**Wall Maze**

**1.Introduction**

The algorithm used in this program is called “the left hand algorithm”.

This algorithm can be simplified in 4 conditions:

1. If you can turn left then turn left

2. Else if you can continue driving straight then drive straight

3. Else if you can turn right then turn right

4. If you are at a dead end then turn around

For this algorithm to work successfully there can’t be any loops in the maze.

The robot uses 2 infrared(IR) sensors.One for following the wall,placed on the left side,which helps the robot to finish a maze using the algorithm above.The second sensor is used for wall and obstacle detection,placed in front of the robot, helping the robot not to crash.

**2.Dependencies**

For this program to run optimally you need the next setup:

* Ubuntu 18.04.5 LTS or a Virtual Machine with Ubuntu 18.04.5 LTS
* Gazebo 11
* ROS Melodic Morenia

All the installation tutorials will be in “Chapter 1”

**3.Installation**

All the commands below must be run in a terminal. To open a new terminal press CTRL+ALT+T or RIGHT CLICK and Open Terminal.

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Descriere generată automat

Terminal commands are highlighted in yellow.

We shall execute then the following code (Downloading the program from Github):

wall\_maze

If the download from GitHub is successful, the next message will appear.If the download is successful, the next message will appear.

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**cd wallmaze**

**catkin\_make**

The catkin\_make command is a convenience tool for working with catkin workspaces(a catkin workspace is a folder where you modify, build, and install catkin packages).

For every shell that launches programs you need to run this command, to make sure your workspace is properly overlayed by the setup script.

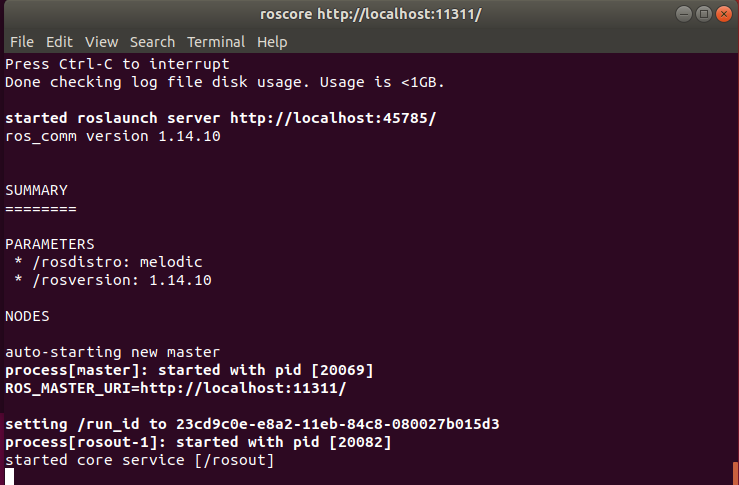
**source devel/setup.bash**

**4.Running the program**

Open a terminal and run this command#



roscore

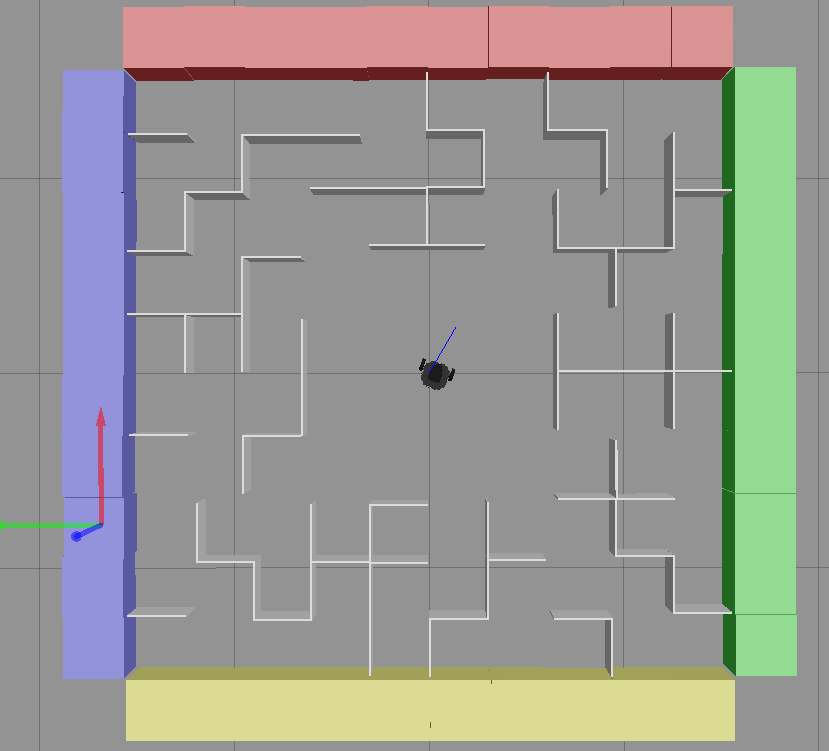
After running the command the next informations will appear.

Open a new terminal and run the code for spawning the maze and the robot.



roslaunch fira\_maze maze\_1\_world.launch

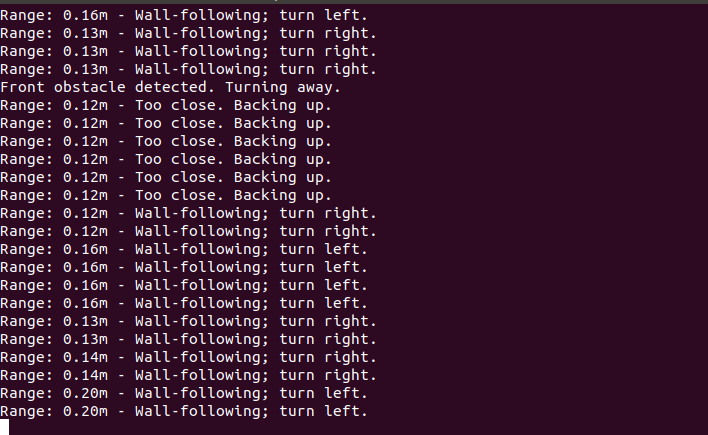
After running the command, the gazebo should start with the maze and the robot.



Open a new terminal and run the command for the program to start.



rosrun fira\_maze maze\_explorer.py



The program will start and you should see the commands for the robot.