

Assignment: A15

Air-Table: Final features

New concepts:

- A modified spring class to represent a pinned-spring system.
- Game metric to establish a win.
- Adding timers to inhibit game resources.
- Inhibiting repeated operations from a depressed key.

Python language topics:

- Getting an objects class name.

Problem statement:

(Again, start with a new Python file.)

Add content to the A14 exercise to produce a finished game:

- Keep track of each player's hit count. Only count hits by bullets that are fired from another player.
- Add a health indicator. This should be a concentric circle that is drawn progressively larger on the players controlled puck as their hit count increases. The increasing radius of the puck is the warning of impending elimination. Player should vanish after the hit count reaches a set limit.
- Add a hit flash. The player's puck should flash red after getting hit by another player's bullet.
- Add a shield feature to the "Gun" class. The shield should be activated with the spacebar. The gun should be disabled when the shields are up. You have to drop the shield to fire.
- The shield should have a hit counter so that after a shield-hit limit is exceeded, the shield has to wait a number of seconds before it is allowed to be activated again. When the shield is on, hits do not add to the hit counter.
- Add a gun bullet counter and a fire-count limit. Once the limit is exceeded, the gun needs to wait a number of seconds before it is available to fire again. This should be made visible by how the gun tube is drawn. A solid color tube indicates bullet availability; a hollow gun tube indicates that you must wait while the gun recharges.
- Add a line of pinned pucks to act as an internal barrier in the game. This adds shelter in the game play and also will act to absorb some energy from the system. Modify the "Spring" class to facilitate a pinned spring. Also add a drag force capability to the "Spring" class that applies a drag force to the attached puck based on its velocity vector. This drag yields a useful damping (quieting) effect on the attached puck.
- Add a feature to flip the direction of the gun and jet to be the opposite of the current motion of the host puck. Do this by pressing the key between the two steering keys ("s" for jet, "k" for gun). Holding these keys down should NOT repeat the flip. To invoke another flip the key must be released and then depressed again. This can be used as a motion break with the jet.

Python code:

No code helpers this time. However some of the code you will need was left in the baseline 2D file that was posted (and of course is also in your A14 assignment). So part of assignment can be done by calling existing methods, using existing attributes, and uncommenting commented code fragments.