CHANDIGARH UNIVERSITY
Discover. Learn. Empower.

ADE LAB WORKSHEET

Student Name: YANA SRIVASTAVA
UID: 20BCS2279
Branch:B.E.CSE
Section/Group:23 "B"
Subject Name: Digital Electronics

Date of Performance: 8.1.2021

Aim

Design a LED Chaser Circuit using Johnson Decade Counter (CD 4017) and Push button.

Task to be done

Using CD4017 IC ,555 timer and some variable voltage inputs attain the LEDs which glow one after the other to form a circling effect

Requirements

1).CD4017 IC

2). Push button

3). LED'S

4).1kohm resistance 5V Power Supply

5). Breadboard

6). Connecting wires

7). Tinkercad Simulator

Circuit diagram/ Block diagram

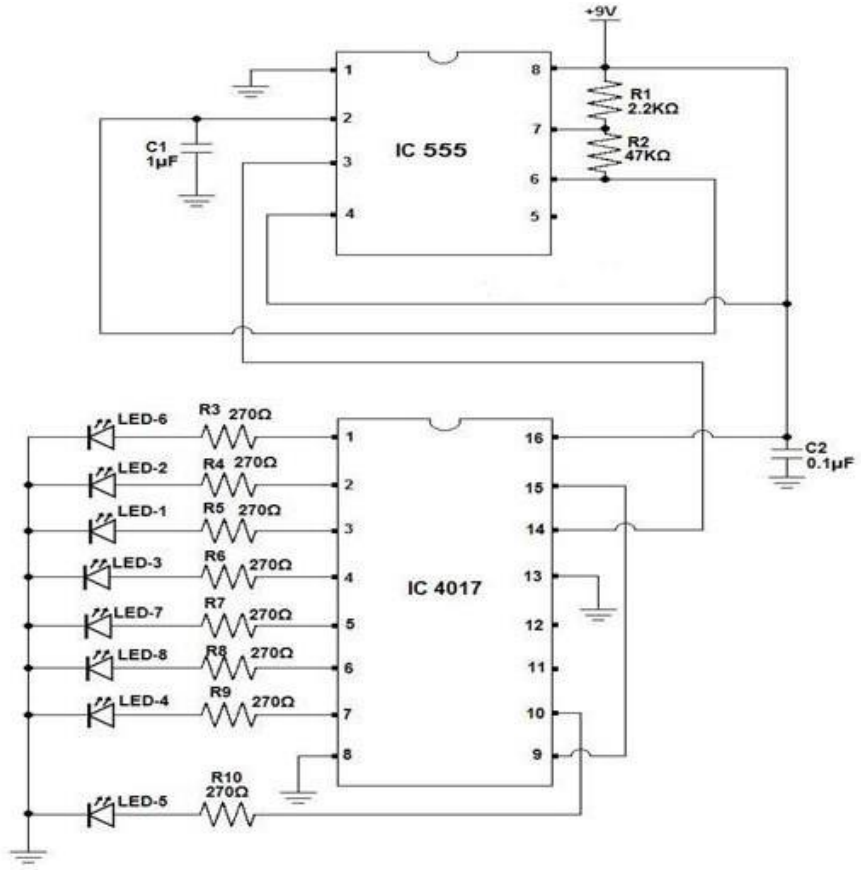
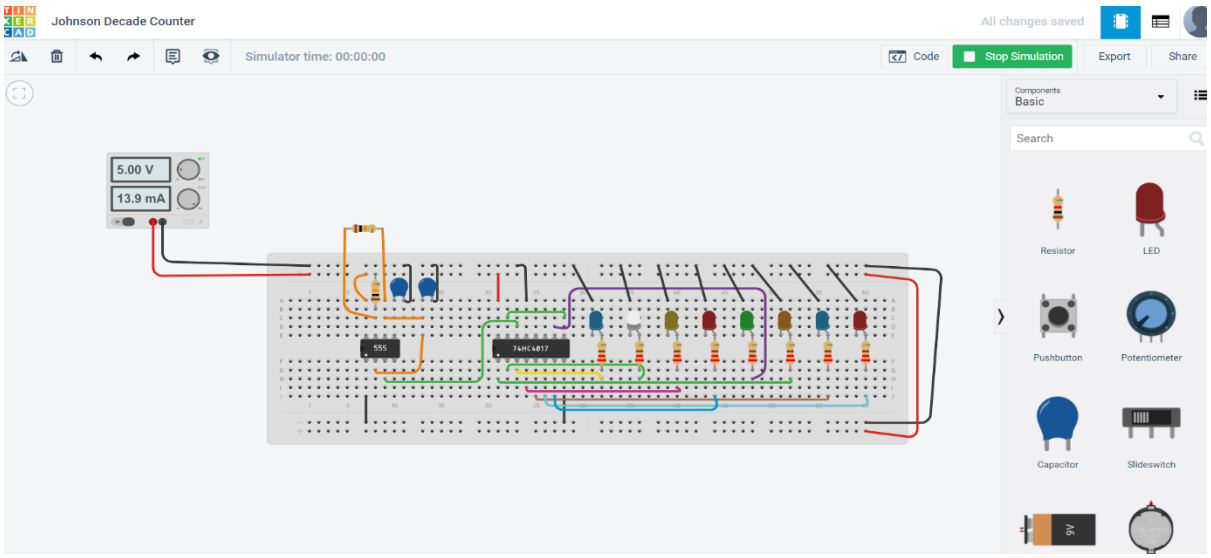


