

Robotic WS 18-19
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Assignment 1

Aufgabe 1/ connect to the car:

```
Applications Places System root@human: ~
File Edit View Search Terminal Help
ssh: Could not resolve hostname longdang-lenovo-ideapad-110-17acl: Name or service not known
meso@deb:~$ ssh root@longdang-lenovo-ideapad-110-17acl
ssh: Could not resolve hostname longdang-lenovo-ideapad-110-17acl: Name or service not known
meso@deb:~$ hostname
deb
meso@deb:~$ hostnamectl
  Static hostname: deb
        Icon name: computer-laptop
        Chassis: laptop
        Machine ID: 6a5fd43bdc094f8a8cb8c50a879a00b9
        Boot ID: 93655422d5a54dd187810234a18f59e2
  Operating System: Debian GNU/Linux 9 (stretch)
        Kernel: Linux 4.9.0-8-amd64
  Architecture: x86_64
meso@deb:~$ ssh longdang
ssh: Could not resolve hostname longdang: Name or service not known
meso@deb:~$ ssh root@192.168.1.199
ssh: connect to host 192.168.1.199 port 22: Network is unreachable
meso@deb:~$ ssh root@192.168.1.199
ssh: connect to host 192.168.1.199 port 22: Network is unreachable
meso@deb:~$ ssh root@192.168.1.199
ssh: connect to host 192.168.1.199 port 22: Network is unreachable
meso@deb:~$ ssh root@192.168.1.199
ssh: connect to host 192.168.1.199 port 22: Network is unreachable
meso@deb:~$ ssh root@192.168.1.199
ssh: connect to host 192.168.1.199 port 22: Network is unreachable
meso@deb:~$ ssh root@192.168.1.199
The authenticity of host '192.168.43.128 (192.168.43.128)' can't be established.
ECDSA key fingerprint is SHA256:0aZv24C5QaM6wheq3K7t0Cyt0uoyQIT7k0ZUlrAew94.
Are you sure you want to continue connecting (yes/no)? y
Please type 'yes' or 'no': yes
Warning: Permanently added '192.168.43.128' (ECDSA) to the list of known hosts.
root@192.168.43.128's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.14.69-148 armv7l)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Security certifications for Ubuntu!
   We now have FIPS, STIG, CC and a CIS Benchmark.

   - http://bit.ly/Security_Certification

 * Want to make a highly secure kiosk, smart display or touchscreen?
   Here's a step-by-step tutorial for a rainy weekend, or a startup.

   - https://bit.ly/secure-kiosk

Last login: Mon Oct 22 09:13:46 2018 from 192.168.43.24
root@human: ~
```

