

# RBOT 250 Labs: Robot Manipulation, Planning, and Control.

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# Prerequisites

## Prerequisites

- A Working Knowledge of C++: Occasionally, we would dabble into using the C++ 1z standards in our coding styles
- A working knowledge of the python programming language
- A working knowledge of the robot operating system (ROS) middleware.
- To ease setup for labs, a dockerized environment has been provided for you that has all the tools you need to get a jumpstart onmost of the lab exercises in the notes.

# Loading the Docker Environment

## Prerequisites

- Ensure you have a Ubuntu OS. For now, any distro from 14.04+ would do.
- To download and install the Ubuntu OS, hop over to the Ubuntu download page:  
<https://ubuntu.com/download/desktop> and follow the download and install instructions
- When you are done installing ubuntu, be sure to install the docker environment
- Go to this webpage, choose your Ubuntu version, browse to pool/stable/, choose amd64, armhf, arm64, ppc64el, or s390x, and download the .deb file for the Docker Engine - Community version you want to install.

- Install Docker Engine - Community, changing the path below to the path where you downloaded the Docker package.
  - `sudo dpkg -i /path/to/package.deb`
- Confirm that your installation runs by testing the hello-world-run image: `docker run hello-world`
- Further instructions can be found on this [webpage](#).

- When you are done, there is a docker image that is already prepared for your use for most of the simulations we would use in this course.
- It can be pulled like so:
  - `"docker pull lakehanne/brandeis"`
- Run the image: `"docker run -ti -rm lakehanne/brandeis:latest -v /tmp/.X11-unix:/tmp/.X11-unix:ro -e DISPLAY=$DISPLAY -privileged -v /dev/bus/usb:/dev/bus/usb"`
- This would launch the image together with usb access and access to your xorg server. The ros installation is at `"/opt/ros/indigo"` and the catkin workspace is located at `"/home/lex/catkin_ws/src"`. This is the directory from which all tutorials shall be launched.

# ROS Introduction

Prerequisites

- Now that you have the ros environment setup, why don't you start playing around with the tutorials at [ROS TUTORIALS PAGE](#).