Home Service Robot

The packages used for the development of home service robot are listed in the below bullet points

* turtlebot \_gazebo
* gmapping
* turtlebot\_teleop
* turtlebot\_rviz\_launchers

The following directories are also used in the project

* add\_markes
* map
* scripts
* rvizConfig
* pick\_objects
* Rob\_rout

**Add\_markers**

* Launch
* src
* CMakeLists.txt
* Package.xml.

The launch folder contains the home\_robot\_rviz.launch that is used to launch the node of saved rviz. The src folder is where the add\_markers.cpp and add\_maker.cpp are stored, these files ae used to add markers objects which can be CUBE, SPHARE or ARROW.

**map**

The map folder contains the files listed.

* home \_robot.world
* home\_robot\_map.pgm
* Home\_robot\_map.yaml

**scripts**

The scripts folder contains the shell scripts listed in the below bullet point

* **pick\_objects.sh:** This script is used to run pick object that send multiple goals for the robot to reach.
* **add\_markers.sh:** This scripts to test the add\_markers concepts.
* **launch.sh:** This script is an example of creating shell scripts.
* **test\_navigation.sh:** This script is to launch manual navigation test, it navigates when the 2D Nav Goal command is manually issued, the robot will drive to the location.
* **test\_slam.sh:**  This script is used to launch the nodes planned the robot path to navigate in an unknown environment, it allows to develop map.pgm and map.yaml files
* **home\_service.sh:** This script run all the nodes in the project, it shows the marker at the pickup and drop off zone

**pick\_objects**

* src
* CmakeList.txt
* Package.xml

The src folder is where the C++ program codes are stored, the C++ flies are listed below

* pick\_objects.cpp
* pick\_objects\_goals.cpp
* rem\_objects.cpp

**rvizConfig**

* home\_robot.rviz

The rvizConfig folder, contains the rviz robot parameters and configurations, these includes the marker, RobotModel, laserScanner, Map and all their Topics.

**Rob\_rout,**

* Pick\_objects.yaml

The Rob\_rout, (robot route) the variables of the objects location of which the robot will travel to pick up and drop off an object is declared in this file. Thanks to the ROS tutorial and the GitHub community, this is where the example was found to write the file.

The official ROS packages used for this project are:

* **turtlebot\_simulator:** Inside the turtlebot\_simulation folder is the turtlebot\_world.launch file
* **slam\_gmapping:** Inside the turtlebot\_simulator folder is the gmapping\_demo.launch file
* **turtlbot\_interactions:** Inside the turtlebot\_interactions folder is the view\_navigation.launch file
* **turtlebot:** Inside the turtlebot folder is the keyboard\_teleop.launch

**Conclusions:**

The initial development of this project clone and build were used to get the packages from the ROS official website, catkin workspace was first initialized and install the package dependencies through following the steps described in the Udacity course website.

In installing the dependencies rosdep -I following the package dependency.