EECS 4313 Assignment 2
Black-box and White-box Testing with JUnit

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1 Black Box Testing

- **Technique**: *Boundary Value Testing*

- **Class**: *net.sf.borg.common.SocketClient.java*

- **Method**: *sendMsg(String host, int port, String msg)*

- **Method Description**: This method sends a given message to a given host, port and returns the response from the socket.
  - the first argument *host* is the host that the socket client should be connected to.
  - the second argument *port* is the port on the host that the socket client should be connected to
  - the third argument *msg* is the message that should be sent over the host and port given.

  UnknownHostException: If the IP address of the host could not be determined.

  IllegalArgumentException: If the port parameter is outside the specified range of valid port values, which is between 0 and 65535, inclusive.

  IOException: If an I/O error occurs when sending the message.

- **Justification**: Boundary value testing is best suited for methods that have inputs that could be seperated into partitions. For this method the port could be partitioned. We have our valid partition which is between 0 and 65535 (inclusive) and our invalid partitions which is any port<-1 or any port>65535.

```java
public void test_sendMsg() {
        /** Method used: Boundary Value Testing **/
        String validHost = "localhost";
        String invalidHost = "asdfasdf";
        String msg = "Port 2929";

        int port_norm = 2929; // x_norm
        int port_min = 0; // x_min
        int port_min_plus = 1; // x_min+
        int port_max = 65535; // x_max
        int port_max_minus = 65534; // x_max-

        // robustness
        int port_min_minus = -1; // x_min-
        int port_max_plus = 65536; // x_max_+

        // port_norm
        String response = SocketClient.sendMsg(invalidHost, port_nor
        response = SocketClient.sendMsg(validHost, port_norm, msg);

        // port_min
        msg = "Port 0";
        response = SocketClient.sendMsg(invalidHost, port_min, msg);
        response = SocketClient.sendMsg(validHost, port_min, msg);

        // port_min+
        msg = "Port 1";
        response = SocketClient.sendMsg(invalidHost, port_min_plus,
        response = SocketClient.sendMsg(validHost, port_min_plus, ms

        // port_max
        msg = "Port 65535";
        response = SocketClient.sendMsg(invalidHost, port_max, msg);
        response = SocketClient.sendMsg(validHost, port_max, msg);

        // port_max-
        msg = "Port 65534";
        response = SocketClient.sendMsg(invalidHost, port_max_minus,
        response = SocketClient.sendMsg(validHost, port_max_minus, m

        // port_min-
```

```
                         msg = "Port -1";
                         response = SocketClient.sendMsg(invalidHost, port_min_minus,
                         response = SocketClient.sendMsg(validHost, port_min_minus, m

                         // port_max+
                         msg = "Port 65536";
                         response = SocketClient.sendMsg(invalidHost, port_max_plus,
                         response = SocketClient.sendMsg(validHost, port_max_plus, ms
```

2 White Box Testing

- The statement coverage measurements for your Assignment 2 test suite.

- A description of the test cases that you added in this assignment to improve statement coverage. The marker will not read your code in order to see what you tested. You have to describe it.

- The statement coverage measurements for your final submission. Include the screenshots of the test running results and the screenshots of the coverage measurement. If your coverage is not 100

- The Control Flow Graph you created. Indicate the segments clearly (you will probably need to include the code for this).

- The path coverage discussion described in section 2 above.

- Attaching bug reports if bugs are discovered using your testing methods. You should use the same bug report format as in Assignment 1. Do not file these bug reports to the projects bug report system.

- An appendix with the specification of the methods you are testing (if there are new ones).