On the device that you desire the hector slam package to be on follow these steps:

1. Run the following command replacing indigo with the appropriate ros type (kinetic, melodic, indigo):
   1. sudo apt-get install ros-indigo-hector-slam
2. We will not be using odometry or other reference frames to establish accurate mapping therefore some files will need to be edited.
   1. roscd hector\_mapping/launch or cd /opt/ros/indigo/share/hector\_mapping/launch
   2. Sudo nano mapping\_default.launch
      1. Replace the following lines:
         1. <arg name="base\_frame" default="base\_footprint"/>
         2. <arg name="odom\_frame" default="nav"/>
         3. <!--<node pkg="tf" type="static\_transform\_publisher" name="map\_nav\_broadcaster" args="0 0 0 0 0 0 map nav 100"/>-->
      2. To (with respect to order):
         1. <arg name="base\_frame" default="base\_link"/>
         2. <arg name="odom\_frame" default="base\_link"/>
         3. <node pkg="tf" type="static\_transform\_publisher" name="base\_to\_laser\_broadcaster" args="0 0 0 0 0 0 base\_link laser 100"/>
3. The launch file will also have to be edited as we do not desire hector slam to be based on simulated time
   1. roscd hector\_slam\_launch/launch or cd /opt/ros/indigo/share/hector\_slam\_launch/launch
   2. Sudo nano tutorial.launch
      1. Replace the following line:
         1. <param name="/use\_sim\_time" value="true"/>
      2. To:
         1. <param name="/use\_sim\_time" value="false"/>
4. TO TEST:
   1. Deploy LIDAR:
      1. rosrun urg\_node urg\_node \_ip\_address:=192.168.0.10
         1. Ensure that both /scan and /tf topics are shown in rostopic list
            1. Failure to publish these nodes will result in errors (for some reason on the new car this command no longer publishes /tf topic? Work around by launching real\_world\_wall\_following.launch. This should publish the appropriate topics)
      2. Roslaunch hector\_slam\_launch tutorial.launch
      3. Map should start to generate. Moving the LIDAR will complete the map
         1. Keep in mind that the elevation of the LIDAR should stay constant. Not built for 3D mapping.
5. Save generated map (replace “moore” with desired map name, should be saved to home directory):
   1. rosrun map\_server map\_saver -f moore