create a file „RoboticABL.txt“ in the car. Write the date and time in the file.

```
Applications Places System root@human: ~
File Edit View Search Terminal Help
root@192.168.43.128's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.14.69-148 armv7l)

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   - https://bit.ly/secure-kiosk

Last login: Mon Oct 22 09:34:07 2018 from 192.168.43.23
root@human: ~
root@human:~# exit
Connection to 192.168.43.128 closed.
meso@deb:~$ ssh root@192.168.43.128
ssh: connect to host 192.168.43.128 port 22: No route to host
meso@deb:~$ ssh root@192.168.43.128
root@192.168.43.128's password:
Welcome to Ubuntu 18.04.1 LTS (GNU/Linux 4.14.69-148 armv7l)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Security certifications for Ubuntu!
   We now have FIPS, STIG, CC and a CIS Benchmark.

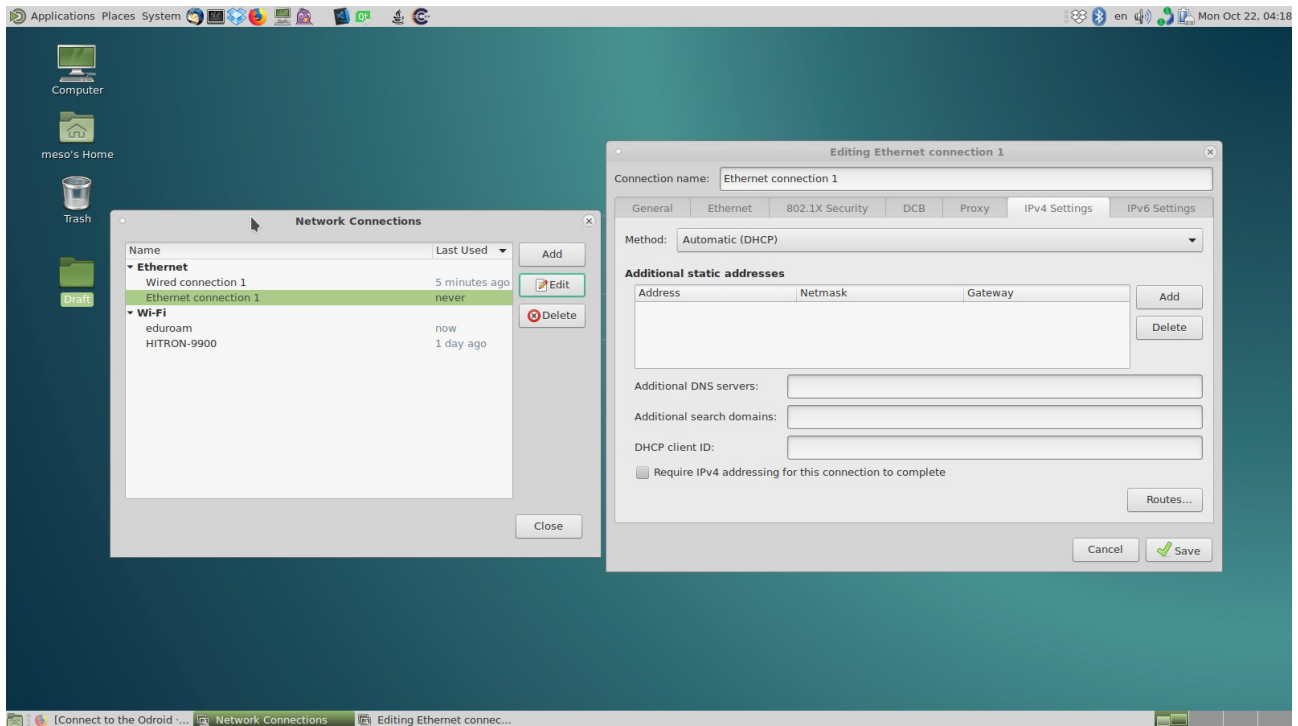
   - http://bit.ly/Security_Certification

 * Want to make a highly secure kiosk, smart display or touchscreen?
   Here's a step-by-step tutorial for a rainy weekend, or a startup.

   - https://bit.ly/secure-kiosk

Last login: Mon Oct 22 09:48:14 2018 from 192.168.43.23
root@human: ~
root@human:~# touch hello_car_XY.txt
root@human:~# ls
4.14.66-147-tuner.ko  4.14.66-147-v4l2-fwnode.ko  4.14.66-147-videobuf-core.ko  4.14.66-147-videobuf-vmalloc.ko  hello_car_crash.txt  librealsense.log
4.14.66-147-uvcdm.ko  4.14.66-147-videobuf2-vmalloc.ko  4.14.66-147-videobuf-dvb.ko  autostart.sh  hello_car_XY.txt
root@human:~# touch hello_car_RoboticABL.txt
root@human:~# ls
4.14.66-147-tuner.ko  4.14.66-147-v4l2-fwnode.ko  4.14.66-147-videobuf-core.ko  4.14.66-147-videobuf-vmalloc.ko  hello_car_crash.txt  hello_car_XY.txt
4.14.66-147-uvcdm.ko  4.14.66-147-videobuf2-vmalloc.ko  4.14.66-147-videobuf-dvb.ko  autostart.sh  hello_car_RoboticABL.txt  librealsense.log
root@human:~# nano hello_car_RoboticABL.txt
root@human:~# nano hello_car_RoboticABL.txt
```

Setting up the network:

