# The Pringles Station

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Project proposal

This project consists of an interactive game along with a reward system. The game consists of 6 LEDs and 6 corresponding push buttons. The LEDs flash randomly, one at a time and one scores points by pressing its corresponding push button within a short time period (around 1 second) after it lights up. If one misses 10 opportunities (counted as losses), the game stops and can be re-started. When one scores 10 points (10 successful hits), the game is paused and the "reward system" is activated

The reward system consists of a can of Pringles with a vertically movable base that raises the chips to the top of tha can when activated. The base stays at that height for long enough that the successful payer can eat some Pringles without having to go through the trouble of fishing around inside a deep can, and then lowers again, making the chips inaccessible until another score of 10 or more is reached on the game. The project was inspired by the simple annoyance of the chips at the bottom of a Pringles can being difficult to reach without turning the can upside down and breaking them. It can be extended to the general problem of raising or lowering a level so as to maintain it at a certain height, when continuous changes to this height are being imposed externally. Our current system assumes that the level of chips is going to constantly decrease and hence implements controlled motion of the base only in the upwards direction. Allowing for the strange possibility that someone might add chips to the pile (net height must still be less than can height) can be accommodated easily.

Block Diagram
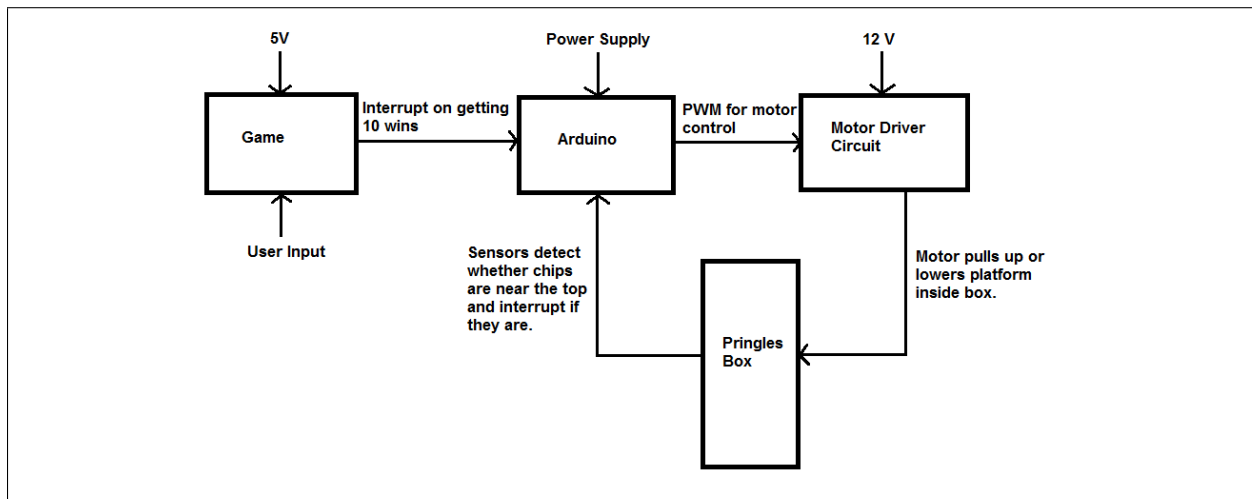
Implementation

The random lighting of the LEDs in the game is achieved by using the inbuilt Arduino pseudo-random number generator. The functioning of the game is taken care of using 2 AND gate ICs and 2 OR gate ICs and two interrupts (one for the pushbuttons and one for the reward system), soldered onto a PCB.

The actual reward system was built on a piece of plywood, with the moving base of the Pringles can attached via pulleys to a 30rpm motor, along with infrared sensors (an emitter and a detector facing one another) near the top. When activated, the motor runs so that the base rises. When the sensors near the top of the can detect an obstruction, the motor switches off. After a specific time period, the motor turns in the opposite direction, taking the remaining chips back down into the can.

The motor was driven with an LM324 IC, with inputs from the Arduino program to specify the direction of the motor's rotation and the duration of being on.