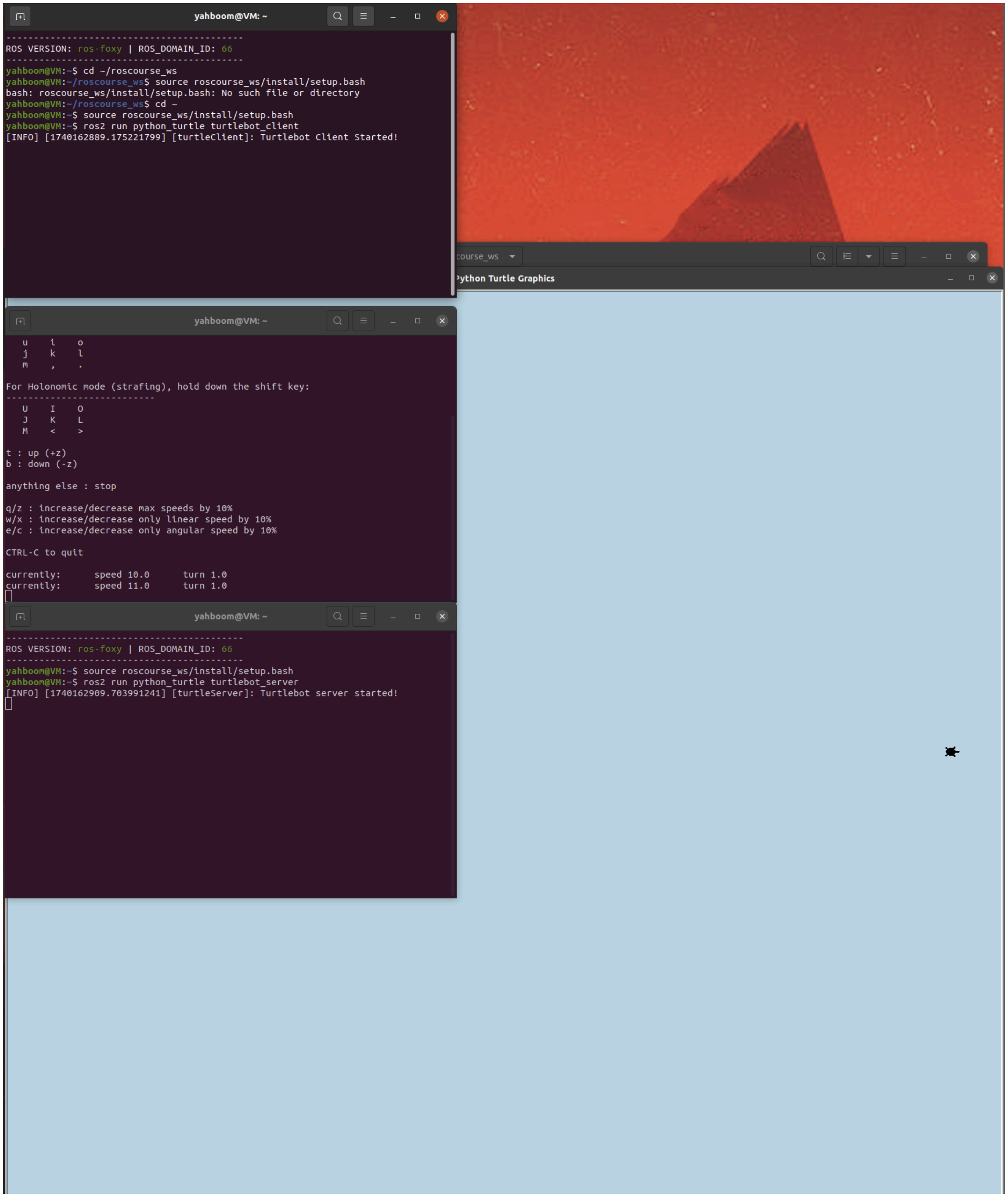
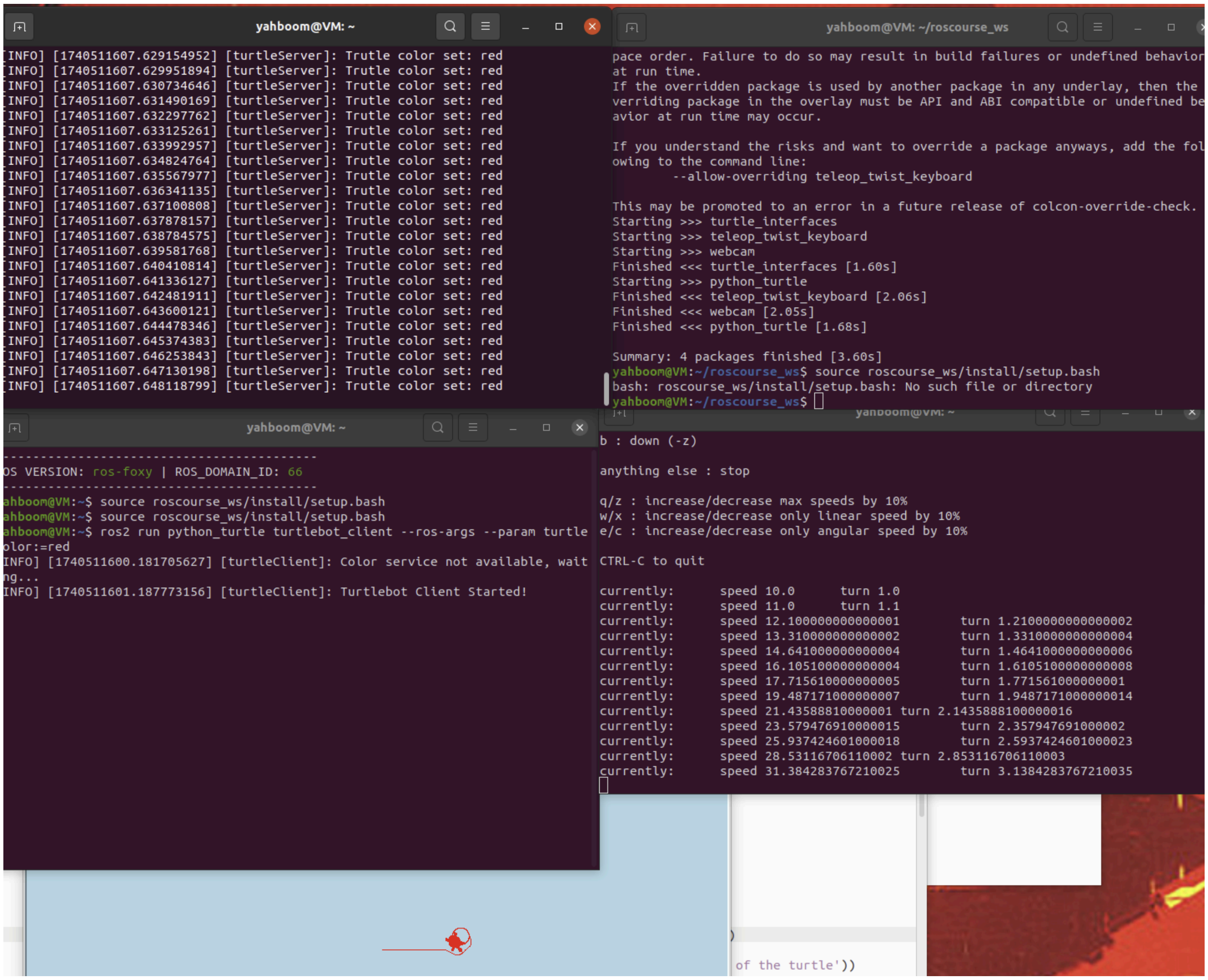


```
-------------------------------------------
ROS VERSION: ros-foxy | ROS_DOMAIN_ID: 66
-------------------------------------------
yahboom@VM:~$ cd ~/roscourse_ws
yahboom@VM:~/roscourse_ws$ source roscourse_ws/install/setup.bash
bash: roscourse_ws/install/setup.bash: No such file or directory
yahboom@VM:~/roscourse_ws$ cd ~
yahboom@VM:~$ source roscourse_ws/install/setup.bash
yahboom@VM:~$ ros2 run python_turtle turtlebot_client
[INFO] [1740162889.175221799] [turtleClient]: Turtlebot Client Started!