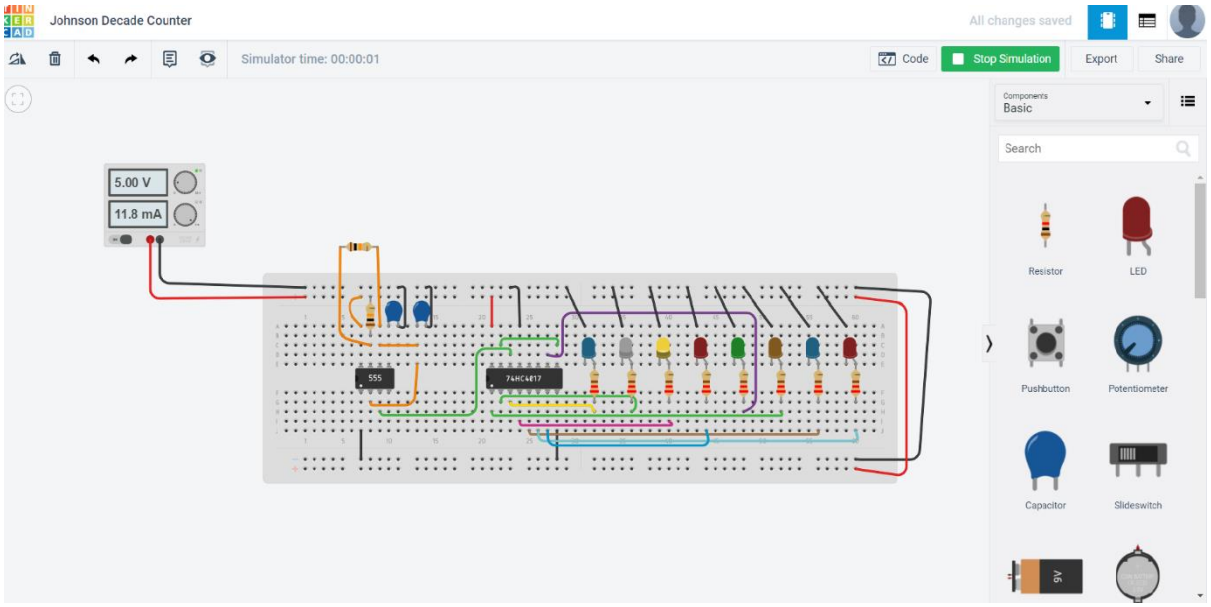
Fig 2: Circuit Diagram of Circling LEDs effect involving IC4017

