Workshop 4 — Code & Sensors I: Basic Control and Robot Skills

Wednesday, January 5, and Thursday, January 6, 2005
38-301

1 Items to Bring

- Handy Board with Expansion Board

2 Reading

- Handy Board technical manual: `http://handyboard.com/techdocs/hbmanual.pdf`

3 Activity (38-600)

Use your Handy Board to program robots that we built that performs simple tasks using its mechanical sensors. The robot has two front bump sensors and two independent drive wheels.

Program the Handyboard to have the robot drive forward until the front bump sensor hits an obstacle. When it does, the robot reacts by backing up a few inches then turning 180° in place.

- Hook up your Handy Board to one of the lab's computers. Turn the Handy Board on.
- Log onto Athena, go to a terminal window, and type:
  `athena% emacs`
- Wait for the Emacs window to open. Make sure the Emacs window is highlighted and type:
  `<Ctrl>-x <Ctrl>-f`
- Type the name of the file you want to create. You want to remember to add a "`.c`" to the end of the file name to make it a source code:
  `Find File: ~/FILENAME.c`
- Type your program. Use the Handy Board technical reference for assistance with the various functions. When you are done with your program, type:
  `<Ctrl>-x <Ctrl>-c`
- You will be prompted as to whether or not to save the file under the previously assigned name. Hit "`y`".
- You should now return a terminal window. Type:
  ```
  athena% cd
  athena% add 6.270
  athena% ic
  ```
- At the `C>` prompt, type "`unload`" followed by the name(s) of the programs that were last loaded onto the Handy Board. At this point it should typically be `hbexptest.c`.

- Make sure the Handy Board is still on. Now type "`load`" followed by the name of your program:
  `C> load NAMEOFFILE.c`

  If the program does not load, there may be an error in the file. You can return to emacs by typing "`emacs`" at the terminal window. Once the Emacs window appears, press `<Ctrl>-x <Ctrl>-f` and type the name of your file to retrieve it.

- Once completed, your program should be in the Handy Board. Turn it off and make sure all the appropriate connections to the robot are made. When ready, turn it back on to test.