1. Download VMWare..
2. Download ubuntu 18.04 64-bit (AMD64) desktop image: <https://releases.ubuntu.com/18.04/>
3. Open VMWare and create a new virtual machine
   1. Select “installer disk image file (iso)”
   2. Browse and select the Ubuntu 18.04 image you downloaded
   3. Name the machine, and set password and username
   4. Set max disk size of 50gb (just to be safe), and “split disk into multiple files”
   5. Customise hardware…
      1. Ram = at least 4gb
      2. Processors = 2
      3. You may need to increase these if the VM runs slow
4. Start the Vm
5. Install ROS: <http://wiki.ros.org/melodic/Installation/Ubuntu>
   1. After the last step run the command:
      1. sudo apt-get install ros-kinetic-catkin python-catkin-tools
6. Download and Install (Linux offline simulator) UR-Sim for linux operating system:
   1. [https://www.universal-robots.com/download/?filters[]=98916&query](https://www.universal-robots.com/download/?filters%5b%5d=98916&query)=
   2. If install fails then run commands:
      1. sudo apt install openjdk-8-jre
      2. sudo update-alternatives --config java
   3. Select the “…java-8-openjdk…” option
7. Install UR driver:
   1. Open new terminal (crtl +alt + t)
   2. Run the commands:
      1. mkdir -p catkin\_ws/src && cd catkin\_ws
      2. git clone <https://github.com/UniversalRobots/Universal_Robots_ROS_Driver.git>
      3. src/Universal\_Robots\_ROS\_Driver
      4. git clone -b calibration\_devel <https://github.com/fmauch/universal_robot.git>
      5. src/fmauch\_universal\_robot
      6. sudo apt update -qq
      7. rosdep update
      8. rosdep install --from-paths src --ignore-src -y
      9. catkin build
   3. If and only if catkin build fails:
      1. catkin\_make
8. Test that the install was successful…. Close the terminal, open a new one.
   1. To launch the ur sim (for UR3) run the command:
      1. ~/./ursim-5.10.2.106319/start-ursim.sh UR3
   2. Note. In the previous command, your version will probably be different, so replace the “ursim-5. 10.2.106319” in the command with the name of the ur sim folder.
   3. Open a new terminal (don’t close the existing one)
   4. Run the commands:
      1. source ~/catkin\_ws/devel/setup.bash
      2. roslaunch ur\_robot\_driver ur3e\_bringup.launch robot\_ip:=127.0.0.1

Run the application:

$

Launch the ROS driver:

$