

Task 2

Setting up the workspace and cloning the repository

```
mkdir -p catkin_ws/src  
cd catkin_ws/src  
git clone https://github.com/nksas/autoz\_task.git
```

Building the workspace

```
cd ..  
catkin_make
```

Source the workspace

```
source devel/setup.bash
```

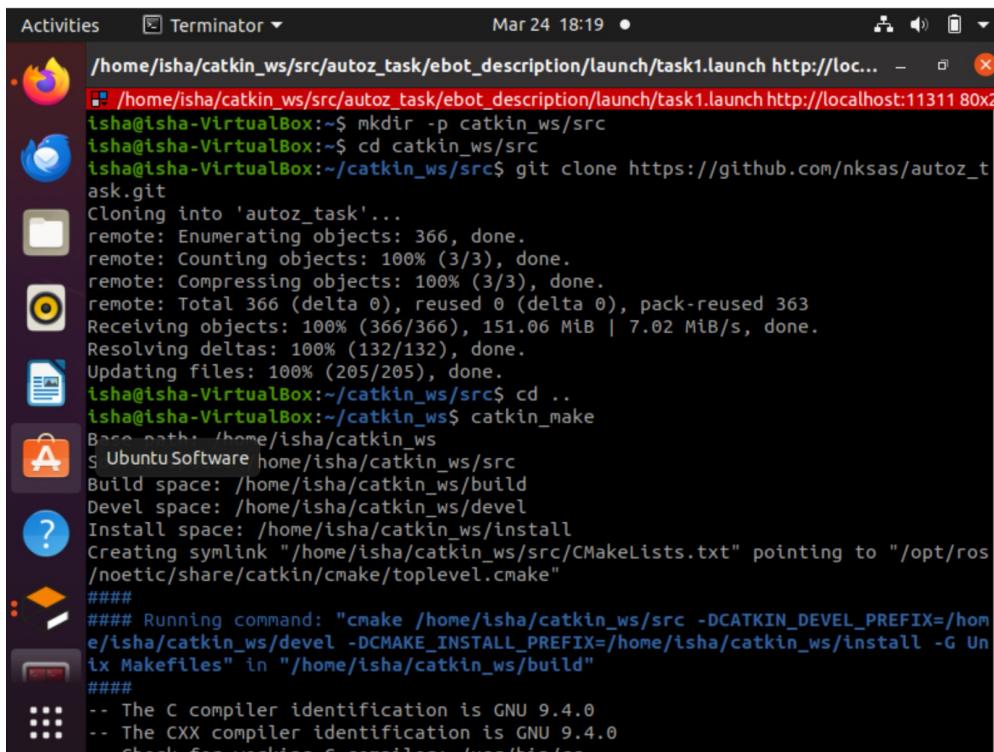
Launch the ROS package

```
roslaunch ebot_description task1.launch
```

In another terminal, install and run teleop_twist_keyboard

```
sudo apt-get install ros-noetic-teleop-twist-keyboard  
rosrun teleop_twist_keyboard teleop_twist_keyboard.py
```

1. Spawning ebot:



```
/home/isha/catkin_ws/src/autoz_task/ebot_description/launch/task1.launch http://loc...  
isha@isha-VirtualBox:~$ mkdir -p catkin_ws/src  
isha@isha-VirtualBox:~$ cd catkin_ws/src  
isha@isha-VirtualBox:~/catkin_ws/src$ git clone https://github.com/nksas/autoz_task.git  
Cloning into 'autoz_task'...  
remote: Enumerating objects: 366, done.  
remote: Counting objects: 100% (3/3), done.  
remote: Compressing objects: 100% (3/3), done.  
remote: Total 366 (delta 0), reused 0 (delta 0), pack-reused 363  
Receiving objects: 100% (366/366), 151.06 MiB | 7.02 MiB/s, done.  
Resolving deltas: 100% (132/132), done.  
Updating files: 100% (205/205), done.  
isha@isha-VirtualBox:~/catkin_ws/src$ cd ..  
isha@isha-VirtualBox:~/catkin_ws$ catkin_make  
--> catkin_ws  
s UbuntuSoftware home/isha/catkin_ws/src  
Build space: /home/isha/catkin_ws/build  
Devel space: /home/isha/catkin_ws/devel  
Install space: /home/isha/catkin_ws/install  
Creating symlink "/home/isha/catkin_ws/src/CMakeLists.txt" pointing to "/opt/ros/noetic/share/catkin/cmake/toplevel.cmake"  
####  
#### Running command: "cmake /home/isha/catkin_ws/src -DCATKIN_DEVEL_PREFIX=/home/isha/catkin_ws/devel -DCMAKE_INSTALL_PREFIX=/home/isha/catkin_ws/install -G Unix Makefiles" in "/home/isha/catkin_ws/build"  
####  
-- The C compiler identification is GNU 9.4.0  
-- The CXX compiler identification is GNU 9.4.0  
Check for working C compiler: /usr/bin/cc
```

```
/home/isha/catkin_ws/src/autoz_task/ebot_description/launch/task1.launch http://loc... - □ ✎
[INFO] /home/isha/catkin_ws/src/autoz_task/ebot_description/launch/task1.launch http://localhost:11311 80x2
--> add_subdirectory(autoz_task/ebot_gazebo)
-- Configuring done
-- Generating done
-- Build files have been written to: /home/isha/catkin_ws/build
#####
##### Running command: "make -j3 -l3" in "/home/isha/catkin_ws/build"
#####
isha@isha-VirtualBox:~/catkin_ws$ source devel/setup.bash
isha@isha-VirtualBox:~/catkin_ws$ roslaunch ebot_description task1.launch
... logging to /home/isha/.ros/log/318b3638-e946-11ee-9ae5-2ddde1eb3693/roslaunc
h-isha-VirtualBox-8172.log
Checking log directory for disk usage. This may take a while.
Press Ctrl-C to interrupt
Done checking log file disk usage. Usage is <1GB.

xacro: in-order processing became default in ROS Melodic. You can drop the optio
n.
started roslaunch server http://isha-VirtualBox:33615/

SUMMARY
=====
PARAMETERS
* /gazebo/enable_ros_network: True
* /robot_description: <?xml version="1.....
* /rosdistro: noetic
Show Applications 1.16.0
' - - : True
```

