Week 10 – Setting up for 3D Pointcloud Map Making with LIO-SAM, Ouster LiDAR, and KVH1750 IMU

1. What is LIO-SAM? In your own words, describe what LIO-SAM does and why it is useful for creating 3D pointcloud maps for autonomous driving.

2. Fill in the blanks:

   LIO-SAM requires a _____ sensor, a _____-axis IMU, and optionally _____ for global positioning.

3. Fill in the commands for launching the Ouster OS2 and Novatel GPS/IMU prior to recording the bag file needed for LIO-SAM map making:
   - ros2 launch ouster_ros _____.launch.xml viz:=false sensor_hostname:=_____
   - ros2 launch novatel_gps_driver _____

   After launching the above two drivers, fill in the blank in the command below to record the bag file:
   - ros2 ___ record -o bagName /____ /____/_____

4. The ROS2 service call command to save the map after running LIO-SAM is the following:

```
ros2 service call /lio_sam/save_map lio_sam/srv/SaveMap "{resolution: ___, destination:
_____}"
```

   Explain what the blank, highlighted sections of the service call command are and how they can impact the saved pointcloud .pcd map.