Lab #3: Guide and Control

Due Date: 3/6/2018

Answer All questions. Submit your code via the SVN

Lab Objectives:

- **Learn to control the drone to a fixed position**
- **Learn to guide the drone movement when there are obstacles**

Write a drone app to simulate each of the following tasks:

1. *[10 points]* Control the drone to take-off at a custom altitude to a fixed position (target) Indicate the altitude, fixed position, your measured proximity associated with the target position. Implement your code in two ways by setting

   i.   The target location in the Global-relative frame, and the airspeed
   ii. The target location in the Global frame and the groundspeed
   iii. The target location in the Global-relative frame, the airspeed followed by the groundspeed

   Make sure to return the drone to its launch position when done

2. *[10 points]* Extend the code in Quest #1 by flying the drone through two consecutive positions: the first position (intermediary) is the same as the target position in Question #1; next the new target fixed position. Make sure you return the drone to its launch position

3. *[10 points]* Guide the drone in a preferred direction by specifying the drone's velocity components

   a. Describe the velocity mappings
   b. Describe your bit mask to identify parameters that are used in the *message_factory* function call

   Make sure to return the drone to its launch position when done