

# Homework 1 - due 9/10/2003

15-491: CMRoboBits

## 1 Introduction

The purpose of this initial assignment is to familiarize yourself with how to build and run code for the robots in preparation for later, more involved assignments.

Your grade will be based on compiling and running a pre-written Chase Ball behavior and changing the default password on all of your team's accounts on the lab machines.

## 2 Optional: Install the OPEN-R SDK on your own laptop

Since we only have a few shared laptops in the lab, people with laptops probably want to install the OPEN-R SDK on them to avoid waiting for one of the shared machines. We recommend installing under Linux if that's at all possible; it's the only thing we have experience with. On the other hand, people have used the SDK under OS X and Windows. It's possible, but we don't know the details and can't help you with them.

- Go to: <http://openr.aibo.com/>
- Pick a language, register, and log in
- Feel free to look around a bit
- Go to the Download area
- Download [assuming Linux]:
  - OPEN-R SDK (top of list)
  - Remote Processing OPEN-R patch for GCC3.2 on Linux
  - OPEN-R SDK Documents English
  - gcc source files (very bottom of list)
  - binutils source files
  - newlib source files
  - Shell script for building cross development tools

- Pop open your terminal of choice and cd to the download directory.
- `tar -zxvf OPEN_R_SDK-1.1.3-r2.tar.gz`
- Become root
- `mv OPEN_R_SDK /usr/local/`
- `chmod +x build-devtools-3.2-r1.sh`
- `./build-devtools-3.2-r1.sh`
- Wait a really long time while your cross-compiler builds

### 3 Environment Setup [OWN LAPTOP ONLY]

You need to have several environment variables defined for the SDK and to check out the code for the course. Edit your `.login`, `.bashrc`, `.zshrc`, `.cshrc`, or your file of choice to add the following variables:

- `CVSROOT=:ext:gs219.sp.cs.cmu.edu:/data/dogs/code_repository/`
- `CVS_RSH="ssh"`
- `PATH=$PATH:~/dogs/util/bin`
- `PATH=$PATH:/usr/local/OPEN_R_SDK/RP_OPEN_R/bin`
- `PATH=$PATH:/usr/local/OPEN_R_SDK/bin`
- `DOGROOT=~/dogs`

### 4 Changing your team's passwords on the lab machines

Accounts have been created on the lab machines for each group. The user names on these accounts are `group1`, `group2`, etc. All of the accounts have a default password which you must change as a part of this assignment. We will give you the default password in class.

You must change your team's password (using the `passwd` command) on:

- `onefish.coral.cs.cmu.edu`
- `twofish.coral.cs.cmu.edu`
- `redfish.coral.cs.cmu.edu`
- `bluefish.coral.cs.cmu.edu`
- `gs219.sp.cs.cmu.edu`

## 5 Checking out code from CVS

From your favorite terminal in your home directory:

- `cvs checkout dogs`
- `cd dogs`
- `make`
- Wait a long time for code to build

Subsequent builds using the `make` command will be much quicker since the majority of the source files will not need to be recompiled.

To update code as we make changes to the utilities and source files for assignments (this is for future reference only):

- `cd dogs`
- `cvs update dogs`

## 6 Building additional documentation

Additional documentation describing how to build code, debug code, set up the network, and use basic Linux commands can be found in `~/dogs/docs/intro`. Type `make` in that directory and then use the `acoread` command to display `intro.pdf`.

## 7 Verify that the robot will be running Chase-Ball

Open the file `agent/config/config/run.cfg` and verify that the `ChaseBall` and `Getup` behaviors are being run before transferring data to your team's memory stick.

## 8 Transferring programs to the memstick

Once your code has compiled, you transfer the finished code to a memory stick using the `stickit` command. `Stickit` takes three options. It may be used to transfer the binary program objects, configuration information, or both at the same time. For this assignment, transfer the program and configuration information with: `stickit -a`

## 9 Handing in a stick image

Note: This will not work until we setup permissions on the handin directories once groups have been finalized. We will send e-mail when this has been done.

To hand in an image of your final, working memory stick:

- Log into AFS with: `klog andrew-id`
- `mount /memstick` (with the stick in the reader)
- `cp -r /memstick`  
`/afs/andrew/course/15/491/dropbox/groupn` (n = group number)  
(The above cp command should all be on one line)
- `umount /memstick`
- `unlog` (log out of AFS to protect your privacy)

## 10 Grading

You will be graded on the following:

- 2 points - Changing your group's password on all 5 lab machines
- 8 points - Your team's stick image from the dropbox directoros runs ChaseBall.