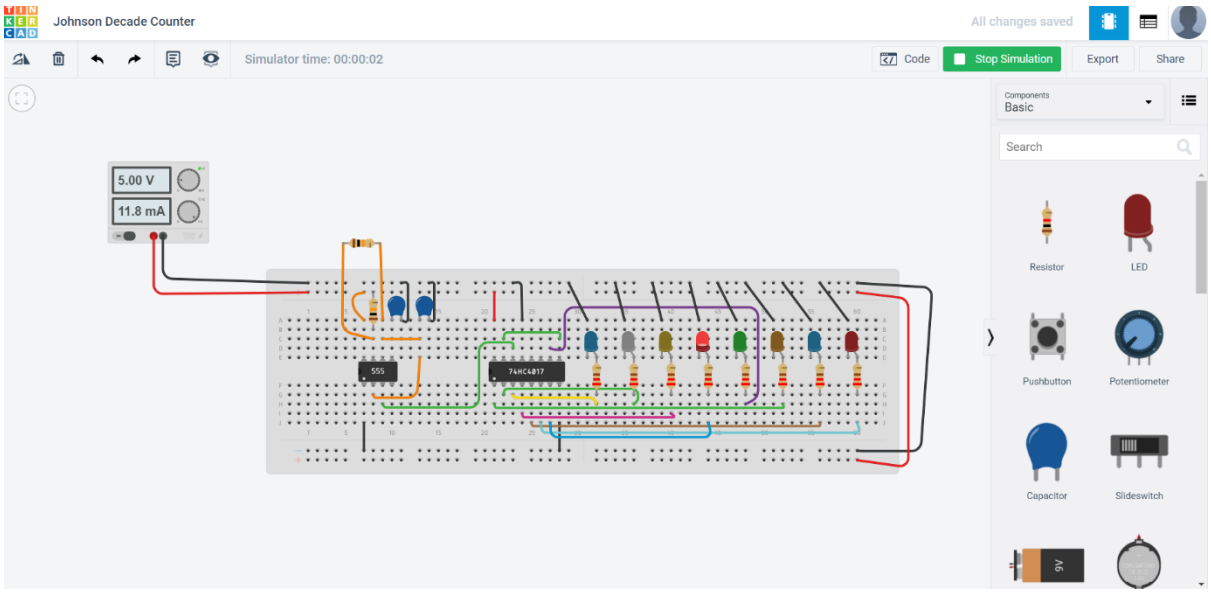
Simulation Results:

CHANDIGARH UNIVERSITY
Discover. Learn. Empower.

