My Home Service Robot includes several packages, both official and written by me as per project specifications, outlined below.

Official ROS Packages

- SLAM_Gmapping
  - Official ROS plugin used to facilitate Simultaneous Localization And Mapping, this is what the robot uses to localize itself in my Apartment.world file as well as facilitating path planning when given navgoals
- Turtlebot
  - This contains nodes, namely a teleop node for the purpose of this project which allows the user to manually control the robot
- Turtlebot Interactions
  - Contains nodes for turtlebot interactions aka being able to view the robot, map and path in rviz
- Turtlebot Simulator
  - This is what we use to load up our turtlebot into the Apartment.world

My Packages

- Map (not a package but still)
  - Contains the pgm rendition of my Apartment.world which the amcl node uses to localize as well as the .yaml file which has pgm specifications
- Scripts (same as Map)
  - various scripts for launching multiple project nodes
- rvizConfig (same as Scripts)
  - Contains a modification of the default turtlebot_interactions rviz config file so that we can visualize our marker/virtual object
- pick_objects
  - This node sends directions to the our turtlebot to the navigation stack via the movebase client in order to tell our turtlebot where to go
- add_markers
  - Adds virtual objects to rviz so we can simulate our robot picking things up and dropping them other locations

I chose to structure the picking up and dropping similarly to the process_image and drivebot as seen in ROS essentials because for me that made the most sense and is fairly extendable. I created a FoundObject service which pick_objects uses to tell add_markers that it has arrived at an object so it needs to hide the object after 5 seconds.
Currently the service only tells add_markers whether an object is to be hidden or shown at a hardcoded location, but this could be extended to use location data from the odometry topic that add_markers is also subscribed to (but does nothing with at the moment) in order to be able to drop virtual objects anywhere on the map.