

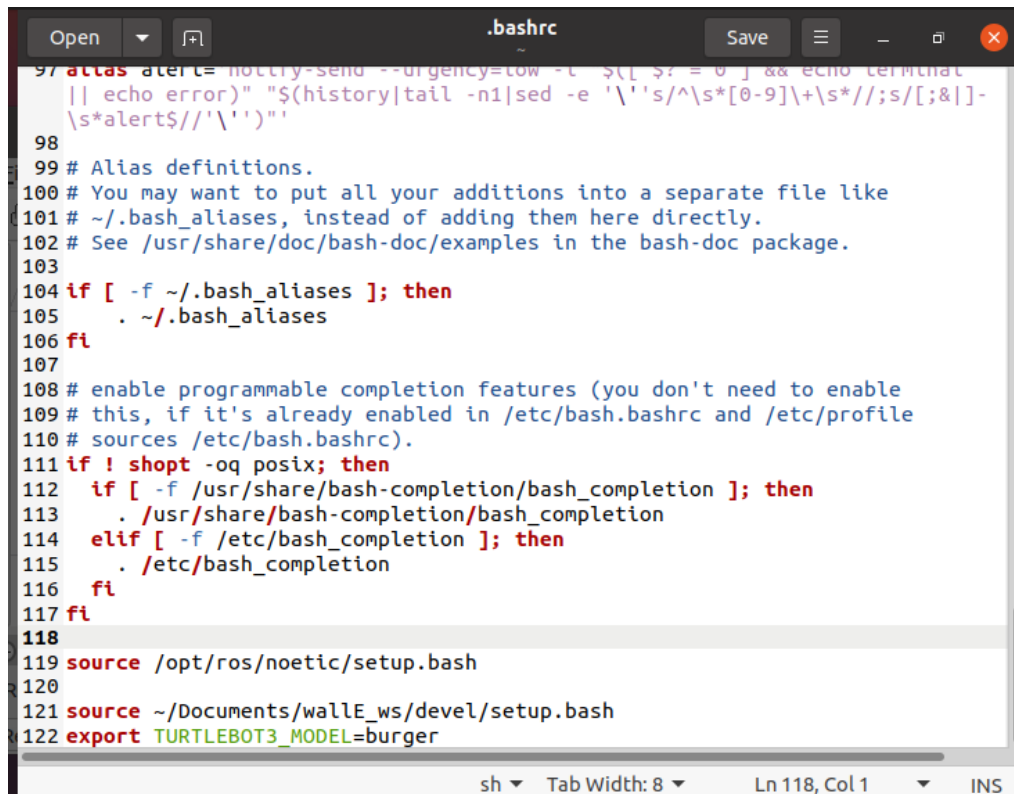
Install tutlebot3

Install turtulebot3 package

```
asrar@asrar-VirtualBox: ~/Documents/wallE_ws
asrar@asrar-VirtualBox:~$ cd Documents/wallE_ws/src/
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ git clone https://github.com/ROBOTIS-GIT/turtlebot3_msgs.git
Cloning into 'turtlebot3_msgs'...
remote: Enumerating objects: 242, done.
remote: Total 242 (delta 0), reused 0 (delta 0), pack-reused 242
Receiving objects: 100% (242/242), 67.03 KiB | 266.00 KiB/s, done.
Resolving deltas: 100% (101/101), done.
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ git clone -b kinetic-devel https://github.com/ROBOTIS-GIT/turtlebot3.git
Cloning into 'turtlebot3'...
remote: Enumerating objects: 111, done.
remote: Counting objects: 100% (111/111), done.
remote: Compressing objects: 100% (86/86), done.
remote: Total 4767 (delta 47), reused 46 (delta 22), pack-reused 4656
Receiving objects: 100% (4767/4767), 120.45 MiB | 2.52 MiB/s, done.
Resolving deltas: 100% (2926/2926), done.
```

```
asrar@asrar-VirtualBox: ~
-- Found gmock sources under /usr/src/gmocktest. gmock will be built.
-- Found PythonInterp: /usr/bin/python3 (found version "3.8.2")
-- Using Python nosetests: /usr/bin/nosetests3
-- catkin 0.8.6
-- BUILD_SHARED_LIBS is on
-- BUILD_SHARED_LIBS is on
--
-- traversing 9 packages in topological order:
--   - turtlebot3 (metapackage)
--   - turtlebot3_msgs
--   - turtlebot3_navigation
--   - turtlebot3_bringup
--   - turtlebot3_example
--   - turtlebot3_slam
--   - turtlebot3_teleop
--   - tutorial
--   - turtlebot3_description
--
-- +++ processing catkin metapackage: 'turtlebot3'
-- ==> add_subdirectory(turtlebot3/turtlebot3)
-- +++ processing catkin package: 'turtlebot3_msgs'
-- ==> add_subdirectory(turtlebot3_msgs)
-- Using these message generators: gencpp;geneus;genlisp;gennodejs;genpy
-- turtlebot3_msgs: 3 messages, 0 services
-- +++ processing catkin package: 'turtlebot3_navigation'
-- ==> add_subdirectory(turtlebot3/turtlebot3_navigation)
-- +++ processing catkin package: 'turtlebot3_bringup'
-- ==> add_subdirectory(turtlebot3/turtlebot3_bringup)
-- +++ processing catkin package: 'turtlebot3_example'
-- ==> add_subdirectory(turtlebot3/turtlebot3_example)
```