2. Installing Teleop:

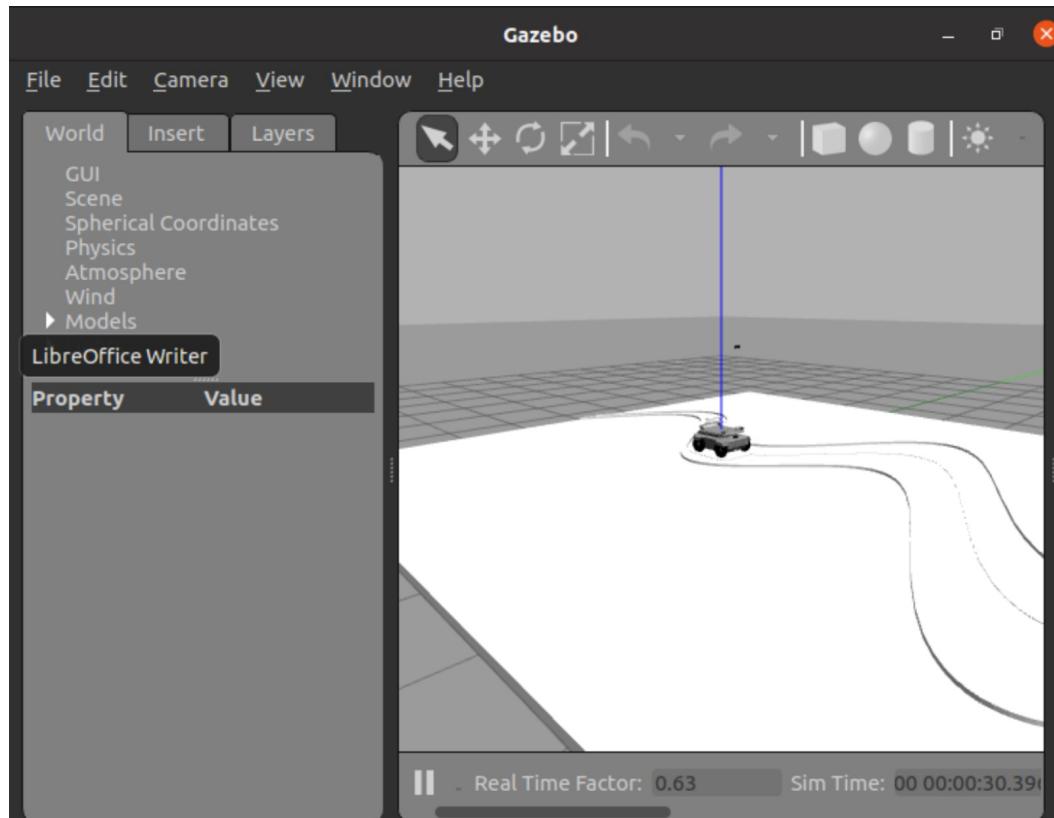
```
isha@isha-VirtualBox: ~/catkin_ws
isha@isha-VirtualBox: ~/catkin_ws 80x28
isha@isha-VirtualBox:~/catkin_ws$ sudo apt-get install ros-noetic-teleop-twist-k
eyboard
[sudo] password for isha:
Sorry, try again.
[sudo] password for isha:
Reading package lists... Done
Building dependency tree
Reading state information... Done
ros-noetic-teleop-twist-keyboard is already the newest version (1.0.0-1focal.202
30620.184914).
0 upgraded, 0 newly installed, 0 to remove and 4 not upgraded.
isha@isha-VirtualBox:~/catkin_ws$ rosrun teleop_twist_keyboard teleop_twist_keyb
oard.py

Reading from the keyboard and Publishing to Twist!
-----
Moving around:
    u      i      o
    j      k      l
    m      ,      .

For Holonomic mode (strafing), hold down the shift key:
-----
    U      I      O
    J      K      L
    M      <      >

t : up (+z)
```

3. Ebot spawned in gazebo:



4. Python script for creating a subscriber node:

```
cmd_vel_subscriber.py
```

```
1 import rospy
2 from geometry_msgs.msg import Twist
3
4 def cmd_vel_callback(msg):
5     linear_x = msg.linear.x
6     angular_z = msg.angular.z
7     print("Received Twist message - Linear: {}, Angular: {}".format(linear_x,
8     angular_z))
9
10 def subscriber():
11     rospy.init_node('cmd_vel_subscriber')
12     rospy.Subscriber('/cmd_vel', Twist, cmd_vel_callback)
13     rospy.spin()
14
15 if __name__ == '__main__':
16     subscriber()
```

The code editor shows a Python file named "cmd_vel_subscriber.py". The code defines a ROS subscriber node that prints received Twist messages. The file is saved in a LibreOffice Writer document.