ADE LAB WORKSHEET

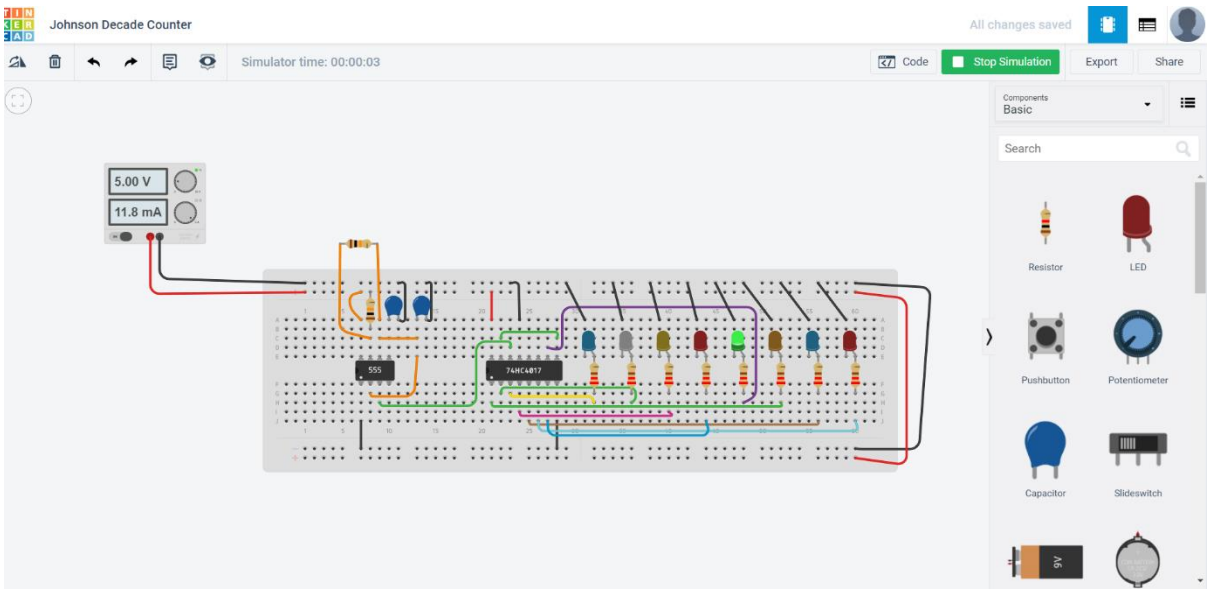


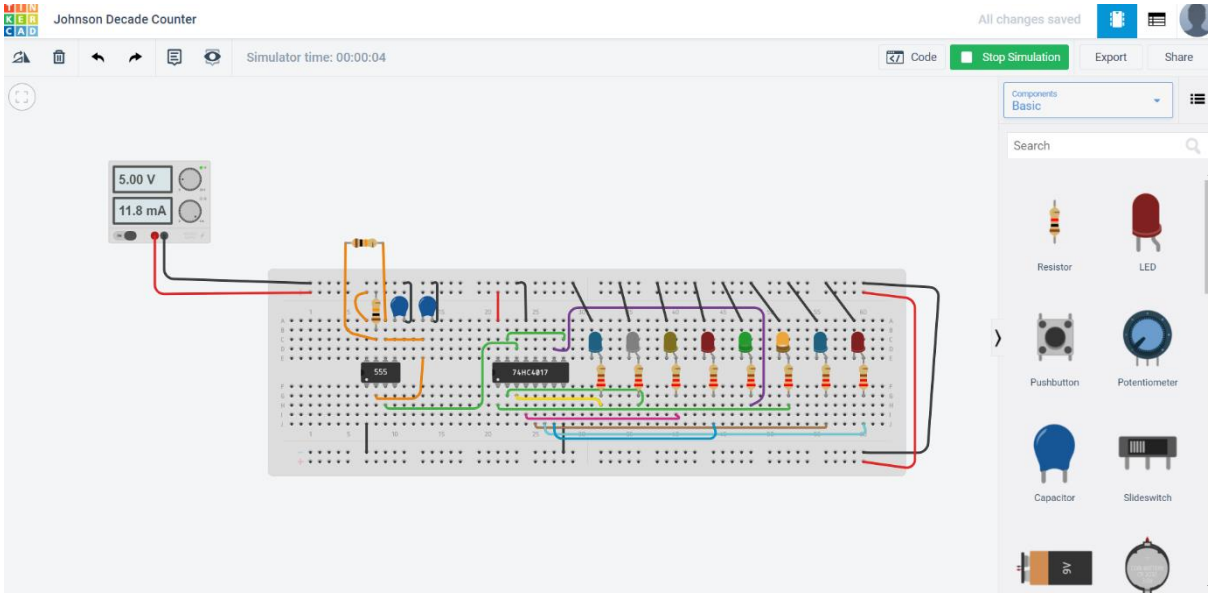


