This test gives us some insight into your coding style and methodology. It is not meant to be a proving ground for writing the perfect application, so it is preferable that you create an application with the same measure of care that you would normally apply, and that you will be able to sustain if you work for us. You can use ANY language, tools, and frameworks to complete the test, and you can build it as a command line or GUI or web app.

The application is both a client and a server application. A single instance of the server can be accessed by one or more clients simultaneously. The requests can be queued and responded to in order, or threaded and responded to on-demand. The server should support three commands:

- An open command, that instantiates the connection to the server and handshakes
- A calc command, that passes a simple mathematical equation using only numbers, a decimal point, and + - / *, and returns (in plain text) the result of the equation or an error
- A close command, that ends the connection to the server

The server should be robust to failure, and should be able to handle bad user input, unexpectedly terminated connections, and connections should have a timeout.

Bonus points:

ONLY if you have time to do so, feel free to build the following out:

- add support for optional JSON input / output
- add an authentication mechanism
- add end-to-end encryption
- add unit, functional, and performance tests
- add automated documentation, eg. Doxygen