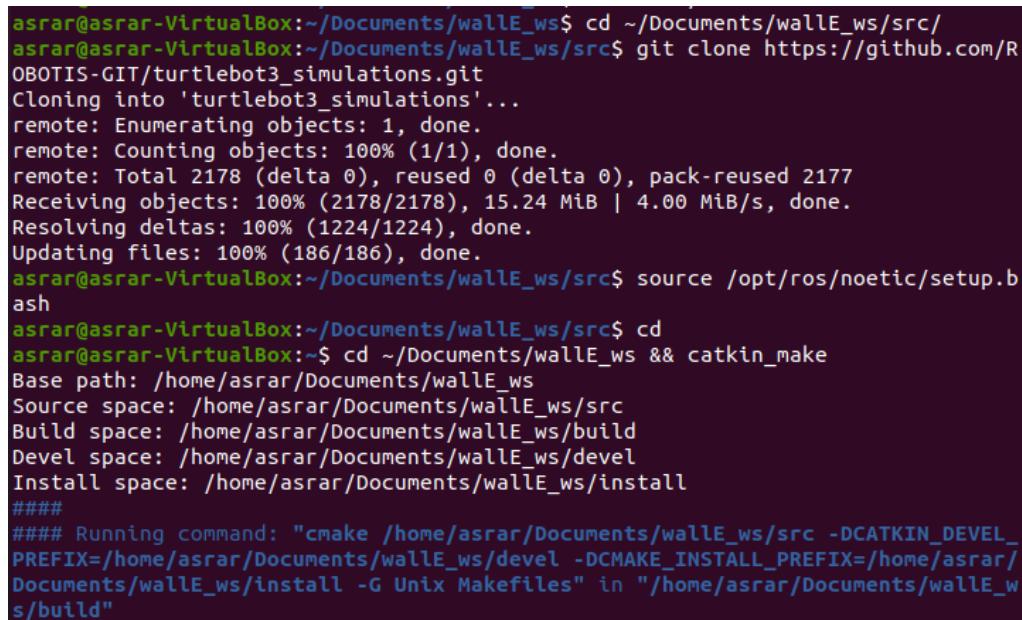
```
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ gedit ~/.bashrc
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ source ~/.bashrc
```

