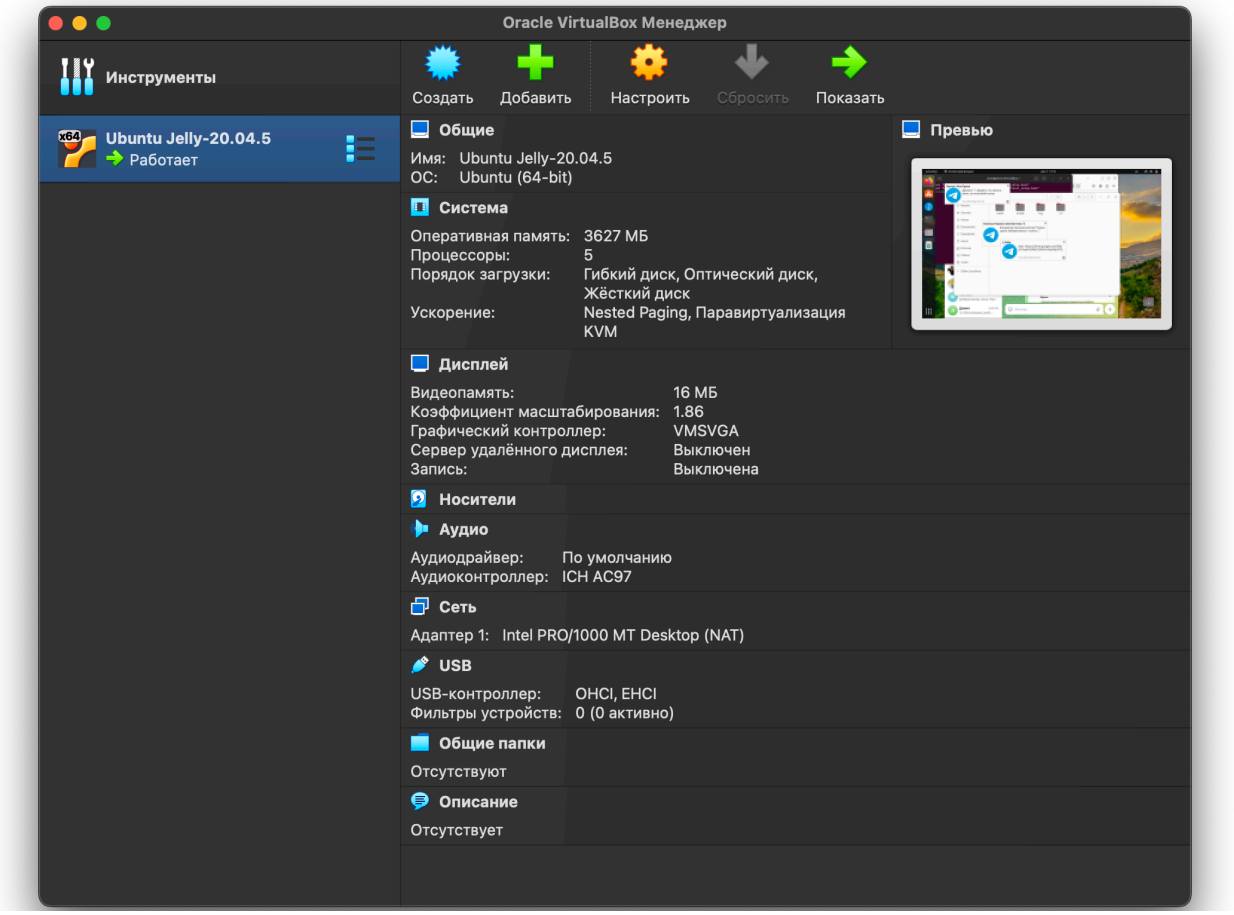
Лабораторная работа 2

1. Установка Ubuntu на виртуальную машину



2. Установка необходимых пакетов и репозиториев

sudo apt install software-properties-common
sudo add-apt-repository universe

3. Установка ROS

sudo apt update && sudo apt install curl -y
sudo curl -sSL https://raw.githubusercontent.com/ros/rosdistro/master/ros.key -o /usr/share/keyrings/ros-archive-keyring.gpg