```

```
   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)
b : down (-z)

anything else : stop

q/z : increase/decrease max speeds by 10%
w/x : increase/decrease only linear speed by 10%
e/c : increase/decrease only angular speed by 10%

CTRL-C to quit

currently:      speed 10.0      turn 1.0
currently:      speed 11.0      turn 1.0
```

```
-------------------------------------------
ROS VERSION: ros-foxy | ROS_DOMAIN_ID: 66
-------------------------------------------
yahboom@VM:~$ source roscourse_ws/install/setup.bash
yahboom@VM:~$ ros2 run python_turtle turtlebot_server
[INFO] [1740162909.703991241] [turtleServer]: Turtlebot server started!
```

Task 1 Step 17



```
[INFO] [1740511607.629154952] [turtleServer]: Trutle color set: red
[INFO] [1740511607.629951894] [turtleServer]: Trutle color set: red
[INFO] [1740511607.630734646] [turtleServer]: Trutle color set: red
[INFO] [1740511607.631490169] [turtleServer]: Trutle color set: red
[INFO] [1740511607.632297762] [turtleServer]: Trutle color set: red
[INFO] [1740511607.633125261] [turtleServer]: Trutle color set: red
[INFO] [1740511607.633992957] [turtleServer]: Trutle color set: red
[INFO] [1740511607.634824764] [turtleServer]: Trutle color set: red
[INFO] [1740511607.635567977] [turtleServer]: Trutle color set: red
[INFO] [1740511607.636341135] [turtleServer]: Trutle color set: red
[INFO] [1740511607.637100808] [turtleServer]: Trutle color set: red
[INFO] [1740511607.637878157] [turtleServer]: Trutle color set: red
[INFO] [1740511607.638784575] [turtleServer]: Trutle color set: red
[INFO] [1740511607.639581768] [turtleServer]: Trutle color set: red
[INFO] [1740511607.640410814] [turtleServer]: Trutle color set: red
[INFO] [1740511607.641336127] [turtleServer]: Trutle color set: red
[INFO] [1740511607.642481911] [turtleServer]: Trutle color set: red