A screenshot of a text editor window titled ".bashrc". The window has a dark theme with a menu bar containing "Open", "Save", and a hamburger menu icon. The text content shows lines 97 to 122 of the file. Line 97 is a complex alias for 'atlas' that uses 'history' and 'tail' to find the last command and 'sed' to replace it with a 'notty-send' command. Lines 98-103 are comments about alias definitions. Lines 104-106 show a conditional block to source ~/.bash\_aliases if it exists. Lines 107-117 show conditional blocks for enabling bash completion. Line 118 is a comment. Lines 119-122 show sourcing setup scripts for ROS Noetic and a custom workspace, and setting an environment variable for the turtlebot3 model.

```
97 atlas alert= notify-send --urgency=low -t "${ $?: = 0 }" && echo terminat
|| echo error)" "$(history|tail -n1|sed -e '\''s/^s*[0-9]\+\s*//;s/[:&|]-
\s*alert$//'\''")"
98
99 # Alias definitions.
100 # You may want to put all your additions into a separate file like
101 # ~/.bash_aliases, instead of adding them here directly.
102 # See /usr/share/doc/bash-doc/examples in the bash-doc package.
103
104 if [ -f ~/.bash_aliases ]; then
105     . ~/.bash_aliases
106 fi
107
108 # enable programmable completion features (you don't need to enable
109 # this, if it's already enabled in /etc/bash.bashrc and /etc/profile
110 # sources /etc/bash.bashrc).
111 if ! shopt -oq posix; then
112     if [ -f /usr/share/bash-completion/bash_completion ]; then
113         . /usr/share/bash-completion/bash_completion
114     elif [ -f /etc/bash_completion ]; then
115         . /etc/bash_completion
116     fi
117 fi
118
119 source /opt/ros/noetic/setup.bash
120
121 source ~/Documents/wallE_ws/devel/setup.bash
122 export TURTLEBOT3_MODEL=burger
```

sh Tab Width: 8 Ln 118, Col 1 INS

Install turtlebot3\_simulation package

A screenshot of a terminal window with a dark background. It shows the commands and output for cloning a git repository and building a catkin workspace. The user is in a virtual box named 'asrar'. The commands include 'cd' to the source directory, 'git clone' of the turtlebot3\_simulations repository, 'source' of the ROS setup script, 'cd' to the workspace, and 'catkin\_make' to build the workspace. The output shows the cloning progress and the successful completion of the build process.

```
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ cd ~/Documents/wallE_ws/src/
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ git clone https://github.com/ROBOTIS-GIT/turtlebot3_simulations.git
Cloning into 'turtlebot3_simulations'...
remote: Enumerating objects: 1, done.
remote: Counting objects: 100% (1/1), done.
remote: Total 2178 (delta 0), reused 0 (delta 0), pack-reused 2177
Receiving objects: 100% (2178/2178), 15.24 MiB | 4.00 MiB/s, done.
Resolving deltas: 100% (1224/1224), done.
Updating files: 100% (186/186), done.
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ source /opt/ros/noetic/setup.bash
asrar@asrar-VirtualBox:~/Documents/wallE_ws/src$ cd
asrar@asrar-VirtualBox:~$ cd ~/Documents/wallE_ws && catkin_make
Base path: /home/asrar/Documents/wallE_ws
Source space: /home/asrar/Documents/wallE_ws/src
Build space: /home/asrar/Documents/wallE_ws/build
Devel space: /home/asrar/Documents/wallE_ws/devel
Install space: /home/asrar/Documents/wallE_ws/install
####
#### Running command: "cmake /home/asrar/Documents/wallE_ws/src -DCATKIN_DEVEL_PREFIX=/home/asrar/Documents/wallE_ws/devel -DCMAKE_INSTALL_PREFIX=/home/asrar/Documents/wallE_ws/install -G Unix Makefiles" in "/home/asrar/Documents/wallE_ws/build"
```

```
asrar@asrar-VirtualBox: ~  
ults  
-- Forcing gtest/gmock from source, though one was otherwise available.  
-- Found gtest sources under '/usr/src/gtest': gtests will be built  
-- Found gmock sources under '/usr/src/gtest': gmock will be built  
-- Found PythonInterp: /usr/bin/python3 (found version "3.8.2")  
-- Using Python nosetests: /usr/bin/nosetests3  
-- catkin 0.8.6  
-- BUILD_SHARED_LIBS is on  
-- BUILD_SHARED_LIBS is on  
--  
-- traversing 12 packages in topological order:  
--   - turtlebot3 (metapackage)  
--   - turtlebot3_msgs  
--   - turtlebot3_navigation  
--   - turtlebot3_simulations (metapackage)  
--   - turtlebot3_bringup  
--   - turtlebot3_example  
--   - turtlebot3_fake  
--   - turtlebot3_gazebo  
--   - turtlebot3_slam  
--   - turtlebot3_teleop  
--   - tutorial  
--   - turtlebot3_description  
--  
-- +++ processing catkin metapackage: 'turtlebot3'  
==> add_subdirectory(turtlebot3/turtlebot3)  
-- +++ processing catkin package: 'turtlebot3_msgs'  
==> add_subdirectory(turtlebot3_msgs)  
-- Using these message generators: gencpp;geneus;genlisp;gennodejs;genpy  
turtlebot3_msgs: 2 messages, 0 services
```

