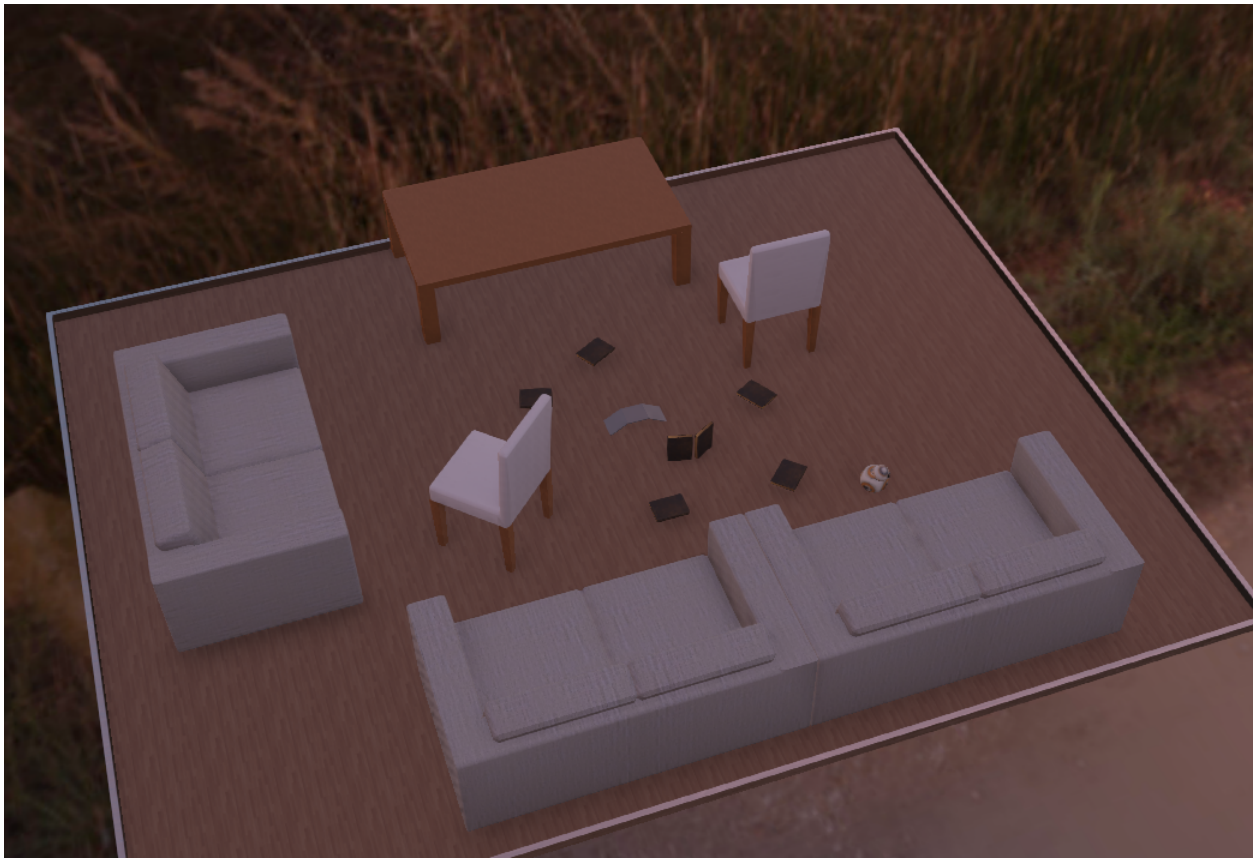
```
var position1 = true;


async function startProgram() {
	setMainLed({ r: 0, g: 43, b: 255 });
	setStabilization(true);
	setSpeed(125);
	setHeading(0);
	if (getAcceleration().z <= 0.3) {
		await roll(180, 50, 1);
		await spin(90, 1);
		await roll(0, 25, 2);
		await spin(-90, 1);
		await roll(0, 255, 120);
	} else {
		setSpeed(125);
		setHeading(0);
	}
}

async function onCollision() {
	Sound.BB8.Alarm.Alarm9.play();
	await strobe({ r: 255, g: 0, b: 3 }, 1, 3);
	await roll(180, 50, 1);
	await spin(90, 1);
	await roll(0, 25, 2);
	await spin(-90, 1);
	await roll(0, 255, 120);
}
registerEvent(EventType.onCollision, onCollision);
```



The webots controller file.