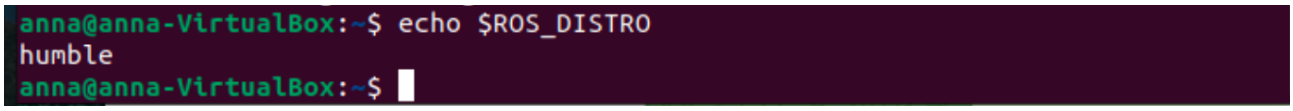
echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/ros-archive-keyring.gpg] http://packages.ros.org/ros2/ubuntu $(. /etc/os-release && echo $UBUNTU_CODENAME) main" | sudo tee /etc/apt/sources.list.d/ros2.list > /dev/null

sudo apt install ros-humble-desktop-full

sudo apt install ros-humble-ros-base

sudo apt install ros-dev-tools

source /opt/ros/humble/setup.bash



4. Установка pyperplan

Pip install pyperplan

5. Установка turtlebot3

sudo apt install ros-humble-gazebo-*

sudo apt install ros-humble-cartographer
sudo apt install ros-humble-cartographer-ros

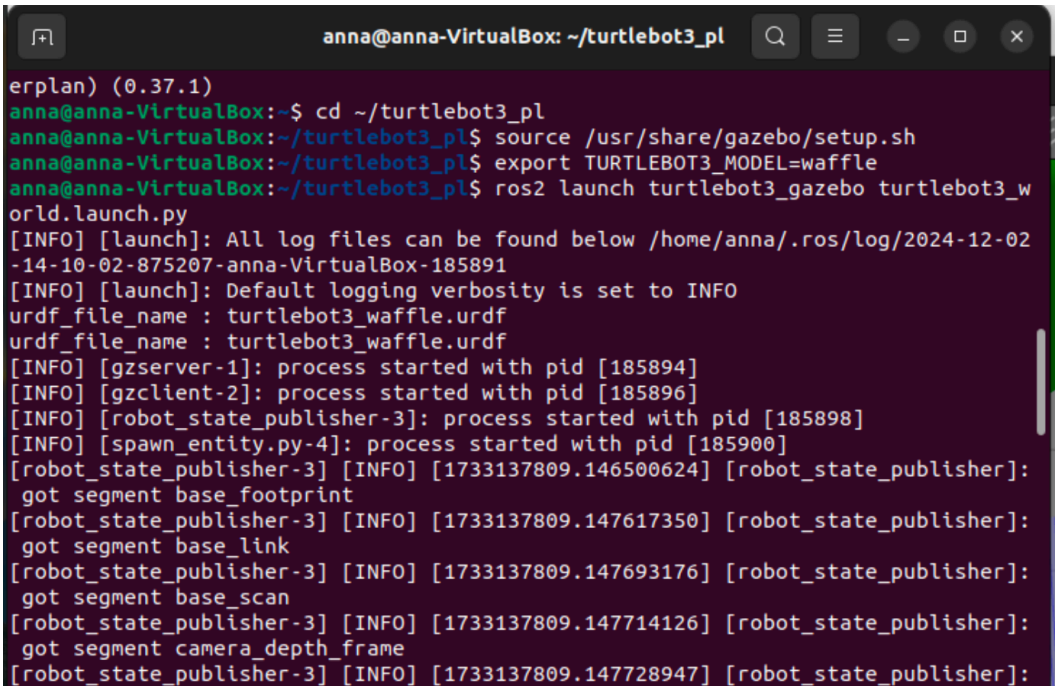
sudo apt install ros-humble-navigation2
sudo apt install ros-humble-nav2-bringup

