# System Integration Testing

To test the overall system integration, we followed the following procedure:

1. We set up the overall system, with each component connected to the CAN network.
2. We sent test messages over the CAN network from the controller to the display components, to confirm that the display logic was working correctly, and that the CAN messages were being correctly transmitted.
3. We took the ultrasonic sensor readings and used those to generate messages to each of the CAN nodes.
4. We used the controller logic to receive CAN messages from each of the button nodes.
5. Finally we tested using a similar process to the ultrasonic sensor tests, except comparing distance to floor markers, and checking to see that the proper floor was displayed at the remote CAN nodes.
6. Then we tested to ensure each button press from the remote CAN nodes was properly being received and displayed at the controller node.

## Results

For steps 1-3, we were receiving proper messages at each of the external nodes; however when we moved to stage 4 we found that messages sent to the controller from each of the external nodes were not being received correctly.

After debugging the issue, we found that it was due to some missing lines of initialization code for the CAN bus in each of the button nodes. After that issue was corrected, we continued to follow the test process; everything was connected and integrated properly.