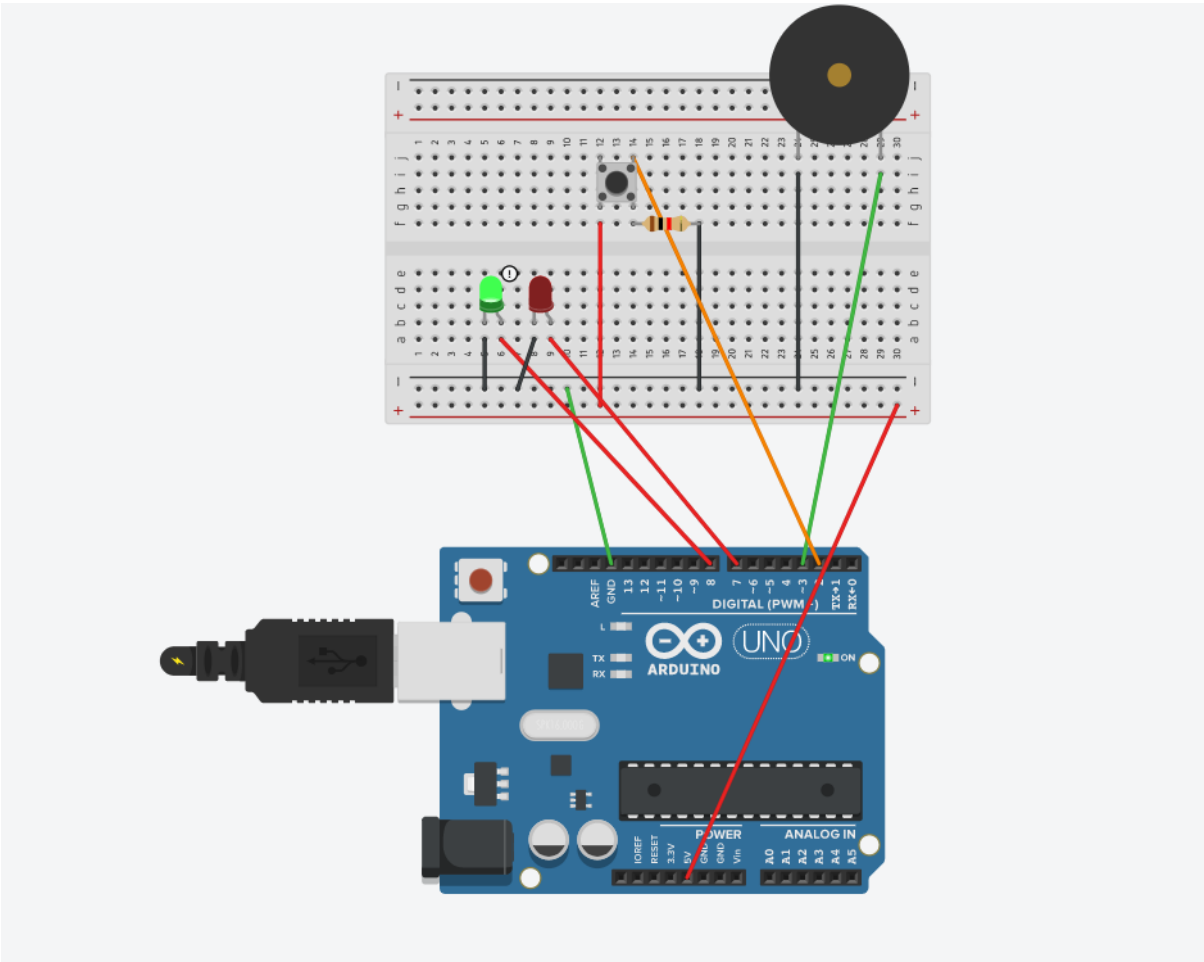
Q-Design a system for a gift-box such that whenever it is opened, it produces sound for 1000 ms and blinks red and green LEDs alternatively, as long as it is open.

Circuit Diagram:



Theory:

Concept Used: In this experiment we have done coding to switch on the buzzer for 1 sec and the 2 LEDs will start twinkling alternately till the switch is on. We have used the lid of the gift box as the switch mechanism . When the box is open the switch will be open .

Learning and Observations : The coding is done on computer from which the instructions are given to the Arduino Uno board .Coding done on Arduino software is C++ .software used in

Arduino is COMP5.Arduino is a single-board microcontroller meant to make the application more accessible which are interactive objects and its surroundings .This micro controller gives the valid instruction to the elements fitted on the breadboard according to coding done on software.THEARDUINO Uno is an open-source microcontroller board based on the Microchip ATmega328p.

PUSH SWITCH

A **push button** is a momentary or non-latching switch which causes a temporary change in the state of an electrical circuit only while the switch is physically actuated. An automatic mechanism (i.e. a spring) returns the switch to its default position immediately afterwards, restoring the initial circuit condition.

ADC (ANALOG TO DIGITALCONVERTER):

=>An analog-to-digital converter is a system that converts an analog signal, such as a sound picked up by a microphone or

light entering a digital camera, into a digital signal.

=>The voltage resolution of an ADC is equal to its overall voltage

measurement range divided by the number of intervals:

=>where M is the ADC's resolution in bits and EFSR is the full scale

voltage range (also called 'span').

BUZZER

A piezo buzzer is generally used to signal user in the form of tone or beep. This type of buzzer widely used in alarm, domestic gadgets or in embedded systems product to provide some kind of indication or alert

RESISTOR

A **resistor** is a passive two-terminal electrical component that implements electrical resistance as a circuit element. In electronic circuits, **resistors** are used to reduce current flow, adjust signal levels, to divide voltages, bias active elements, and terminate transmission lines, among other uses

LEDs

light-emitting diode (**LED**) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes ,releasing energy in the form of photons. The color of the light (corresponding to the energy of the photons) is determined by the energy

required for electrons to cross the band gap of the semiconductor.

Precautions:

1-The coding done on the software should be correct in every manner. All the errors should be avoided i.e. syntax,logical errors ,semantic etc..

2-All the wires and elements should be connected tightly and according to the coding done on the system.

3-Postive and Negative terminals should be put in correct order.

4-arduino cable should be fitted or connected tightly.

Problems and Trouble shooting:

1-The incorrect coding might cause problems in the working of hardware. This can be corrected by learning C++ and practicing it on the software.

2-Hardware should be correctly fitted on the Breadboard or they might get fuse or get permanently damaged .

3-Arduino wire must be checked if they are loose or not. And the ports should be properly cleaned before using ,they might cause problem in future.

Learning Outcome:

From this experiment we have learn how to code in the arduino software .we have learn how to use a switch, buzzer and flash 2 led with the help of Arduino. Learn various components eg-pins(output or input) about Arduino or we have also learn LED chasher used to turn on and off groups of LED either sequentially or according to a programmed pattern done on Arduino.