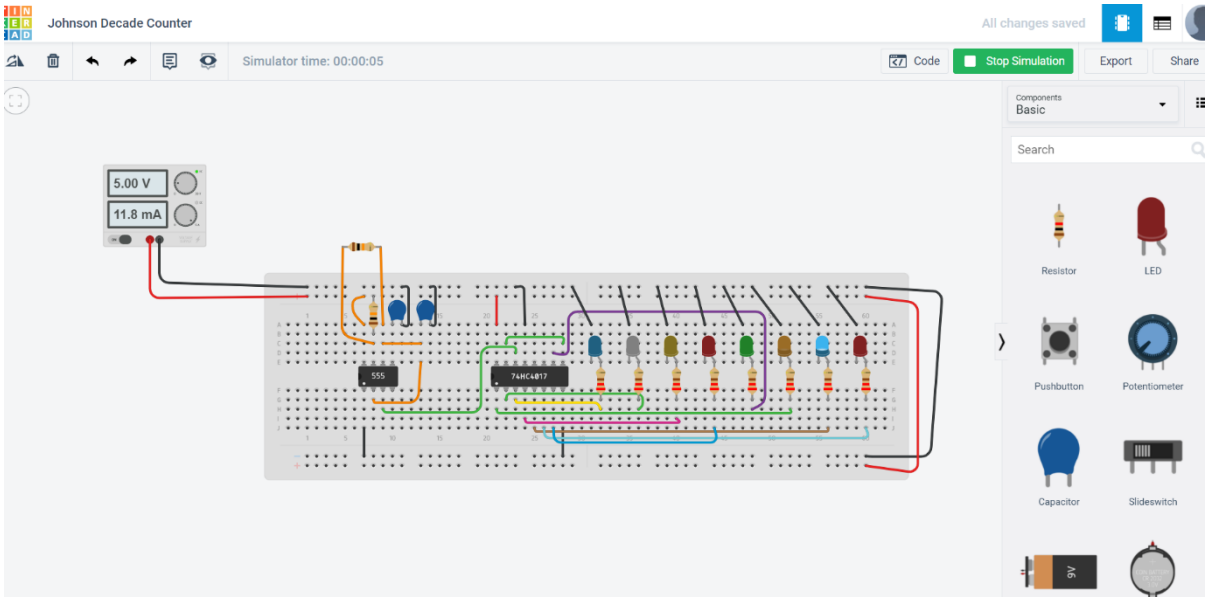


CHANDIGARH UNIVERSITY
Discover. Learn. Empower.

