Problem Statement

Requirement:

From the instructions given in Testing Instructions folder, you are expected to interface MPU6050, motor encoder with ATmega2560 and check their data on serial console. These are intended for making you acquainted with the serial console which comes in handy when debugging. You will find **testing_hardware.hex** (in **test files** folder) which has to be loaded into the ATmega2560. Microcontroller code publishes a topic of "/chatter" and subscribes a topic of "/motor_control" (published by motor_publisher.py which is to be run on the PC(host)).

/chatter is used to display the required info messages in terminal.
/motor_control accepts the data from the host. This data is of type UInt16.

Run the master node by the following command

roscore

Run the *motor_publisher.py* (provided to you in the **"test file" folder**). Make sure that you have *keyboard_header.py* in the same folder in which *motor_publisher.py* is placed. Go through the code of *motor_publisher.py.*

Testing Hardware:

The inputs are to be given from the terminal when it prompts "Enter input:".

Input following numbers to test individual functionalities :

2 -> makes the robot move backwards.
8 -> makes the robot move forward
4 -> makes the robot move left
6 -> makes the robot move right
5 -> stops the robot
7 -> outputs the encoders' data
9 -> outputs the accelerometer and gyroscope values.(of the form ax ay az gx gy gz).

Note that the inputs of 7 and 9 display continuous data. These are coded in such a way that it stops displaying only when there is **any key press**. In other words, just by pressing any key it stops displaying continuous data and prompts for input.

Submission Instructions:

Make a video that shows :

1. Following Navigations of the robot
    a. Forward (minimum 5 secs)
    b. Backward (minimum 5 secs).
    c. Left (minimum 2 secs).
    d. Right (minimum 2 secs).
    e. Stop

2. The encoders' data
    a. Rotate the wheels in clockwise direction (minimum 2 secs.)
    b. Rotate the wheels in anti-clockwise direction (minimum 4 secs.)

Rotate the wheels manually with hands. (This is mainly intended for viewing positive and negative values of encoders).

3. The change in accelerometer and gyroscope values
    a. Tilt the robot. (Minimum of 5 secs.)

Video Submission: Upon verifying that your task is complete, record a **maximum 2 minutes** video using a screen recorder. The video must be as follows:

- Team Slide –All members detail in the given slide.
- Any One member of the team, passing the input in terminal.