

The goal is to spawn a swarm of (n) turtles on the turtlesim window and make each and everyone one of them move on a circular path in a synchronized fashion. The following is an example of a swarm of 3 turtles moving on a circular path:



#### Notes:

- For the control algorithm, convert the control algorithm provided in the previous session to a full PID Controller.
- Modify the code to allow each turtle spawned in the environment to move individually to a desired (x, y) coordinate simultaneously.
- The rospams file will include the following:

num_of_turtles : (int)	#represents the number of turtles in the swarm.
Radius: (float)	#the radius of the circular path of the first turtle in the swarm
Spacing : (float)	#the distance between each turtle in the swarm

- The control node should retrieve the information from a .yaml file that contains the above data
- When Spawning the turtles, you can name them whatever you want but make sure to spawn all of them at the center of the map and then each of them will fan out and follow their path
- You can utilize whatever code or tools you want to accomplish the task, you are not bounded by the files that were provided for the previous session (note that everything that was given in the previous sessions is enough to solve the problem with little modification).
- Create a launch file called swarm.launch inside the launch directory of your package. This launch file will display your output.

Deadline: 3/6/2025

Submit your packages to the following link: DROPBOX

Good Luck