**GNG1103 Group 9 : Deliverable H Prototyping Plan**

The purpose of this test is to test that our comprehensive prototype is able: to pick up QR codes, send the QR information to Dashboard, and allow a user to easily modify and view this information inside of Dashboard. As our last prototype before Design Day, the test objectives will allow us to show up to Design Day with a working project compared to a concept. The test objectives our prototype as follows:

**Test Objective 1 -** Read QR codes with Pi's camera

Test objective 1 is a success if the Pi is able to consistently read an alternating number of QR codes without taking a long time (over 10 seconds), crashing, or overheating; it is a failure otherwise. If this is a success, we learn that our idea is workable and that we can continue with it. The main results are: it works, it works sometimes, or it does not work at all. If it works or works sometimes, we know we can continue with it and make some adjustments to make it better. However, if it does not work at all, we need to rethink our idea. The stopping criteria for this test is Design Day because if we cannot get this to work for Design Day, we do not have a project.

**Test Objective 2 -** Have the Pi communicate with Dashboard

Test objective 2 is a success if Dashboard is able to display the different messages the Pi sends to it; otherwise it is a failure. If this is a success, we learn that our idea is workable and that we can continue with it. The main results are: it works, it works sometimes, or it does not work at all. If it works or works sometimes, we know we can continue with it and make some adjustments to make it better. However, if it does not work at all, we need to go back and follow the Dashboard tutorials, as Dashboard is a required software for this course. The stopping criteria for this test is Design Day because if we cannot get this to work for Design Day, we do not have a project.

**Test Objective 3 -** Ensure connection with Dashboard is stable (Error Testing)

Test objective 3 is a success if Dashboard is able to remain a constant line of communication with the Pi; otherwise it is a failure. If this is a success, we learn that our idea is workable and that we can continue with it. The main results are: it works, it works sometimes, or it does not work at all. If it works constantly, we know we can continue with it, without worrying about it. However, if it does not work at all or sometimes, we need to go back and try to find a way to at least have it work during Design Day. The stopping criteria for this test is Design Day because if we cannot get this to work for Design Day, we do not have a very impressive project.

The testing process mainly consists of testing a test objective, and seeing if the expected result appears (ie. a QR value is returned to dashboard). Since most of the project is code based, if an unexpected result returns, or if no result returns at all, we know that the test failed; our next step is to find out why it did not work, and how to fix it.

To test these test objectives we created a bunch of QR Codes and startup the Pi. From there, we continue to scan the barcodes adding and removing printers from the active printer list. Test trying different methods, or if scanning multiple QR Codes at once, and see if any errors in the code arise, or any loss of connection to the server.

The information measured from these tests are the reliability of the software as well as the hardware is being tested. Seeing if any unexpected errors come up or if the Raspberry Pi can not handle the amount of printers/ or rate of adding and removing them.

The observations from these tests are ensuring that the system performs as expected without error. Observing the output of the server and ensuring that it is as expected as well as checking on the physical performance of the Pi, ensuring that is not overheating, or slowing down.

No materials are needed other than the QR Code scanner itself, a monitor to observe the output terminal for the Pi. A computer running dashboard to connect to the Pi, and a bunch of QR Codes. All of these materials are expected to be owned and thus there is no cost for running the tests.

Remaining work that needs to be done is testing the software to ensure that the Pi performs even under a strenuous load that most likely wouldn't occur in a real world scenario. Endurance testing is also necessary to define its functional time under a normal and abnormal load. This tests are happening now, and will continue until the due date being Design Day.

## Prototype Images: