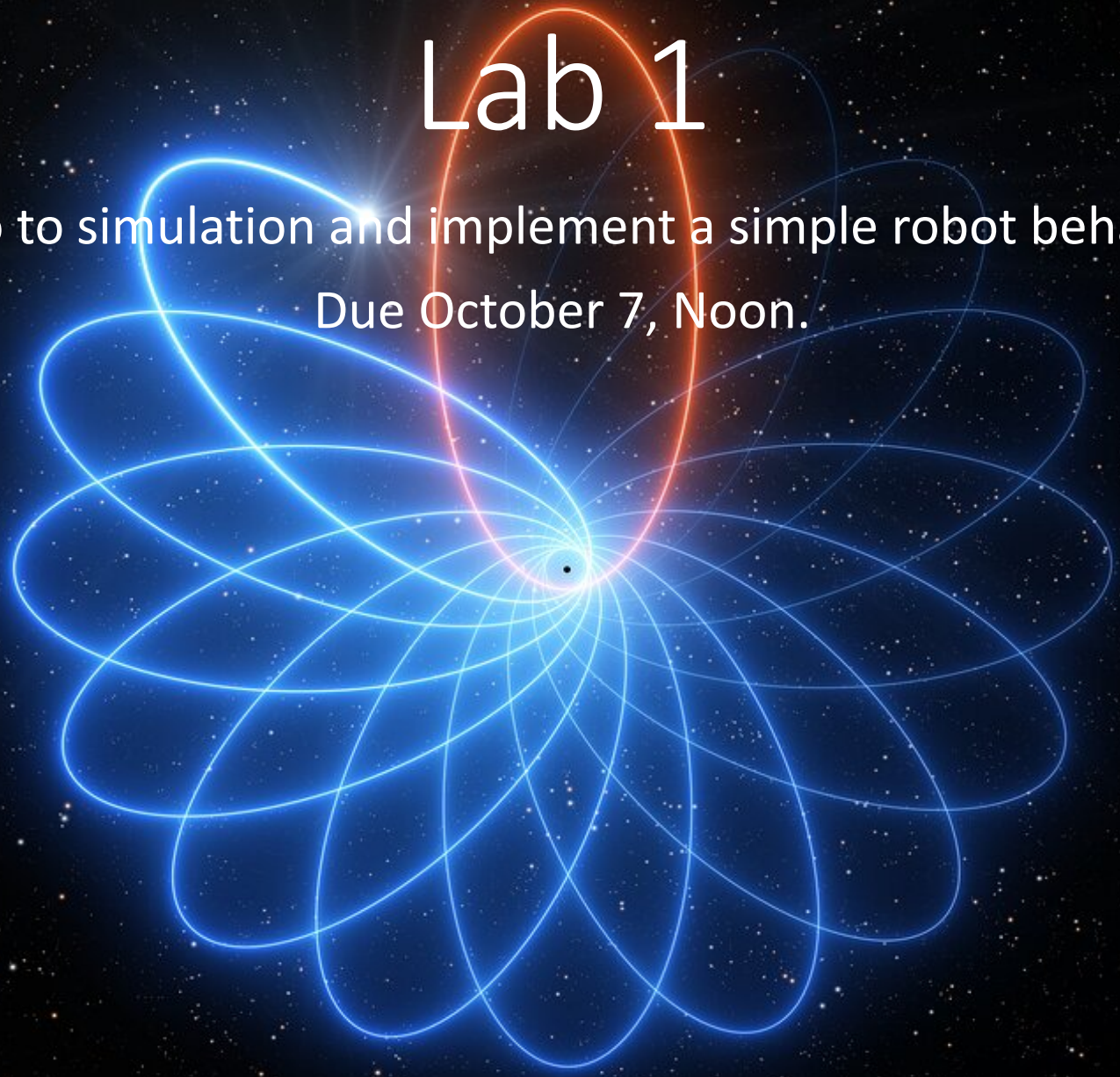
Lab 1

Intro to simulation and implement a simple robot behavior

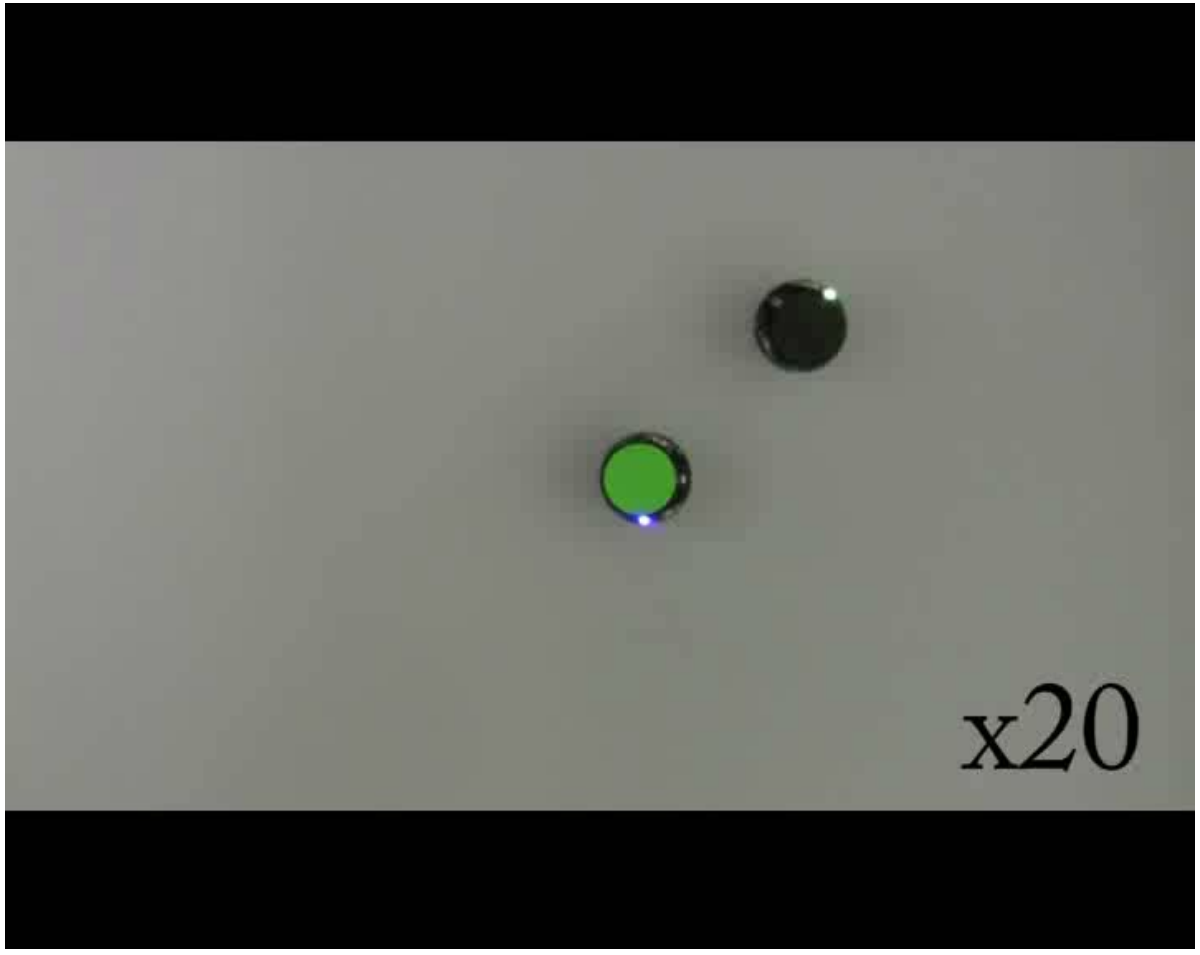
Due October 7, Noon.



Email me with questions

Orbit

- Move while maintain distance to stationary robot.



Orbit

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Lab 1 goal

- Create stable orbit at distance defined by global variable desired_distance
  - Value used for grading will be between 0.13 and 0.25
- Have robot with id==1 (robot.id ==1) orbit robot with id==0
  - Robot 0 should not move (but don’t assume it is stationary, I may have it move slowly for grading)
  - Robot 1 should orbit in clockwise direction
- Color of both robots should show distance error
  - Red if greater than desired_distance
  - Green if less than or equal to desired_distance
- Robot with id ==0 should only print out distance value, no other print statements from any other robot please

Running simulation

1. Make sure docker is running
2. Run bash start (windows users, copy text in “start windows” and run in command
3. Print statements will be displayed in command window
4. Open a browser to localhost:6083 to see robots
5. Run bash stop (windows users, copy text in “stop” and run in a second command terminal
6. Modify usr_code.py (and save)
7. Go to 2

Api

- API in readme.txt
- Some examples
  - set_led(r, g, b)
  - set_vel(l,r)

Behavior hints

- Compute distance by looking at robot's positions.
- Only update motion when new message arrives
- Look at how the distance changes between two readings to determine how to move
  - If too far
    - Distance is getting closer to desired distance, keep moving in wide circle
    - Distance is getting farther from desired distance, turn in tighter circle
  - If too close
    - Distance is getting closer to desired distance, keep moving in wide circle
    - Distance is getting farther from desired distance, go straight

Submission

- Only code to submit is usr_code.py
  - Well commented for easy understanding
  - Submit file on canvas before Oct 7 Noon.
  - 14.2% penalty per day late (Prorated)
- No other files should be changed from original state

- Can work on this project alone, or in teams of two (put both partners names in file so I know who you worked with)
- Future labs will be solo.