TASK 1
Robotics and Control
Control Systems

PROBLEM STATEMENT:

You are playing a custom mod of Space Shooters developed by the raid bosses at Spider Inc. Your job as a game developer is to develop a PID controllers which can move and rotate the gun to make the tip reach the mouse pointer.

Links:

- Video
- Python File

GUIDELINES:

The code for the window and the gun would be given. Develop two PID controller functions – one to control the lateral movement of the gun and the other to rotate the gun. A mouse click will create a dot on the screen. The job of the controller is to make the tip of the gun reach the dot. Output the speed of the gun along the railing and the angular velocity of the gun. Also output the time taken for the gun to reach the dot. You may use the PID designed in Task 0.

EVALUATION METRICS:

- Plagiarism will lead to direct disqualification.
- Approach to solving the problem.
- Accuracy of PID controller.
- Neatness of the code and comments explaining steps

COMPONENTS REQUIRED:

- Python 3.x
- Pygame

SUBMISSION:

- Python code file.
- Video recording of the code running.
- All the files are to be uploaded on to a google drive and the link to the drive is to be submitted.

RESOURCES:

- Python
  - https://www.w3schools.com/python/python_intro.asp
- PID Control
  - https://youtube.com/playlist?list=PLn8PRpmsu08pQBgjxYFXSsODEF3Jqmm-y
  - https://www.tutorialspoint.com/control_systems/control_systems_controllers.htm
- Pygame
  - https://www.javatpoint.com/pygame
  - https://realpython.com/pygame-a-primer/