[INFO] [1740511607.643600121] [turtleServer]: Trutle color set: red
[INFO] [1740511607.644478346] [turtleServer]: Trutle color set: red
[INFO] [1740511607.645374383] [turtleServer]: Trutle color set: red
[INFO] [1740511607.646253843] [turtleServer]: Trutle color set: red
[INFO] [1740511607.647130198] [turtleServer]: Trutle color set: red
[INFO] [1740511607.648118799] [turtleServer]: Trutle color set: red
```

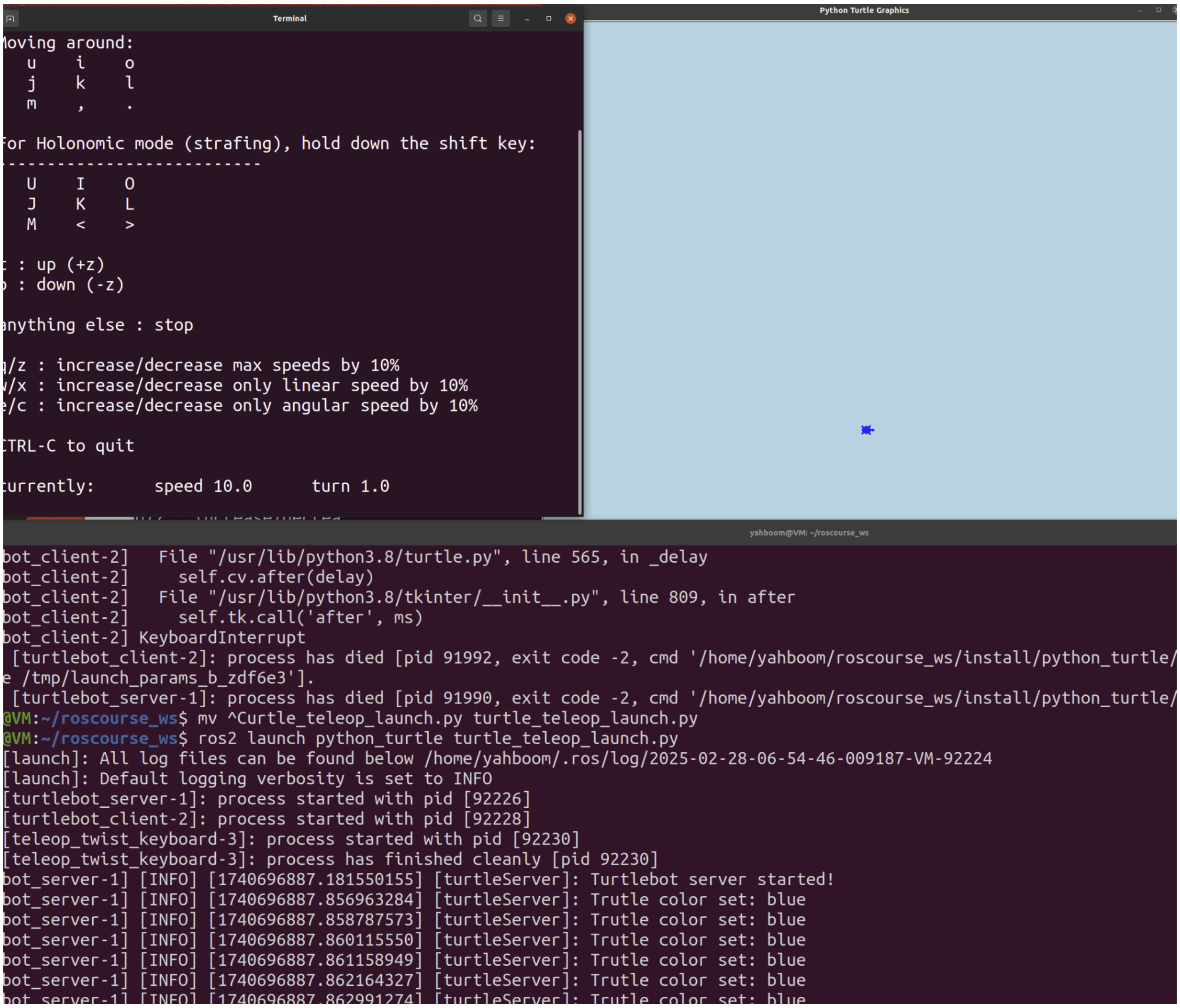
```
pace order. Failure to do so may result in build failures or undefined behavior
at run time.
If the overridden package is used by another package in any underlay, then the 
verriding package in the overlay must be API and ABI compatible or undefined be
avior at run time may occur.

If you understand the risks and want to override a package anyways, add the fol
owing to the command line:
        --allow-overriding teleop_twist_keyboard

This may be promoted to an error in a future release of colcon-override-check.
Starting >>> turtle_interfaces
Starting >>> teleop_twist_keyboard
Starting >>> webcam
Finished <<< turtle_interfaces [1.60s]
Starting >>> python_turtle
Finished <<< teleop_twist_keyboard [2.06s]
Finished <<< webcam [2.05s]
Finished <<< python_turtle [1.68s]

Summary: 4 packages finished [3.60s]
yahboom@VM:~/roscourse_ws$ source roscourse_ws/install/setup.bash
bash: roscourse_ws/install/setup.bash: No such file or directory
yahboom@VM:~/roscourse_ws$ 
```

```
----------------------------------------
OS VERSION: ros-foxy | ROS_DOMAIN_ID: 66
----------------------------------------
ahboom@VM:~$ source roscourse_ws/install/setup.bash
ahboom@VM:~$ source roscourse_ws/install/setup.bash
ahboom@VM:~$ ros2 run python_turtle turtlebot_client --ros-args --param turtle
olor:=red
INFO] [1740511600.181705627] [turtleClient]: Color service not available, wait
ng...
INFO] [1740511601.187773156] [turtleClient]: Turtlebot Client Started!
