MockRobot by the command set described in this document, implemented by a Device Driver. The user will press a button mapped to one of the Device Driver functions below after typing in any needed parameters. The UI program 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, which will be displayed to the user.

Interface Methods:

1. OpenConnection(string IPAddress)
   1. When a user presses the “Open Connection” button, the UI calls this function and 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 a user presses the “Initialize” button, the UI calls this function and 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 a user presses the “Execute Operation” button, the UI calls this function and 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 a user presses the “Abort” button, the UI calls this functionand expects that the Device Driver will terminate communication with the MockRobot.

During normal operation, a user should select 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 a user could accidently press buttons in an incorrect order. Your driver design should have a way to handle this gracefully.

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