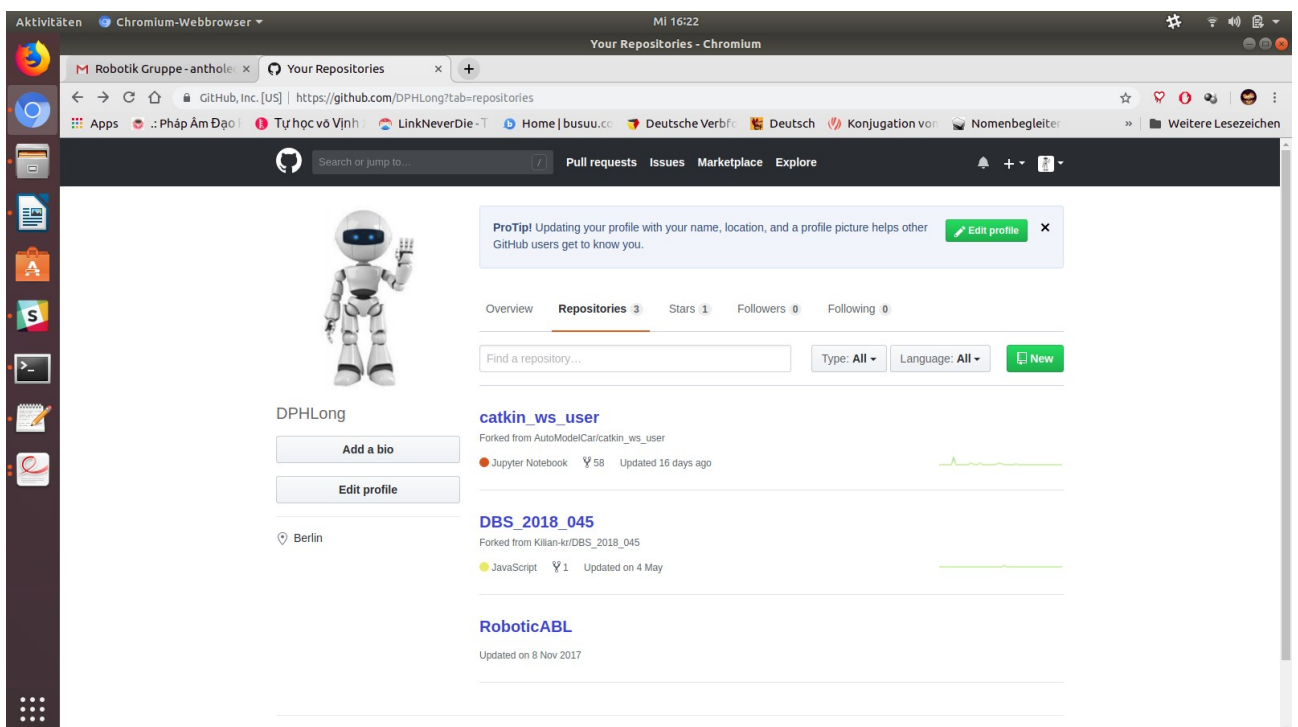


Aufgabe 2/

Create a new Ordner in Github:

