1 Summary
The instructions provided for building and running the system were very detailed and helpful. We did not run into any problems with the installation of the program. In the process of testing, we found that the majority of the implemented features seem to work very well. However, we discovered several problems with some of the features that were made available in this release. We found possible problems with repeat logins, movement bounds, regional broadcast, player collision detection, and the server shutdown process.

2 Findings

2.1 Problems

2.1.1 Repeat Logins
Description: Repeat logins with a previously created account after the server had been shut down and restarted were not successful. Should this information be saved?
Severity Level: Severe
Comments: N/A

2.1.2 Movement Command Range Unbounded
Description: In the Movement commands, specification of coordinates outside of the 1-9,999 in the x and y direction range (above 9,999 or less than 1) are not rejected. For instance:
M 5 10000 10000
Resulted in the following on the server:
Read: M 5 10000 10000
Adding command to the commandQueue
Cords: 10000.000000 10000.000000
Sending movement command to all local player
Sending data to ID 5
Saving destination cords: x: 10000.000000 y: 10000.000000 from ID 5
Severity Level: Moderate-Minor
Comments: Since the GUI is not included for testing, we expect that the restriction of a +/-10 unit destination will solve this problem. Also, with the GUI the user will be expected to select a destination that is within the window.

2.1.3 Broadcast to Local Region
Description: Chat and Move commands are not broadcasted just to the players in the region, but to all players. For example, we had two players in two opposite corners of the
world – one at position (0,0) and one at (10000, 10000) – and Chat and Move commands sent by one player were received by the other.

**Severity Level:** Moderate  
**Comments:** We are now sure how large the regions are and what their geometry is. The proper regions management was one of the major goals in the design spec for scalability of the application. So, it is probably very important to fix this problem.

### 2.1.4 Player Collisions

**Description:** Two players can occupy the same (x,y) at the same time.  
**Severity Level:** Severe, possibly Moderate  
**Comments:** The following commands did not produce an error.

L casey casey  
Produced: D 5 casey 1.00 1.00

L casey2 casey  
Produced: D 6 casey2 1.00 1.00

### 2.1.5 Server Shutdown

**Description:** The server process keeps running after you issue the command: Q chris qwerty, which is supposed to shutdown the server. Next, when you try to connect to the server again after issuing the shutdown command, the server process crashes with a “Segmentation fault” error.  
**Severity Level:** Moderate  
**Comments:** I’m not sure whether this happens all the time or it is caused by something in my data file.

### 2.2 Questions

#### 2.2.1 Specifying You Own Id

Why do Chat and Move commands require you to specify your id as part of the command, when the server already knows the id of the player from whom it is receiving the command?

#### 2.2.2 Movement Transitions

How is incremental movement handled? Starting from coordinates (1,1), then using the command to move to (500,500), immediately logging out and then back in again results in: D 5 casey 500.00 500.00 rather than an intermediate point as expected.

### 2.3 Correct Returns

- Use of Movement and Chat commands with incorrect Id number are not executed and result in an error message on the server.
- The server responds to unimplemented commands with “Unknown Command: [CommandLetter]EOL reached”
- Commands are parsed using length i.e. combination of commands such as “CM [Id number] coord coord” is not processed.
The server messages produced by user commands were especially helpful in understanding the underlying functionality of Aegir.