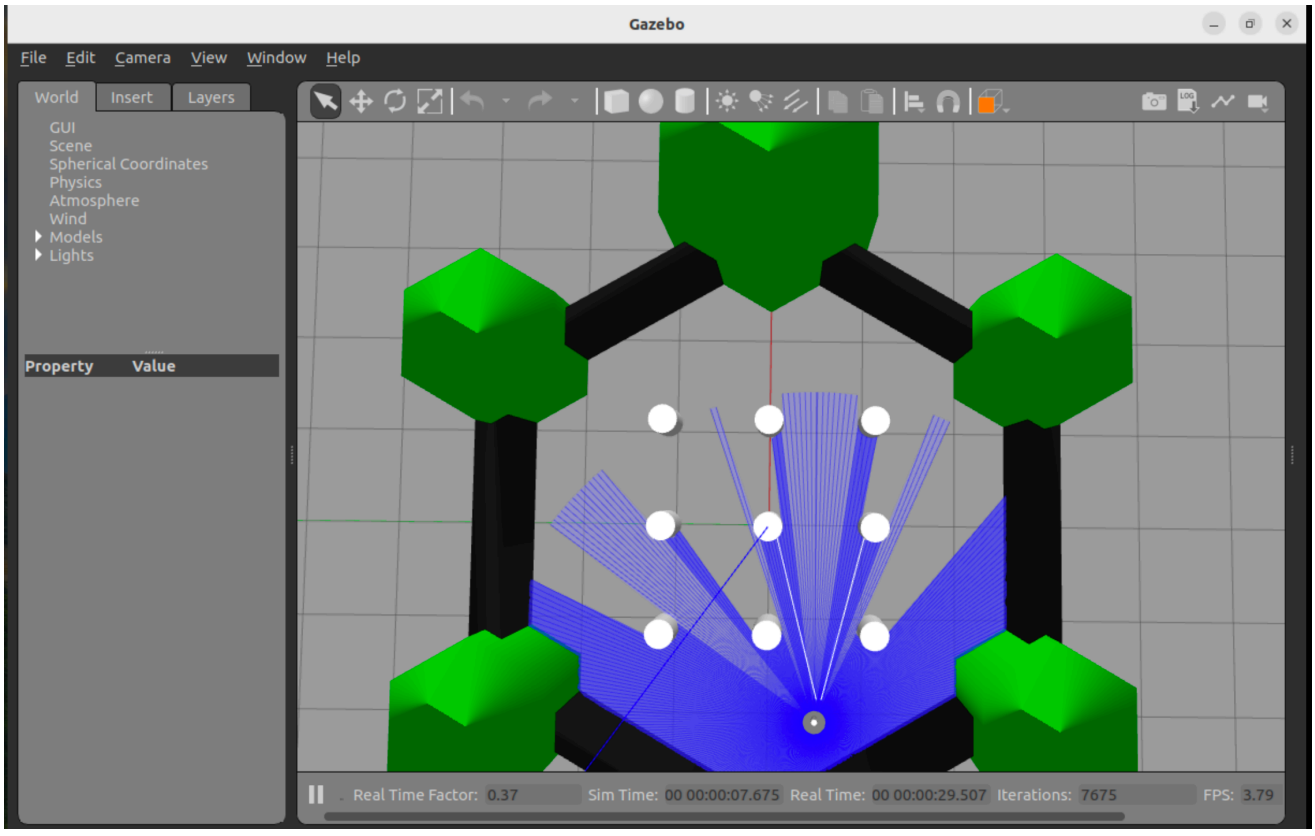
mkdir -p ~/turtlebot3_ws/src
cd ~/turtlebot3_ws/src/
git clone -b humble-devel https://github.com/ROBOTIS-GIT/DynamixelSDK.git
git clone -b humble-devel https://github.com/ROBOTIS-GIT/turtlebot3_msgs.git
git clone -b humble-devel https://github.com/ROBOTIS-GIT/turtlebot3.git
cd ~/turtlebot3_ws
colcon build --symlink-install
echo 'source ~/turtlebot3_ws/install/setup.bash' >> ~/.bashrc
source ~/.bashrc

echo 'export ROS_DOMAIN_ID=30 #TURTLEBOT3' >> ~/.bashrc
source ~/.bashrc

cd ~/turtlebot3_ws/src/
git clone -b humble-devel https://github.com/ROBOTIS-GIT/turtlebot3_simulations.git
cd ~/turtlebot3_ws && colcon build --symlink-install

Запуск
source /usr/share/gazebo/setup.sh
export TURTLEBOT3_MODEL=waffle
ros2 launch turtlebot3_gazebo turtlebot3_world.launch.py