ADE LAB WORKSHEET

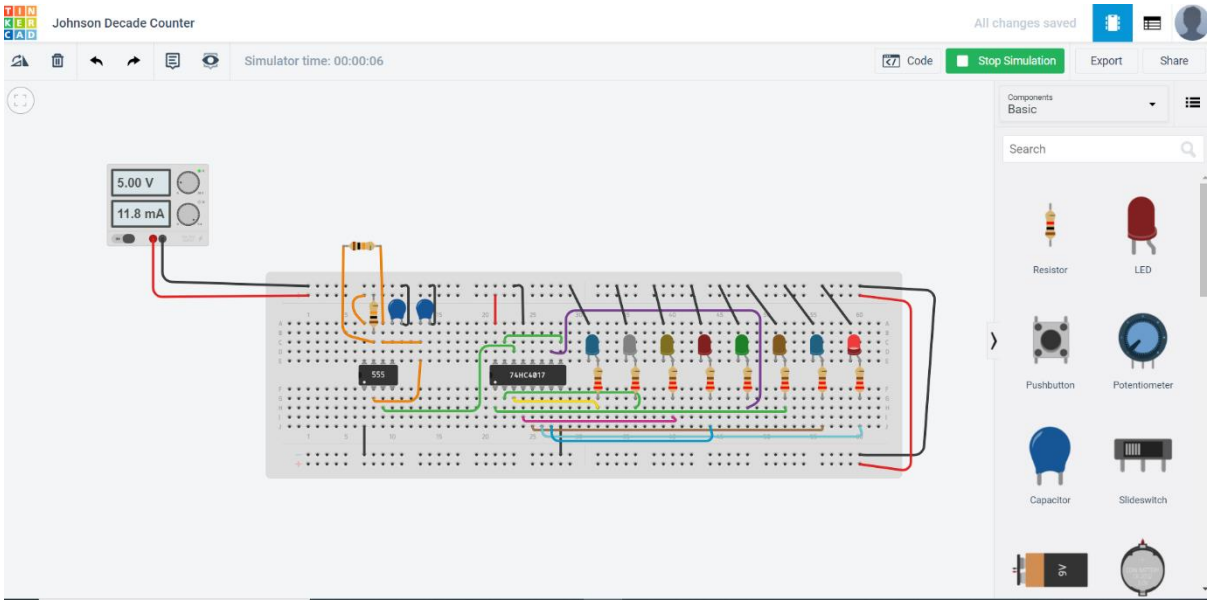


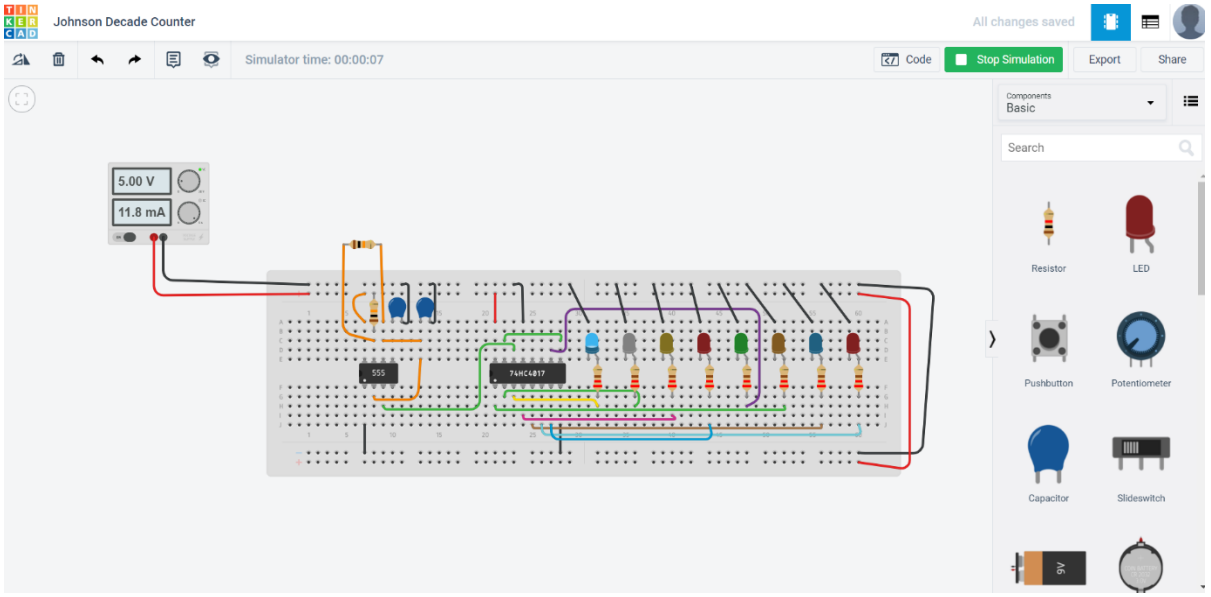




CHANDIGARH UNIVERSITY
Discover. Learn. Empower.

ADE LAB WORKSHEET





Concept used

The 555 IC will operate in a stable mode with a frequency of 14Hz. The 555 IC in the circuit is used as a clock pulse generator to provide input clock pulses to the counter IC 4017. The IC 555 in the circuit operates at a frequency of 14Hz, which means that it produces about 14 clock pulses every second to the IC 4017.

Now we shall analyze what happens at IC 4017. IC 4017 is a digital counter plus decoder circuit. The clock pulses generated at the output of IC 555 timer (PIN-3) is given as an input to IC 4017 through PIN14.

Whenever a clock pulse is received at the clock input of the IC 4017 counter, the counter increments the count and activates the corresponding output PIN. When the count is zero, PIN-3 is HIGH, which means LED-1 will be ON and all the other LEDs are OFF. After the next clock pulse, PIN-2 of IC 4017 is HIGH, which means that LED-2 will glow and all the other LEDs can be turned OFF.

This repeats and the LEDs turn ON and OFF successively on each clock pulse thereby producing a circling effect

Learning/ observation

In this, we have eight LEDs that glow one after the other to form a circling effect. My intention in publishing this circuit is not just to make some artwork with electronics but also to illustrate the working principle and circuit design using IC 555 in astable mode, 4017 counter.