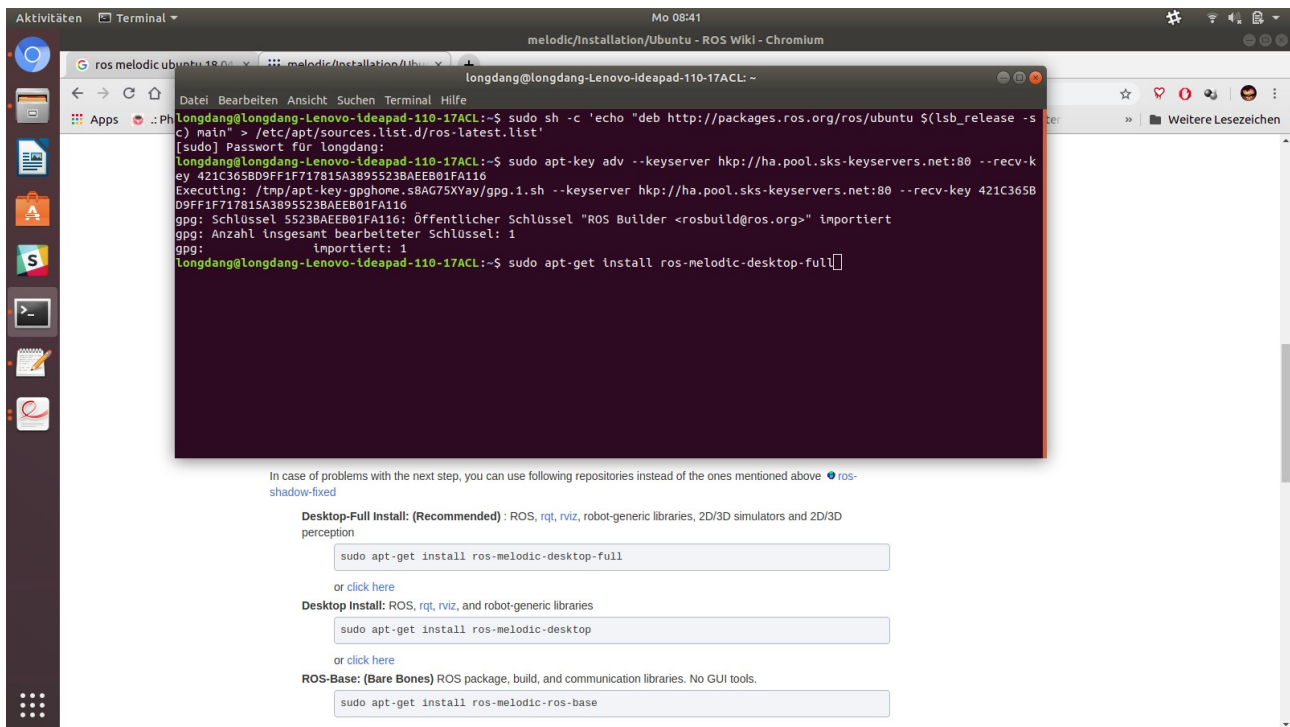
<https://github.com/DPHLong/RoboticABL.git>

folk to the catkin_ws_user:



Aufgabe 3/

install key and ros-melodic:



The screenshot shows a terminal window on a Ubuntu system. The user is in the directory `longdang@longdang-Lenovo-ideapad-110-17ACL: ~`. They run the following commands:

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$ sudo sh -c 'echo "deb http://packages.ros.org/ros/ubuntu $(lsb_release -sc) main" > /etc/apt/sources.list.d/ros-latest.list'
```

[sudo] Passwort für longdang:

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$ sudo apt-key adv --keyserver hkp://ha.pool.sks-keyervers.net:80 --recv-key 421C365BD9FF1F717815A3895523BAEEB01FA116
```

Executing: /tmp/apt-key-gpghome.s8AG75XYay/gpg.1.sh --keyserver hkp://ha.pool.sks-keyervers.net:80 --recv-key 421C365BD9FF1F717815A3895523BAEEB01FA116

gpg: Schlüssel 5523BAEEB01FA116: Öffentlicher Schlüssel "ROS Builder <rosbuild@ros.org>" importiert

gpg: Anzahl insgesamt bearbeiteter Schlüssel: 1

gpg: importiert: 1

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$ sudo apt-get install ros-melodic-desktop-full
```

In case of problems with the next step, you can use following repositories instead of the ones mentioned above [ros-shadow-fixed](#)

Desktop-Full Install: (Recommended) : ROS, [rqt](#), [rviz](#), robot-generic libraries, 2D/3D simulators and 2D/3D perception