```
#include <webots/robot.h>
#include <webots/camera.h>
#include <webots/device.h>
#include <webots/keyboard.h>
#include <webots/motor.h>
#include <webots/robot.h>
#include <webots/touch_sensor.h>
#include <webots/led.h>
#include <stdio.h>

#define MAX(x, y) (((x) > (y)) ? (x) : (y))
#define MIN(x, y) (((x) < (y)) ? (x) : (y))

#define TIME_STEP 64

 void usage() { //debugging proto device additions in proto file
   int n_devices = wb_robot_get_number_of_devices();
   int i;
   for(i=0; i<n_devices; i++) {
     WbDeviceTag device = wb_robot_get_device_by_index(i);
     const char *name = wb_device_get_name(device);
```

```
    printf("%d\n", wb_device_get_node_type(device));
    printf("Device #%d = %s\n", i, name);
   }
 }
int main(int argc, char **argv) {
  wb_robot_init();

  usage();

  WbDeviceTag body_yaw_motor = wb_robot_get_device("body yaw motor");
  wb_motor_set_position(body_yaw_motor, INFINITY);
  wb_motor_set_velocity(body_yaw_motor, 0.0);

  WbDeviceTag body_pitch_motor = wb_robot_get_device("body pitch motor");
  wb_motor_set_position(body_pitch_motor, INFINITY);
  wb_motor_set_velocity(body_pitch_motor, 0.0);

  WbDeviceTag head_yaw_motor = wb_robot_get_device("head yaw motor");
  wb_motor_set_position(head_yaw_motor, INFINITY);
  wb_motor_set_velocity(head_yaw_motor, 0.0);


  int n_devices = wb_robot_get_number_of_devices();
  int i;
  for(i=0; i<n_devices; i++) {
    WbDeviceTag device = wb_robot_get_device_by_index(i);
    const char *name = wb_device_get_name(device);
    printf("%d\n", wb_device_get_node_type(device));
    printf("Device #%d = %s\n", i, name);
  }

  double yaw_speed = 0.0;
  double pitch_speed = 0.0;
  const double max_speed = 4.5;
  const double attenuation = 0.9;

  WbDeviceTag bumper;
  int movement_counter = 0;

  bumper = wb_robot_get_device("bumper");
  wb_touch_sensor_enable(bumper, TIME_STEP);

  while (wb_robot_step(TIME_STEP) != -1) {
    if(wb_touch_sensor_get_value(bumper) > 0)
```

```
      movement_counter = 15;

    if(movement_counter == 0) {
      pitch_speed += attenuation;
      } else if (movement_counter >= 7) {
        pitch_speed -= attenuation;
        movement_counter--;
      } else if (movement_counter >= 10) {
        yaw_speed += attenuation;
        pitch_speed += attenuation;
      } else {
        yaw_speed -= attenuation;
        pitch_speed += attenuation;
      }

     pitch_speed = MIN(max_speed, MAX(-max_speed, attenuation * pitch_speed));
     yaw_speed = MIN(max_speed, MAX(-max_speed, attenuation * yaw_speed));


     wb_motor_set_velocity(body_yaw_motor, yaw_speed);
     wb_motor_set_velocity(head_yaw_motor, yaw_speed);
     wb_motor_set_velocity(body_pitch_motor, pitch_speed);

  };
  wb_robot_cleanup();

  return 0;
}
```

Here is the link for the video recorded of the code running.
https://www.youtube.com/channel/UCAWrPNV6_k52Gvo0iKQtHww
There are 3 runs recorded, it was done through my laptop camera as my phone had to be on the app to run the code so the quality is below average, there are sounds playing on collisions detected as well but it is a little difficult to hear.