Instructions for software installation related to Mobile Robotics course

System requirements:
Ubuntu 11.04 and above

All softwares provided here are of .deb format so please double click on them and they will get installed Ubuntu Software Center at /usr/local path of your system

After Installation:
Open Mobilesim from the applications and go to the /usr/local/Aria/examples. By default you will find the binary “demo” generated for you. Run it
$ ./demo

You can compile all other programs in the folder using the Makefile given there.
$ make

You will see all the codes compiled and binaries available for you.
Play around with them and see how these codes are written and used.
Note: If Mobilesim is not running along you will get that it could not connect to robot.

You may also run the Mobilesim from the command line. This give you many options that might be helpful in the first project where you may have to spawn many robots at a time in the simulation. Please go through the commands available to you by running the below command.

root:/usr/local/MobileSim$ ./MobileSim -h

A sample code is written for you to edit and use. It is available in the MobileRoboticsSample folder. Please follow the instructions given in the Readme.txt of the same folder. After getting to know what all the functions available in the Aria from the examples you can start writing the code for the project.
Please learn how to use the Makefile wisely for your codes.

Creating maps in Mobilesim:
Now create maps in Mapper3Basic and load them in the Mobilesim and move around the map. You can check the sonar readings from the robot varying when the sonar rays hit the obstacles.

OpenCV/Qt:
Please install OpenCV from http://opencv.org/
Qt will be available to you from the synaptic manager in Ubuntu.

I can troubleshoot OpenCV related problems. So if you are new to both these libraries, go for OpenCV.
Start off with tutorials on the OpenCV as you may have to get acquainted with it asap to complete the 1st part of the Project.

For people who intend to be part of Robotics lab for their BTech Project or MS:
Its not compulsory but I would strongly suggest you to get ROS installed in your Ubuntu.
In that case you will be using ROSARIA instead of ARIA and rest of the above instructions remain the same.
Please contact me or anyone from the lab for details on ROS.

General Instructions

- Codes should be written in C++.
- Use object oriented programming to make your life easier.
- As you may have to do lot of experiments with the parameters for fine tuning your code, I suggest you to start the project asap.
- Running your algorithm on robot may not be straightforward, so make use of my presence on saturday evenings 3.30PM - 6.00PM in the lab for these experiments.
- If you plan to discuss on the course topics or projects with me, please inform me earlier by a mail.
- Please feel free to post any issues/discussions related to project/course work on the course portal forums. Post your questions and problems here before coming to me.
- All the intermediate deadlines of projects will have equal weightages.
- Codes have to be submitted on these deadlines.
- Evaluation of the codes on the simulation or the real robot will be done batchwise. Slots for the same will be mailed as the deadline approaches.
- If the intermediate deadlines are missed, you will be penalised according to your late submissions of that part.
- Any copying/plagiarism will get you into serious troubles.

All the best and have fun with the robots!!!