```
sudo apt-get install ros-melodic-desktop-full
```

or [click here](#)

Desktop Install: ROS, [rqt](#), [rviz](#), and robot-generic libraries

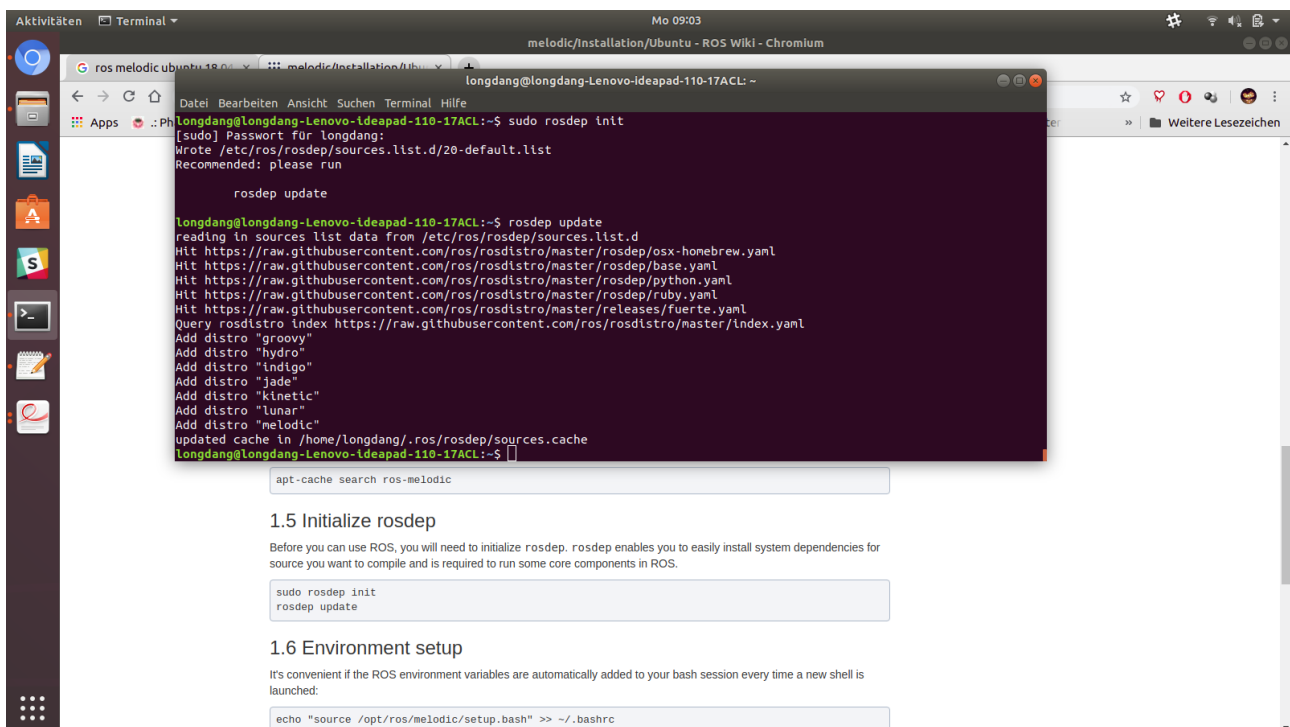
```
sudo apt-get install ros-melodic-desktop
```

or [click here](#)

ROS-Base: (Bare Bones) ROS package, build, and communication libraries. No GUI tools.

```
sudo apt-get install ros-melodic-ros-base
```

rosdep update:



The screenshot shows a terminal window on a Ubuntu system. The user is in the directory `longdang@longdang-Lenovo-ideapad-110-17ACL: ~`. They run the following commands:

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$ sudo rosdep init
```

[sudo] Passwort für longdang:

```
Wrote /etc/ros/rosdep/sources.list.d/20-default.list
```

Recommended: please run

```
rosdep update
```

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$ rosdep update
```

reading in sources list data from /etc/ros/rosdep/sources.list.d

Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/osx-homebrew.yaml

Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/base.yaml

Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/python.yaml

Hit https://raw.githubusercontent.com/ros/rosdistro/master/rosdep/ruby.yaml

Hit https://raw.githubusercontent.com/ros/rosdistro/master/releases/fuerte.yaml

Query rosdistro index https://raw.githubusercontent.com/ros/rosdistro/master/index.yaml

Add distro "groovy"

Add distro "hydro"

Add distro "indigo"

Add distro "jade"

Add distro "kinetic"

Add distro "lunar"

Add distro "melodic"

updated cache in /home/longdang/.ros/rosdep/sources.cache

```
longdang@longdang-Lenovo-ideapad-110-17ACL:~$
```

1.5 Initialize rosdep

Before you can use ROS, you will need to initialize rosdep. rosdep enables you to easily install system dependencies for source you want to compile and is required to run some core components in ROS.

