

AE483 Lab Manual: Appendix C

How to Change the Off-Board Code

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1 Create a project (do this once for each lab)

Do the following things:

- Go to the lab website

<http://coecsl.ece.illinois.edu/AE483/>

and download the starter code

`AE483GroundStation_LabXX.zip`

where “XX” will change from one lab to the next.

- Unzip the starter code (e.g., right-click and do “Extract all...”).
- Right-click and open the file with extension `.sln`, choosing Visual Studio 2010. This is yet another software development environment, the one we will be using for off-board code (a.k.a. the “ground station”) that runs on your PC instead of on a drone. When prompted, you can choose “General Development Settings”.

2 Compile your code

Your project has a bunch of code that is written in C. This code is organized into *source files* that have the extension “`.c`” and *header files* that have the extension “`.h`”. In order for this code to actually run on your PC, it needs to be *compiled* — doing so turns it into an *executable*. Do the following things to compile your code:

- From the menubar, do

Build → Build Solution

- Look at the console toward the bottom of the VS window to monitor progress. It should take 5 or 10 seconds to compile your code. You will either see a message saying that there were no errors, or you will see a list of all errors/warnings that were generated, along with file names and line numbers. These errors will have been caused by bugs in your code. You’ll need to fix these bugs before trying again.

You should compile your code (1) after creating your project and (2) every time you are done making changes to it, checking to make sure that there are no errors.

3 Run your executable (and fly!)

Do the following things to run your executable (i.e., to start the ground station) prior to flight:

- Make sure:
 - the XBee wireless module is connected to your PC with a USB cable
 - the drone is powered on in “run mode”
- Make sure that the motion capture system is running and has been configured for your drone. (Ask a TA to show you how to complete this process. It must be done every time you switch from one drone to another.)
- Make sure that your drone is on the ground in the center of the room, facing north.
- From the menubar, do

Debug → Start Without Debugging

When prompted by Windows Firewall, check all boxes and click “Allow Access.” On the command prompt that opens up, click “Enter” to record data.

- It is at this point that you could fly the drone. Note, however, that you need not fly the drone in order to collect data. It is often easier to test data collection, for example, by simply picking up the drone and moving it around with your hands.

It is expected that you will compile your code (to check for errors) more often than you will run the resulting executable.