

Technological University (Kalay)
Department of Electronic Engineering

Siren Circuit
AGTI 2nd Year project

Objective : To understand the basic electronic siren and to use it economically.

Components : Resistor \times 4
Capacitor: \times 3
BD 140 \times 1
Speaker \times 1
555 IC \times 1

Operation : -In this project, two 555 ICs are to create AC sound signal.

-First 555 IC feed the signal to second 555 IC to create output variations.

-BD 140 Transistor is used to amplify the output signal to speaker.

-555 IC needs DC =9V and 100 μ F capacitor is used to smooth DC supply voltage.

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LED Dancing Light
AGTI 2nd Year project

Objective : To display symbols and letters.

Components : 555 IC × 1
4017 × 1
Diode 1N4148 × 12
Transistor C1384 × 12
LED × 50
Capacitor × 2

Operation : -In this project, to get the sequential output, the 4017 IC is used. 4017 IC requires square wave (duty cycle) input for the sequential output.

-555 IC can provide the length of time for one sequent by adjusting 100kΩ (variable resistor).

-555 IC and 4017 IC need 9V to 15V for DC-biasing.

-The output sequent of 4017 IC can be modified by arranging LED array.

-In this circuit, the output sequent is seven sequent, **E, C, :, D, e, p, t ;**.

-Display resolution of these letters depend on the number of LEDs.

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20 Watt Amplifier
AGTI 2nd Year project

Objective : To understand the Basic Amplifier Design.

Components : Resistor × 6

Capacitor × 10

TDA 2004 IC × 1

Operation : -In this simple circuit, TDA 2004 IC is used.

-TDA 2004 IC requires DC=12V for the power consumption.

-At the input, pin 1, RC filter is used to eliminate low frequency noise.

-2200 μ F is used to smooth the supply voltage

-100 μ F is bypass pin 3 and ground to remove DC variations.

-The input is feed to pin 1, and the output is provided at pin 10 and pin 8.

-This circuit is used only TDA2004 IC and no transistor is used.

TECHNOLOGICAL UNIVERSITY (KALAY)
DEPARTMENT OF ELECTRONIC ENGINEERING

DIGITAL TO ANALOG CONVERTER
B.TECH SECOND YEAR PROJECT

Object : To understand Digital to Analog conversion process

Components : Resistor \times 19

741 IC \times 1

Switch \times 1

Volt meter \times 1

Operation : This circuit is an 8 bit DA converter. It operates when the voltage reference is supplied 12V, and ± 9 to IC 741.

As pin 2 of IC 741 is input, the output is (-) resolution. If pin -3 is input, the output will be (+) resolution.

In the circuit, the LSB of binary code beings from D_0 and then D_7 is defined as MSB.

The value of shunt resistor is twice of series resistor. If series resistor is $5k\Omega$, shunt resistor is $10k\Omega$.

And the input current is 2.4mA. The value of current I_7 of D_7 which is being MSB is two times less than the input current. Similarly, the current I_6 of D_6 is two times less than that of D_7 . The currents of the remaining D_5 to D_0 are respectively two times less than their corresponding input currents.

In this circuit, eight digital switches are used and 1 is referred to ON stage as well as 0 is OFF stage. When the digital switches are applying to the condition of 1111111, full scale is shown and the output voltage (V_o) is -5.98V. The output voltage (V_o) is two times less than the reference voltage because the value of series resistance is two times less than the feedback resistor (R_f) of IC 741.

The 1-lines of the digital switches using in this circuit are connected to the input of IC 741 (pin 2), and the 0-lines are joined to the ground line of IC 741 (pin 3).

The exact value can be obtained by measuring the output voltage (V_o) with a good resolution voltmeter.

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Toy Organ
B.E (Electronic) Project

Objective : To create basic musical sound using capacitors.

Components : Resistor \times 3

Capacitors - 0.1 μ F, 0.05 μ F, 0.01 μ F, 0.005 μ F, 0.001 μ F, 10n F

555 IC \times 1

Speaker - 1

Operation : -In this circuit, 555 Timer IC is used to generate signal.

-There are two states in 555 IC configuration, mono stable and astable.

-To control the 555 IC output signal, the capacitors between 1 and 2 are arranged in parallel and only one capacitor is permitted at a time.

-Different switches make different sounds according to the value of capacitor.

-The voltage signal level can also be controlled by adjusting 100k (volume control resistor).

-In this project, 5 switches are used to make five different musical sounds.

-To evaluate a large number of different sound, many switches and many capacitors must be used.

-The signal strength of output signal depends on capacitor value.

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Measuring Circuit (AC line voltage)
AGTI 2nd Year Project

Objective : To measure AC line voltage.

Components : Resistor \times 17
Diode 1N4148 \times 2
Zener Diode \times 1
LM324 IC \times 2
LED \times 7

Operation : -In this circuit, comparators are used.