```
sudo rosdep init
```

```
rosdep update
```

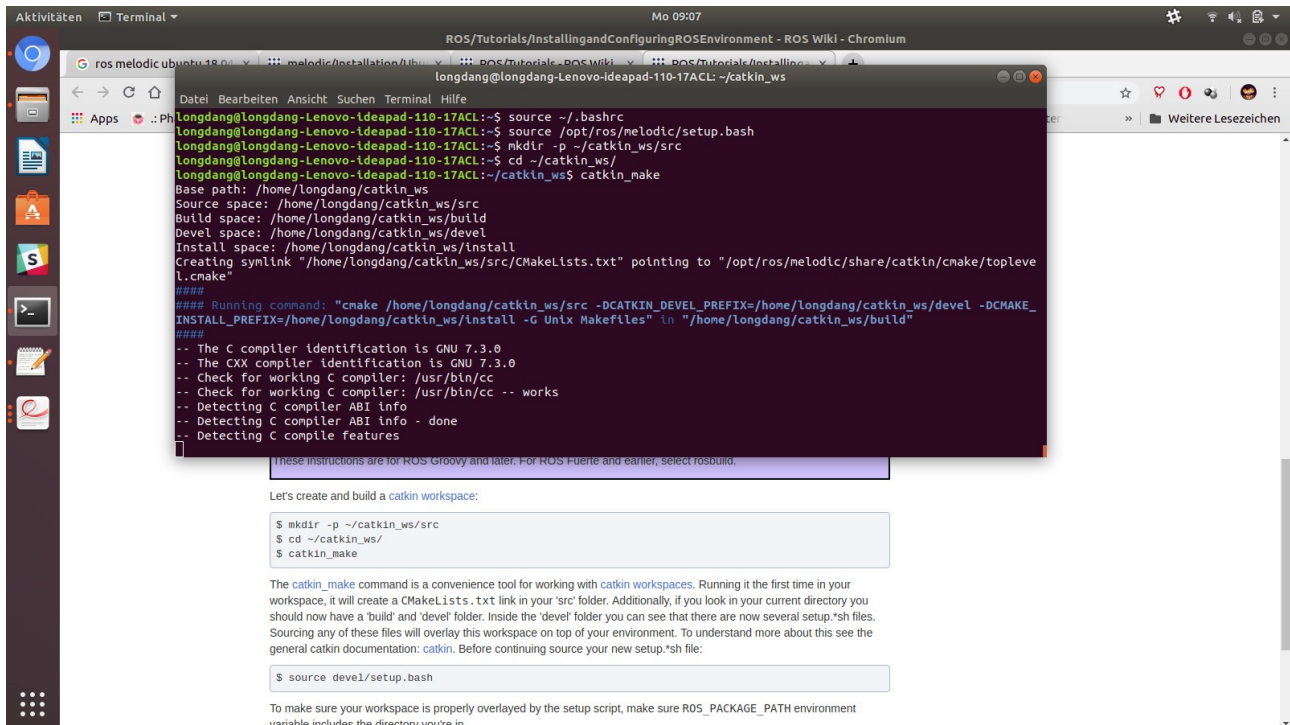
1.6 Environment setup

It's convenient if the ROS environment variables are automatically added to your bash session every time a new shell is launched:

