

Task 3:

By: Maryam Abdou Abdelfattah

Task 3.3: (Ron's Broomstick)

Including the library Wire.h.

In the setup, it setups the registers of the MPU-6050. It reads the raw accelerometer and gyroscope data from the MPU-6050 and gets the sum of gyroscope values in the three axis for 1000 times. It gets the average offset in the three axis.

In the loop, it subtracts the offset values from the raw gyroscope values. It calculates the total accelerometer vector to calculate the accelerometer pitch and roll angles. If the IMU started, it corrects the drift of the gyroscope pitch and roll angles but if not then it makes the gyroscope pitch and roll angles equal to the accelerometer pitch and roll angles. Then the pitch and roll angles are dampened. If pitch or roll angles exceeds 60 degrees, the red led blinks. Then it waits until the loop timer reaches 4000 micro second (250Hz) before starting the next loop.