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PY371, Project Proposal

## **An Invisible Fox Singer**

### ABSTRACT OF CONCEPT

For this project, I want to build a tool to prevent my cat entering balcony by playing her most dislike song “what does the fox say”. The plan is using Arduino to control the power of a speaker to play the song when a sensor detects my cat trying to enter the balcony.

### PARTS REQUIRED

**Breadboard\* 1**

**Arduino microcontroller \* 1**

**PIR \* 1 (Passive Infrared Sensor)**

A PIR sensor detects changes in the amount of infrared radiation around it. I made several different trials to see what the necessary conditions are to pull the trigger.

**Speaker \* 1**

The plan was to use the Tone() function in Arduino, however, “what does the fox say” is a rather complicated song that can’t be generated by Arduino itself. Thus, I employ a sound equipment with the song recorded. All I need to do is using the Arduino to control the power supply to the sound equipment.

[~20\$.]

**Resistors \*2**

A 330  $\Omega$  resistor and a 10k $\Omega$  resistors are used along with the op-amp to create an amplifier. Because I am not going to employ any outside battery sources, the current is too small for the speaker. The current needs to be amplified to make the speaker work.

**Cat\*1**

[priceless]

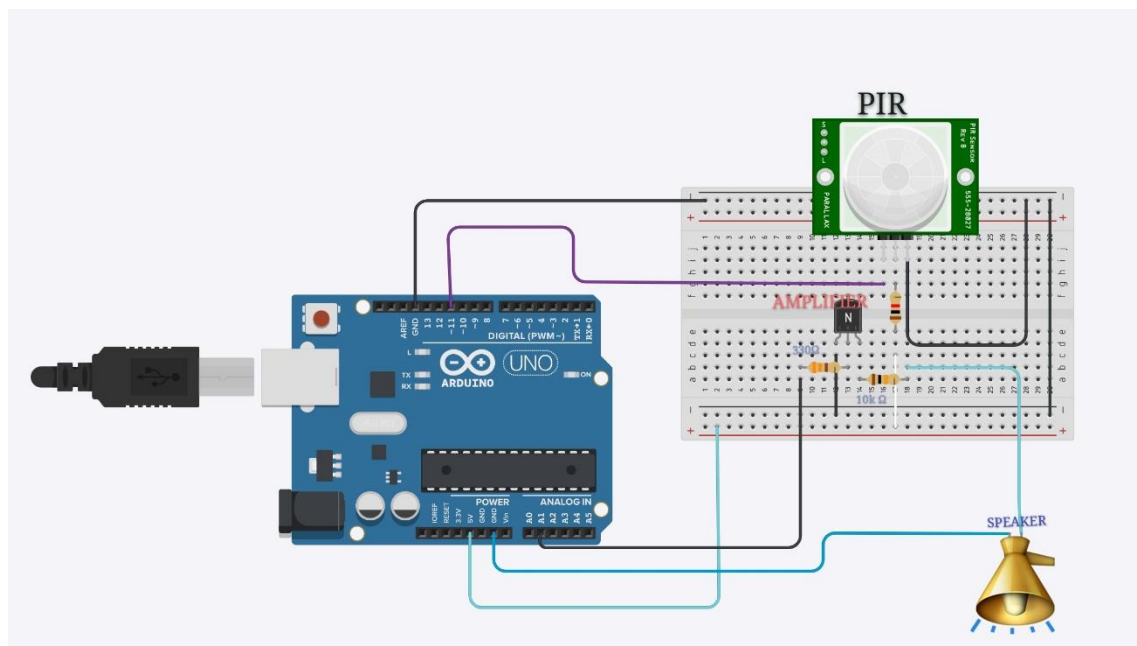
## EXPLANATION

The flow path of this circuit is: sensing a signal (PIR)→Arduino, if the signal is HIGH →power supply on→ play the song (speaker). I plan to use the Arduino with the TONE function to control the speaker play the song I intend.

After many times of trials, I think the mechanism of the Passive infrared sensor is to detect something with heat moving toward (mostly) or away from the sensor instead of detecting if there's anything alive around it. Many factors could affect the status of the sensor, such as the moving speed, body temperature, and of course, the distance from it. If the heat resource is moving faster than around 1m/s, the detectable distance range is within 1.1 m. But when the speed is quite small (assume the cat is walking slowly), then either the temperature has to be very high or the object has to be within 7 cm from the PIR sensor.

Besides, an attempt to add a remote receiver failed because the controller is mad.

## SCHEMATIC



## BLOCK DIAGRAM