```
echo "source /opt/ros/melodic/setup.bash" >> ~/.bashrc
```

```
source ~/.bashrc
```

catkin_make:

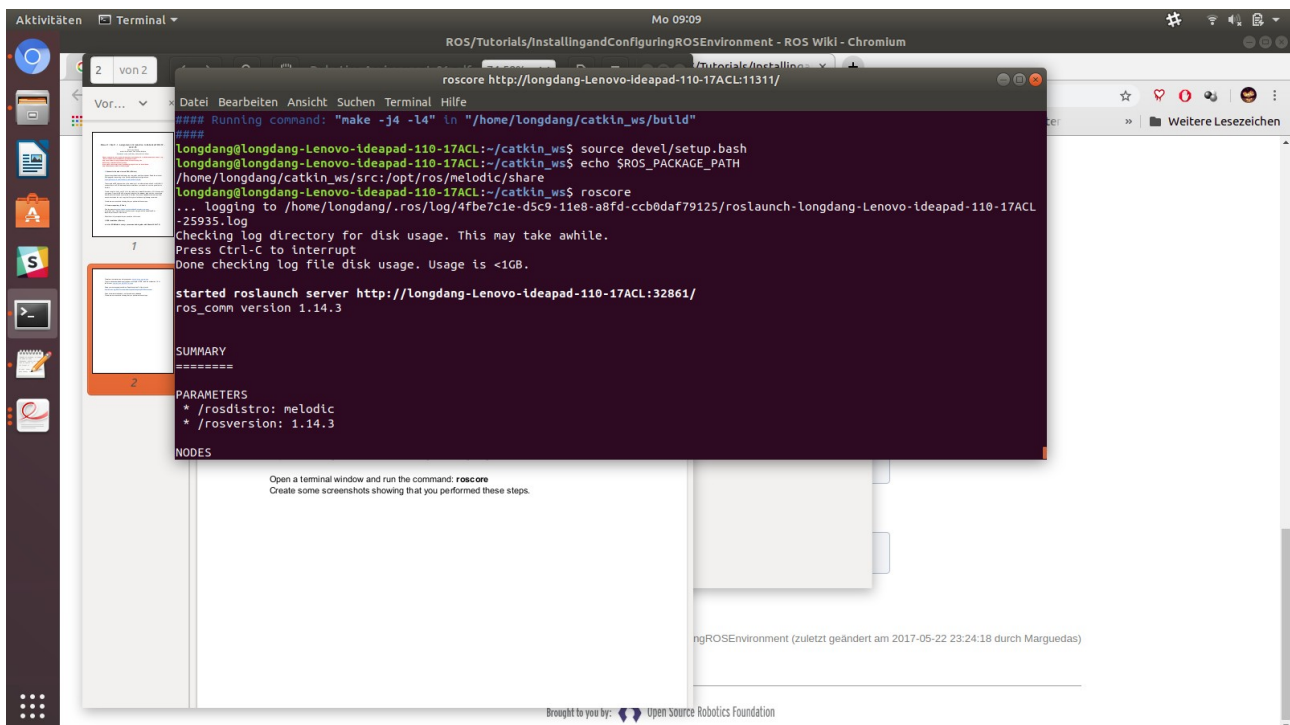


```
longdang@longdang-Lenovo-Ideapad-110-17ACL:~$ source ~/.bashrc
longdang@longdang-Lenovo-Ideapad-110-17ACL:~$ source /opt/ros/melodic/setup.bash
longdang@longdang-Lenovo-Ideapad-110-17ACL:~$ mkdir -p ~/catkin_ws/src
longdang@longdang-Lenovo-Ideapad-110-17ACL:~$ cd ~/catkin_ws/
longdang@longdang-Lenovo-Ideapad-110-17ACL:~/catkin_ws$ catkin_make

Base path: /home/longdang/catkin_ws
Source space: /home/longdang/catkin_ws/src
Build space: /home/longdang/catkin_ws/build
Devel space: /home/longdang/catkin_ws/devel
Install space: /home/longdang/catkin_ws/install
Creating symlink "/home/longdang/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/melodic/share/catkin/cmake/toplevel.cmake"

####
#### Running command: "cmake /home/longdang/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/longdang/catkin_ws/devel -DCMAKE_INSTALL_PREFIX=/home/longdang/catkin_ws/install -G Unix Makefiles" in "/home/longdang/catkin_ws/build"
####
-- The C compiler identification is GNU 7.3.0
-- The CXX compiler identification is GNU 7.3.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
```

run roscore:



```
longdang@longdang-Lenovo-Ideapad-110-17ACL:~/catkin_ws$ source devel/setup.bash
longdang@longdang-Lenovo-Ideapad-110-17ACL:~/catkin_ws$ echo $ROS_PACKAGE_PATH
/home/longdang/catkin_ws/src:/opt/ros/melodic/share
longdang@longdang-Lenovo-Ideapad-110-17ACL:~/catkin_ws$ roscore
... logging to /home/longdang/.ros/log/4fbc7c1e-d5c9-11e8-a8fd-ccb0daf79125/roslaunch-longdang-Lenovo-Ideapad-110-17ACL-25935.log
Checking log directory for disk usage. This may take awhile.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

started roslaunch server http://longdang-Lenovo-Ideapad-110-17ACL:32861/
ros_comm version 1.14.3

SUMMARY
=====
PARAMETERS
* /rostdistro: melodic
* /rosversion: 1.14.3

NODES
```