**Link to Simulation:** <https://www.tinkercad.com/things/6CBLB48fvl0-smooth-kieran/editel?sharecode=HB2UAWn6ZaORqDOuN2RvrGY7dkX68omGYgVLllKLtrg>

**Schematic Explanation**

Diagram

Description automatically generated

There are two potentiometers to represent the X and Y directions of the joystick. The button is for when the player wants to use a boost to temporarily make their ghost faster with the red LED lighting up when the button is pressed. The two blue LEDs in the top corners will stay off while the ghost is invulnerable and only start flashing once Pac-Man has eaten a power pellet, rendering the ghosts vulnerable. As there is no Arduino Micro in TinkerCAD, I am using the Arduino Uno as a placeholder for it. The left potentiometer controls the Up and Down direction of the joystick, while the right potentiometer controls the Left and Right direction of the joystick. The two potentiometers combined represent the joystick that’ll control the controllable ghost’s movement.

When playing the simulation, the two blue LEDs will already be flashing to signify that the player ghost is vulnerable to Pac-Man. Pressing the button will print in the serial monitor a message saying “Boost Used” to signify that the ability has been used, while at the same time the red LED will light up upon the button being pressed. The left potentiometer will print in the serial monitor “Going Down” while the right potentiometer will print “Going Left”, but when they’re turned clockwise past a certain point, they’ll respectively print “Going Up” and “Going Right” to represent the change in direction.