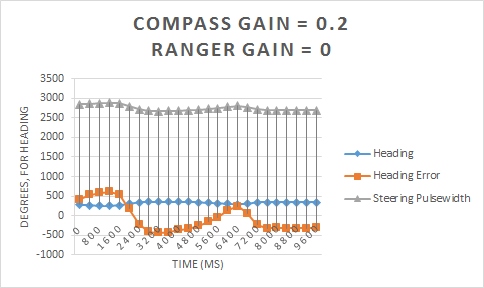
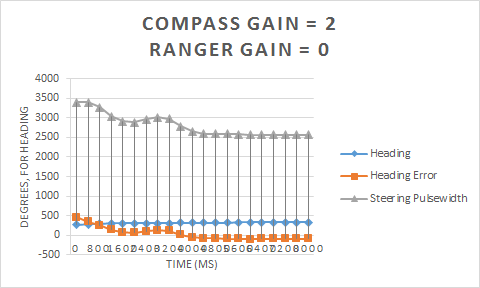
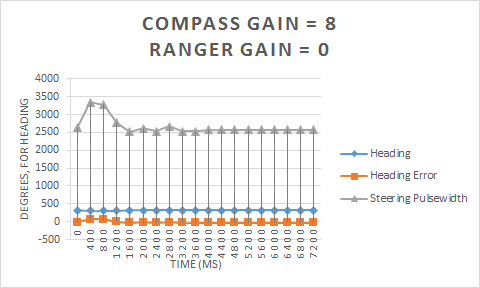
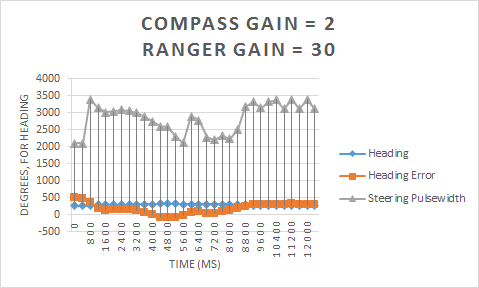
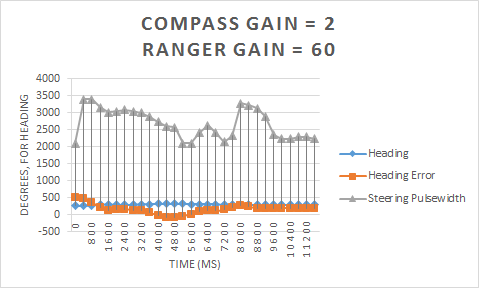
# Writing Assignment – Results Memo (brief 2-page written (plus plots, pseudocode, and C program-listing))

**Include the five response plots for the:**

* **3 values (~0.2, ~2, & ~8) of the proportional feedback compass error gain when the ranger gain is 0 (no obstacle in the path)**
* **2 values for the ranger gain (~30 & ~60) when the compass gain is ~2 (an obstacle present)**
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* 
* 

**Plot the compass value, the ranger value, and the steering pulsewidth on the same time axis.**

**Values will need to be scaled to plot nicely.**

**Analysis of the plots should explain what is happening and why.**

**Significant features on the plots should also be noted and explained.**

**Include a discussion of how the code performs the desired control by adjusting the steering to correct the heading error.**

The steering pulsewidth is a function of the compass\_adj and ranger\_adj variables. The compass\_adj steers the car towards a desired heading by subtracting the current measured heading from the current heading. This adjusts the pulsewidth with a specified compass gain to direct the steering. range\_adj has a much higher gain constant, and gradually adjusts the steering as the car approaches an object to avoid a collision. The closer the car gets to an object, the more it will adjust the steering. The range\_adj variable is intentionally larger than compass\_adj to force the car to avoid an object, even over adjusting to the desired heading. Once an object has been successfully avoided, range\_adj goes to 0 and compass\_adj will slowly adjust the car back to its desired heading. Both of these are done entirely through proportional control.

**Include a complete commented listing of the C code; printed with a single spaced Courier font, 10 points, left justified, with proper indenting.**