```

```
b : down (-z)

anything else : stop

q/z : increase/decrease max speeds by 10%
w/x : increase/decrease only linear speed by 10%
e/c : increase/decrease only angular speed by 10%

CTRL-C to quit

currently:      speed 10.0      turn 1.0
currently:      speed 11.0      turn 1.1
currently:      speed 12.100000000000001        turn 1.2100000000000002
currently:      speed 13.310000000000002        turn 1.3310000000000004
currently:      speed 14.641000000000004        turn 1.4641000000000006
currently:      speed 16.105100000000004        turn 1.6105100000000008
currently:      speed 17.715610000000005        turn 1.771561000000001
currently:      speed 19.487171000000007        turn 1.9487171000000014
currently:      speed 21.43588810000001 turn 2.1435888100000016
currently:      speed 23.579476910000015        turn 2.357947691000002
currently:      speed 25.937424601000018        turn 2.5937424601000023
currently:      speed 28.53116706110002 turn 2.853116706110003
currently:      speed 31.384283767210025        turn 3.1384283767210035
```

```
)
of the turtle'))
```

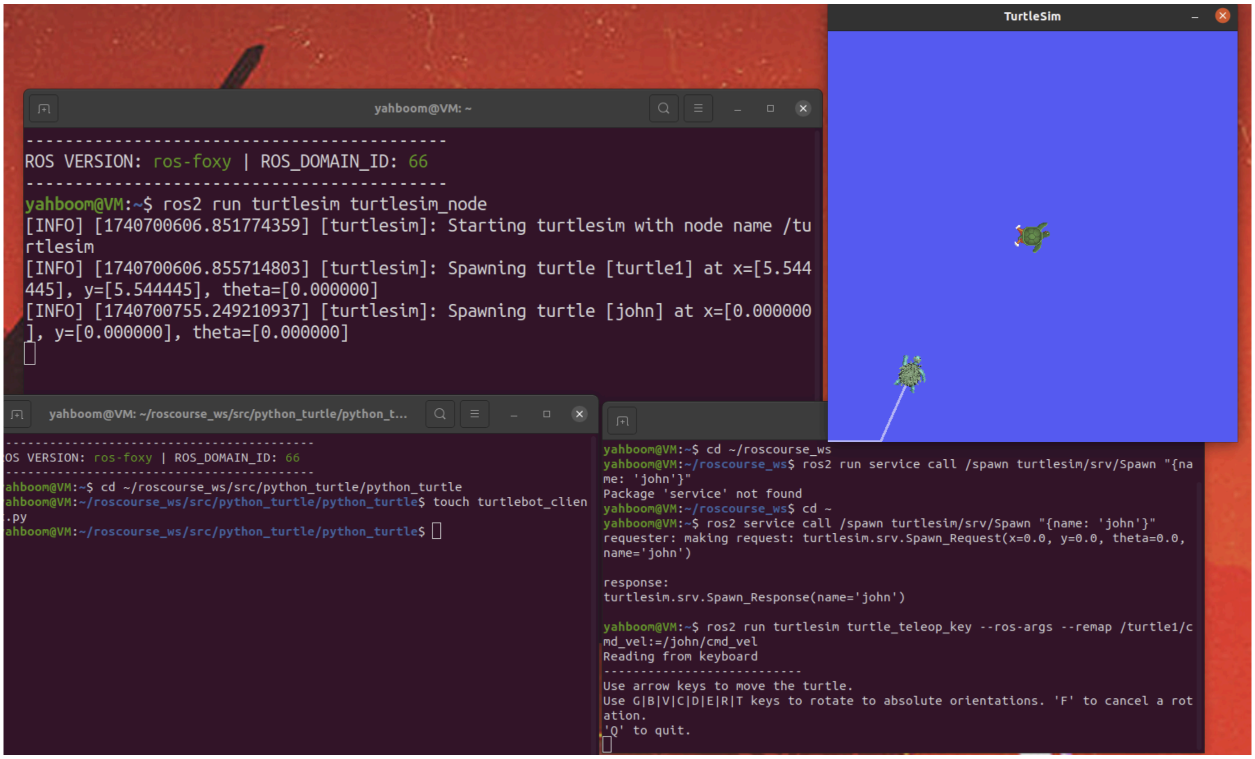
Task 2 Step 13



```
loving 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)
b : down (-z)

anything else : stop

q/z : increase/decrease max speeds by 10%
w/x : increase/decrease only linear speed by 10%
e/c : increase/decrease only angular speed by 10%

CTRL-C to quit

currently:      speed 10.0      turn 1.0
```

```
bot_client-2]   File "/usr/lib/python3.8/turtle.py", line 565, in _delay
bot_client-2]     self.cv.after(delay)
bot_client-2]   File "/usr/lib/python3.8/tkinter/__init__.py", line 809, in after
bot_client-2]     self.tk.call('after', ms)
bot_client-2] KeyboardInterrupt
 [turtlebot_client-2]: process has died [pid 91992, exit code -2, cmd '/home/yahboom/roscourse_ws/install/python_turtle/
e /tmp/launch_params_b_zdf6e3'].