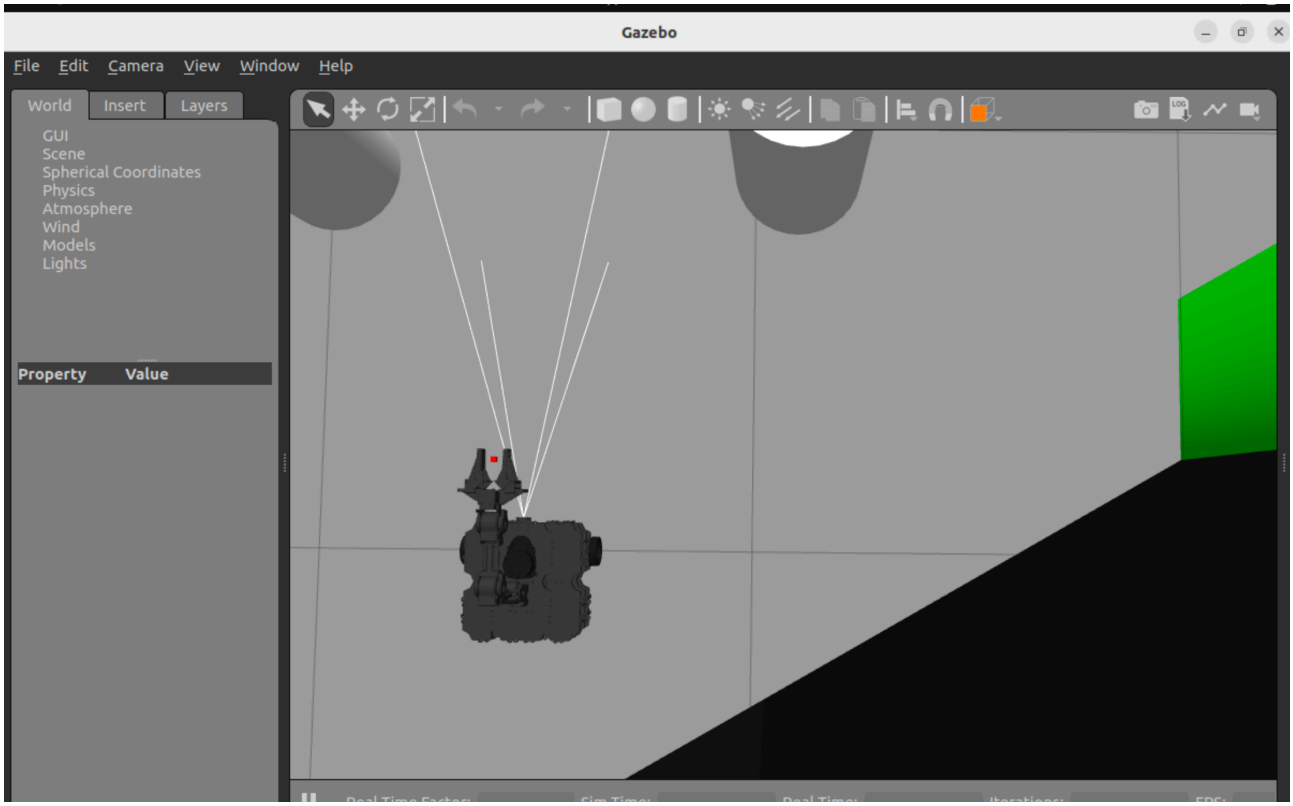




6. Установка Turtlebot3 с манипулятором

sudo apt install ros-humble-dynamixel-sdk ros-humble-ros2-control ros-humble-ros2-controllers ros-humble-gripper-controllers ros-humble-moveit
cd ~/turtlebot3_ws/src/
git clone -b humble-devel https://github.com/ROBOTIS-GIT/turtlebot3_manipulation.git
cd ~/turtlebot3_ws && colcon build --symlink-install

ros2 launch turtlebot3_manipulation_bringup gazebo.launch.py



7. Создание узла

mkdir -p ~/ros2_ws/src
cd ~/ros2_ws

colcon build

source ~/ros2_ws/install/setup.bash

echo "source ~/ros2_ws/install/setup.bash" >> ~/.bashrc
source ~/.bashrc

cd ~/ros2_ws/src
ros2 pkg create --build-type ament_python a_node