## TurtleBot3 simulation Using RViz

```
/home/asrar/Documents/wallE_ws/src/turtlebot3_simulations...  
asrar@asrar-VirtualBox:~/Documents/wallE_ws$  
asrar@asrar-VirtualBox:~/Documents/wallE_ws$ roslaunch turtlebot3_fake turtlebo  
t3_fake.launch  
... logging to /home/asrar/.ros/log/02715eca-c2d7-11ea-aff2-2bbc8af718f6/roslau  
nch-asrar-VirtualBox-4204.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 opti  
on.  
started roslaunch server http://asrar-VirtualBox:37629/  
  
SUMMARY  
=====  
  
PARAMETERS  
* /robot_description: <?xml version="1...  
* /robot_state_publisher/publish_frequency: 50.0  
* /roscdistro: noetic  
* /rosversion: 1.15.7  
* /tb3_model: burger  
  
NODES  
/  
  robot_state_publisher (robot_state_publisher/robot_state_publisher)  
  rviz (rviz/rviz)  
  turtlebot3_fake_node (turtlebot3_fake/turtlebot3_fake_node)  
  
auto-starting new master
```

```
/home/asrar/Documents/wallE_ws/src/turtlebot3_simulations...
started roslaunch server http://asrar-VirtualBox:37629/

SUMMARY
=====

PARAMETERS
* /robot_description: <?xml version="1...
* /robot_state_publisher/publish_frequency: 50.0
* /roscdistro: noetic
* /rosversion: 1.15.7
* /tb3_model: burger

NODES
/
  robot_state_publisher (robot_state_publisher/robot_state_publisher)
  rviz (rviz/rviz)
  turtlebot3_fake_node (turtlebot3_fake/turtlebot3_fake_node)

auto-starting new master
process[master]: started with pid [4234]
ROS_MASTER_URI=http://localhost:11311

setting /run_id to 02715eca-c2d7-11ea-aff2-2bbc8af718f6
process[rosout-1]: started with pid [4244]
started core service [/rosout]
process[turtlebot3_fake_node-2]: started with pid [4247]
process[robot_state_publisher-3]: started with pid [4248]
process[rviz-4]: started with pid [4249]
```

```
asrar@asrar-VirtualBox: ~
asrar@asrar-VirtualBox:~$ roslaunch turtlebot3_teleop turtlebot3_teleop_key.lau
nch
... logging to /home/asrar/.ros/log/02715eca-c2d7-11ea-aff2-2bbc8af718f6/roslau
nch-asrar-VirtualBox-4335.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.

started roslaunch server http://asrar-VirtualBox:37577/

SUMMARY
=====

PARAMETERS
* /model: burger
* /roscdistro: noetic
* /rosversion: 1.15.7

NODES
/
  turtlebot3_teleop_keyboard (turtlebot3_teleop/turtlebot3_teleop_key)

ROS_MASTER_URI=http://localhost:11311

process[turtlebot3_teleop_keyboard-1]: started with pid [4349]

Control Your TurtleBot3!
-----
Moving around:
```

```
Terminal 21:25 10 يوليو
asrar@asrar-VirtualBox: ~
process[turtlebot3_teleop_keyboard-1]: started with pid [4349]

Control Your TurtleBot3!
-----
Moving around:
    w
a    s    d
    x

w/x : increase/decrease linear velocity (Burger : ~ 0.22, Waffle and Waffle Pi
: ~ 0.26)
a/d : increase/decrease angular velocity (Burger : ~ 2.84, Waffle and Waffle Pi
: ~ 1.82)

space key, s : force stop

CTRL-C to quit

currently: linear vel 0.0 angular vel 0.1
currently: linear vel 0.0 angular vel 0.0
currently: linear vel 0.01 angular vel 0.0
[turtlebot3_teleop_keyboard-1] process has finished cleanly
log file: /home/asrar/.ros/log/02715eca-c2d7-11ea-aff2-2bbc8af718f6/turtlebot3_
teleop_keyboard-1*.log
all processes on machine have died, roslaunch will exit
shutting down processing monitor...
... shutting down processing monitor complete
done
asrar@asrar-VirtualBox:~$
```