 [turtlebot_server-1]: process has died [pid 91990, exit code -2, cmd '/home/yahboom/roscourse_ws/install/python_turtle/
@VM:~/roscourse_ws$ mv ^Curtle_teleop_launch.py turtle_teleop_launch.py
@VM:~/roscourse_ws$ ros2 launch python_turtle turtle_teleop_launch.py
[launch]: All log files can be found below /home/yahboom/.ros/log/2025-02-28-06-54-46-009187-VM-92224
[launch]: Default logging verbosity is set to INFO
[turtlebot_server-1]: process started with pid [92226]
[turtlebot_client-2]: process started with pid [92228]
[teleop_twist_keyboard-3]: process started with pid [92230]
[teleop_twist_keyboard-3]: process has finished cleanly [pid 92230]
bot_server-1] [INFO] [1740696887.181550155] [turtleServer]: Turtlebot server started!
bot_server-1] [INFO] [1740696887.856963284] [turtleServer]: Trutle color set: blue
bot_server-1] [INFO] [1740696887.858787573] [turtleServer]: Trutle color set: blue
bot_server-1] [INFO] [1740696887.860115550] [turtleServer]: Trutle color set: blue
bot_server-1] [INFO] [1740696887.861158949] [turtleServer]: Trutle color set: blue
bot_server-1] [INFO] [1740696887.862164327] [turtleServer]: Trutle color set: blue
bot_server-1] [INFO] [1740696887.862991274] [turtleServer]: Trutle color set: blue
```

Task 3 step 8



```
-------------------------------------------
ROS VERSION: ros-foxy | ROS_DOMAIN_ID: 66
-------------------------------------------
yahboom@VM:~$ ros2 run turtlesim turtlesim_node
[INFO] [1740700606.851774359] [turtlesim]: Starting turtlesim with node name /tu
rtlesim
[INFO] [1740700606.855714803] [turtlesim]: Spawning turtle [turtle1] at x=[5.544
445], y=[5.544445], theta=[0.000000]
[INFO] [1740700755.249210937] [turtlesim]: Spawning turtle [john] at x=[0.000000
], y=[0.000000], theta=[0.000000]
```

```
-------------------------------------------
OS VERSION: ros-foxy | ROS_DOMAIN_ID: 66
-------------------------------------------
ahboom@VM:~$ cd ~/roscourse_ws/src/python_turtle/python_turtle
ahboom@VM:~/roscourse_ws/src/python_turtle/python_turtle$ touch turtlebot_clien
.py
ahboom@VM:~/roscourse_ws/src/python_turtle/python_turtle$ 
```

```
yahboom@VM:~$ cd ~/roscourse_ws
yahboom@VM:~/roscourse_ws$ ros2 run service call /spawn turtlesim/srv/Spawn "{na
me: 'john'}"
Package 'service' not found
yahboom@VM:~/roscourse_ws$ cd ~
yahboom@VM:~$ ros2 service call /spawn turtlesim/srv/Spawn "{name: 'john'}"
requester: making request: turtlesim.srv.Spawn_Request(x=0.0, y=0.0, theta=0.0,
name='john')

response:
turtlesim.srv.Spawn_Response(name='john')

yahboom@VM:~$ ros2 run turtlesim turtle_teleop_key --ros-args --remap /turtle1/c
md_vel:=/john/cmd_vel
Reading from keyboard
---------------------------
Use arrow keys to move the turtle.
Use G|B|V|C|D|E|R|T keys to rotate to absolute orientations. 'F' to cancel a rot
ation.
'Q' to quit.
```

Task 4 Step 3