-IC LM 324 is composed of four comparators and two LM 324 ICs is available to the number of comparators.

-First stage, the AC line voltage is converted to equivalent DC voltage.

-This voltage applies to the positive input terminals of all comparators.

-The amplified voltage is also limited to make 1.4 DC constant voltage and feed to the comparators using voltage divider theorem.

-Comparator output is exist for positive voltage which occur (+ node) voltage is more than the reference voltage.

-The variation of AC line voltage provide amplified voltage to change and comparator exist according to the voltage level.

-In this circuit, seven level 180,190,200,210,220,230,240,250 can be provided.

-The amplified voltage which feeds to the (+ node) terminal can be adjusted by 1k Ω (variable resistor).

SPECIFICATIONS

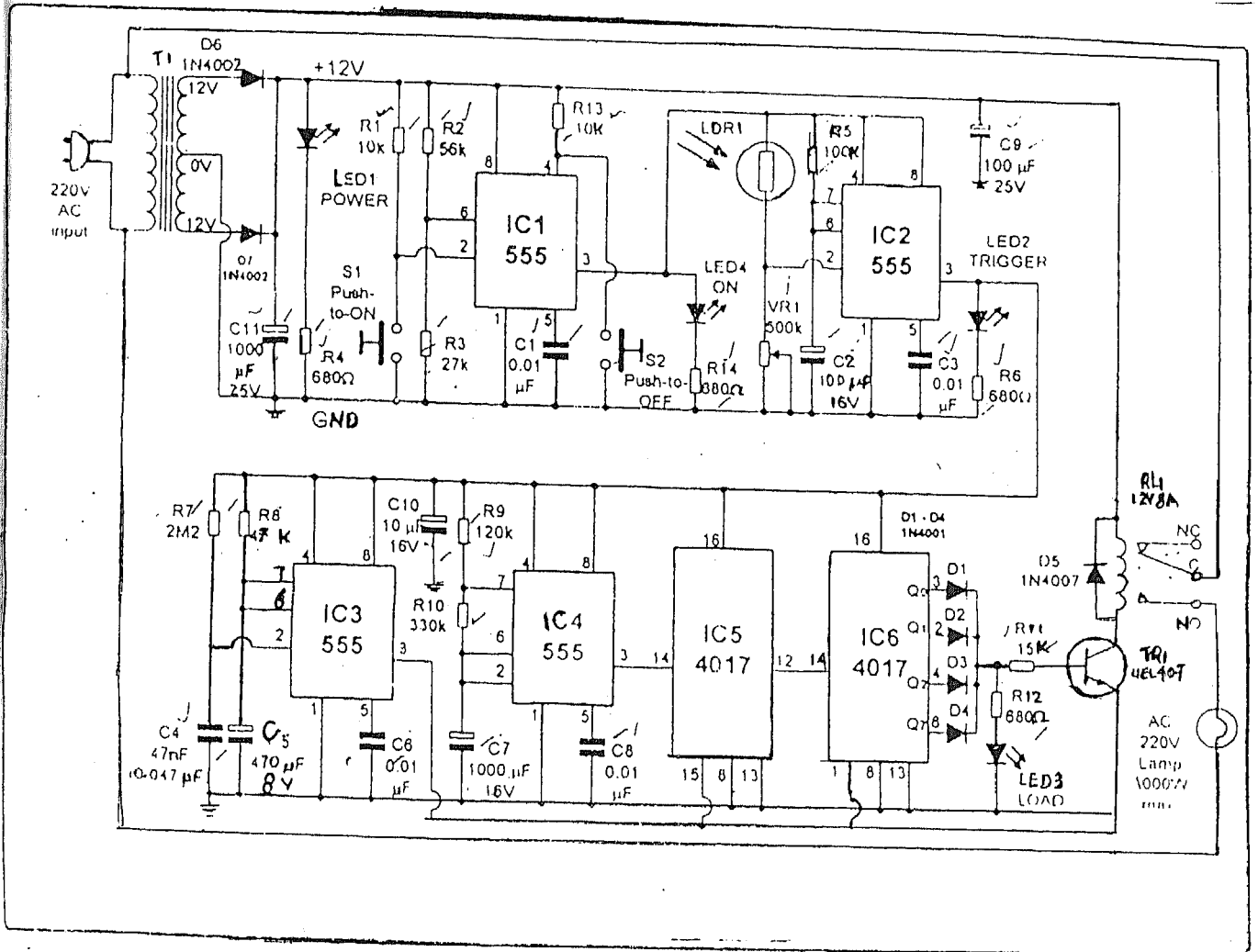


Figure 3.1 Circuit of Timer-controlled Light switch

SPECIFICATIONS

