

The main point of the game is to control the character and to move around the arena while collecting as many orange power ups as possible without getting touched by the green cactuses. Collecting oranges gets you positive points while touching cactuses causes penalty (negative) points. The goal is to maximize the score.

There are a few components to the game. This includes the player controls, camera controls, sound effects, physics, and a GUI.

First, we have a variety of actions possible for the player. WASD control the basic player movement. In strafe mode, W moves forward, S moves backward, A strafes left, and D strafes right. In this mode, the rotation of the character is done by moving the mouse which rotates both the camera and the character. In rotate mode, W moves forward, S moves backward, A rotates the character left, and D rotates the character right. In this mode, the rotation of the character is done purely with the AD keys and the rotation of the camera is done purely with the mouse. In this mode, the camera rotation and the character rotation are completely independent of one another. The character always moves based on it's own local forwards in both modes. Clicking the space bar once allows the character to jump up, and this can be done together with WASD controls. When the character is in the air for any reason (ex. after clicking the spacebar to jump), gravity naturally pulls the character back down. The character is able to walk up certain angled platforms (angle amount tunable in editor) but slides down any angled surfaces it cannot walk up. The character can also interact with a ledge in a variety of ways. First, doing nothing and walking over a ledge will cause ledge fall where the character simply falls from gravity. However, when shift is clicked and held down, trying to walk over a ledge will cause ledge stop where the character is stopped before it can walk over a ledge. Lastly, when H is clicked and held down, trying to walk over a ledge will cause ledge hang where the character goes over the ledge but catches the edge of the ledge and holds on without falling. From this point, the character can jump back up onto the ledge or jump down. Clicking the spacebar with WASD controls allows the character to climb back up the ledge while clicking the spacebar with no WASD input will allow the character to jump and fall down from the ledge. The player also has the ability to glide by holding G and moving the character with normal jump and WASD controls. Holding G reduces gravity so jumping and WASD movement will be in a gliding fashion rather than a falling fashion. Releasing G turns gravity back on and stops the gliding movement. Clicking the spacebar while still in midair from a previous jump (clicking spacebar twice in quick succession) causes the player's custom movement double jump. Lastly, the player interacts with objects in a few different ways. The character has 2 different active user interactions. First, when it tries to pick items up by clicking E. When clicking E with only cactuses or nothing nearby, nothing happens. When clicking E while near (on) an orange powerup, the powerup is collected. The character also has an interaction where it gets hurt and loses points when it moves near and touches a cactus.

In addition to player controls, we also have camera controls. These were mentioned slightly beforehand. The camera will be positioned in a third person POV angle that follows the character as it moves around. The camera is always controlled by the mouse but has differences in the 2 modes. Moving the mouse only moves the camera in the rotate mode, but moving the mouse moves both the camera and rotates the character in the strafe mode.

There are quite a few sounds implemented in the game as well. By default, there is a custom made background track that plays while the game is running. The volume can be turned up with the up arrow, down with the down arrow, and muted with M. In addition, there are a few sound effects. First, clicking E to interact while only cactuses or nothing is around plays an empty interact sound (a clunk sound). Second, clicking E to interact while on an orange powerup plays a powerup interact sound (a squish sound). Third, moving near and touching a cactus and getting hit by it plays a pain interact sound (a oof grunt sound). The sound effects can be turned on and off by toggling the comma (,).

There are various physics forces present in our game. First, gravity acts on the player at all times where having nothing below the player will cause it to fall downwards towards the ground. We also have an impulse force that allows us to both jump and double jump that acts against gravity but is still affected as it comes down from the jump. Lastly, we have velocity impulses and friction forces for the actual character movement where the character moves until the keys are released and friction brings the character to a stop.

Lastly, we will have an in-game GUI. This in-game GUI will display the points that have been accumulated throughout the game, gained from collecting orange powerups and lost through colliding with green cactuses.

We also have an extra credit end condition. If the character collects 10 points, they win and get a win screen. However, if the character falls off the map or ever gets a negative point value, they lose and get a lose screen.