* Do you need to change gains every time? If yes/no, why?   
  No, you may not need to change gains: If the PID controller is designed to handle changes in velocity dynamically, it should be able to adapt to variations in the turtle's acceleration and deceleration without the need to adjust the gains constantly. The proportional, integral, and derivative terms are typically tuned based on the characteristics of the system and the desired performance criteria, such as settling time, overshoot, and stability. As long as the acceleration and deceleration behavior remains within the expected range, the gains should remain effective.
* Do you need a planning element to accomplish this?   
  No, a planning element may not be necessary to accomplish the goal of chasing the turtle in Goal 5: Chase turtle slow. In this scenario, while the police turtle (PT) moves at half the speed of the robber turtle (RT), it can still rely on reactive control strategies rather than planning ahead. The PT can continuously adjust its velocity and heading based on real-time feedback from the observed position of the RT, without the need for complex planning algorithms. By simply reacting to the observed movements of the RT, the PT can adjust its own trajectory to gradually close the distance and eventually intercept the RT. Since the PT's speed is slower than the RT's, it can afford to make more frequent adjustments to its path, enabling it to effectively pursue the RT without the need for sophisticated planning mechanisms. Therefore, while planning may enhance the efficiency of the pursuit, it may not be strictly necessary for achieving the goal of chasing the turtle in Goal 5.
* Do you need a better estimator to guess where the RT is going to be?   
  No, a better estimator may not be necessary to accomplish the goal of chasing the turtle in Goal 6: Chase turtle noisy. While the noisy poses of the robber turtle (RT) introduce uncertainty into its actual position, the police turtle (PT) can still rely on reactive control strategies to pursue the RT without the need for a sophisticated estimator. By continuously adjusting its velocity and heading based on the observed noisy poses of the RT, the PT can adapt its pursuit strategy in real-time to close the distance and intercept the RT. Although a better estimator could potentially improve the accuracy of predicting the RT's future positions, it may not be strictly necessary for achieving the goal. Reactive control strategies, combined with occasional adjustments based on noisy pose information, can still enable the PT to effectively track and pursue the RT without the need for additional estimation techniques. Therefore, while a better estimator could potentially enhance the efficiency of the pursuit, it may not be essential for accomplishing the goal of chasing the turtle in Goal 6.