# Game:Microgravity Situation

Intro

This game is designed as a solution to the following challenge Galactic Games: Fun in a Microgravity Environment!
Scenario: Imagine a scenario where multiple space stations orbit various celestial bodies within the solar system. Astronauts must live, work, and play for long durations in microgravity environments. Not only does living under these conditions impact their physical well-being, sometimes they get bored! Your task is to design a game that leverages the unique challenges and opportunities of a microgravity environment to entertain and contribute to the overall well-being and cohesion of astronaut crews, enhancing their resilience and adaptability in the extraterrestrial frontier.

After analyzing the gravity of our situation we ended up with a concept that helps new astronauts to learn orbital mechanics on an intuitive level. The game is based on principles of golf, where you have to take in consideration the curvature of the playing field in order to get the ball into the hole. Here we substitute curvatures of the green area in the Golf with localized gravity.

Example map
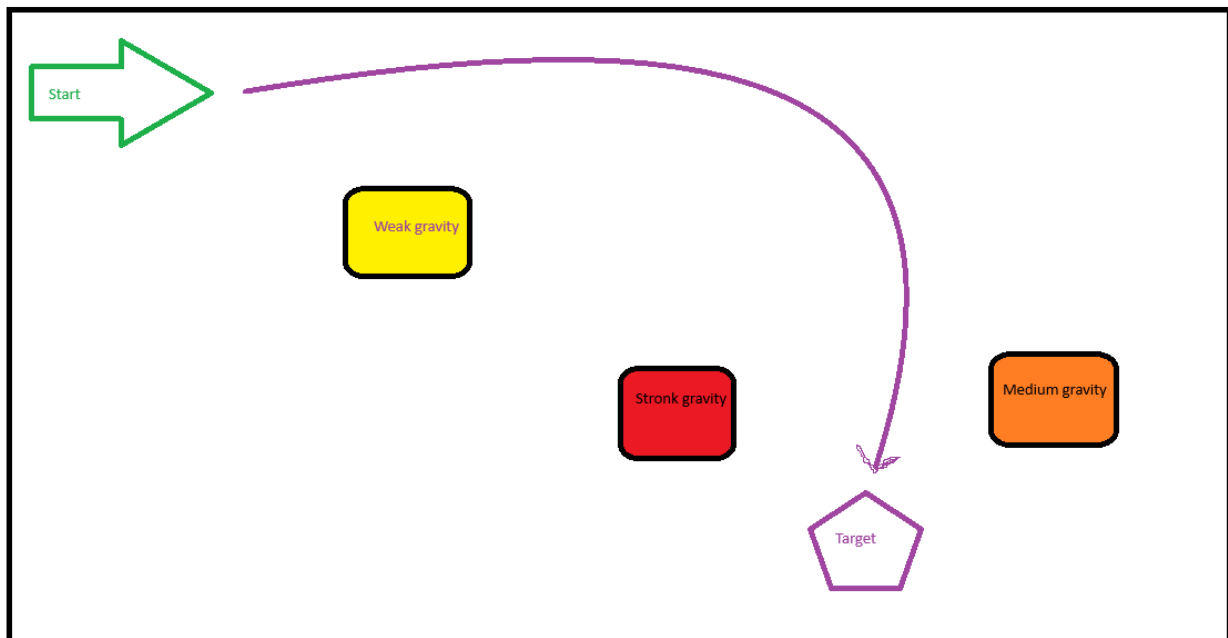
MoSCoW story

1. Game **must** have a player, room, target and obstacles.
2. Player **must** be able to shoot a ball that **should** bounce off walls and other objects. Player **should** be able to decide speed of the shooting ball before they shoot.
3. Obstacles **should** have 3 different gravity properties, indicated with colors and they **should** be able to change the balls trajectory, according to their gravity, when the ball is in the proximity of the obstacle.
4. Target **must** count hits.
5. Player will not move, but camera **could** show the room from the top looking down, before the challenge begins. **would be nice** if we could procedurally generate new map(rearrange obstacles)

Additional features

6. The menu system is a **would be nice** feature.
7. While improving scoring system and addressing some other functional issues is **should be** -category
8. **Would be nice** if the new scoring system would count trickshots. Trickshots are shots where the ball interacts with walls and/or with gravity obstacles; that interaction **should** count as a score multiplier when the ball reaches the target.

Changed features

5. Player Should be able to move and find his/her own challenges.

Bugs discovered so far

- The ceiling eats balls only in room X3, but ceiling protrusions can bounce balls.
- Balls don't disappear => memory leak that will break the game eventually
- Too much empty stuff to explore, people go exploring and get lost in non functional area. Proposed solution: move the game into room A3(dining room) and then remove everything outside and seal the door, also the target may need to be named as Target
- When weight of the ball is increased it locks in the speed of the ball to be very slow.

- balancing issues:
  - light boxes too weak, heavy boxes can be too strong.
  - Target position could move too when boxes are randomized using R-button.
- Gravity of Obstacles is funny at the edge of the gravity field, it repels balls when they move slowly enough.