# Week 12 Progress Report

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# Project: Bee Tracker

# Date: November 22, 2016

I am right on schedule to finish to finish the project and present for next week. I have a functional prototype that I have been doing unit testing on to count the number of bees coming and going from the hive through a single gate. The last thing to do is the production testing, where I will ensure that each individual gate is able to increment and decrement the same counter, which will determine the population of the hive. This will integrate the sensors for the five entrances at the front of the hive to be run by a single program that will keep track of all bees entering and leaving. This will be done by expanding the python code that I have written to check for signals on 4 other GPIO pins on the Raspberry Pi, using the same logic that was implemented to check the signal on the initial pin.

One of the main problems that I am facing is the inability to test the prototype with real bees. Since it is getting colder out, the bees will be clustered inside the hive by the time production testing would be ready for live bees. This means that I have to test with objects that are similar in size to bees such as fake plastic bees or marbles. When unit testing, I was originally using a pen to test the sensors, but realized that this was not effective because the pen was not always hitting both sensors based on how it was being held since one end could be up in the air while the other was touching the ground. This issue will be tested thoroughly throughout the production testing.

Financially, I am on track to meet the budget I set at the beginning of the semester. Originally, I had over-budgeted for the project when my other team members and I who are developing the Android application thought we would each implement every aspect of the hardware. We later decided that it would make more sense to each implement a specific mechanism for one aspect of measurement. Therefore, I focussed solely on counting the bees. This cut out some components from the budget that I would have needed to buy, however, the IR sensors that I am using to count the bees proved to be more expensive than originally planned. This was because the ones from the budget would take too long to ship from overseas and so I was forced to buy components from Canada, which were more expensive. The GP1A57HRJ00F IR Optical Interrupter module is $7 per sensor and since I am using 10 of them, it comes to $70. However, the initial budget was for $200 and the Raspberry Pi was $115. This means that with the $70 for the sensors, I am still slightly under my budget of $200 at $185.