Electronic Dice

Title :

Electronic Dice

Abstract :

Dice are used in playing games. A simple Dice can be built using electronic components like diodes, resistor, transistors, ICs and LEDs.

Introduction :

Dice are the small throwable objects with multiple resting positions, used for generating **random numbers**. A traditional die is a cube, with each of its six faces showing a different number of dots from 1 to 6.

Content :

The following items are used to create an electronic dice :

- NE555 (Timer IC)
- CD4017 (Decade Counter IC)
- Diode (1N4148)
- Transistors (BC547)
- LEDs
- Resistors
- Capacitors

The idea is get a **random digit**, so NE555 is used as astable multivibrator to obtain a clock pulse signal which is fed to CD4017 IC through a pushbutton. When the pushbutton is pressed CD4017 starts counting from 1-6, when count is 6, IC resets to 1. Due to the high frequency clock signal, output generated is a random number.

A 1KHz clock pulse is obtained from NE555. The LEDs are arranged in pattern. Transistors are used to drive LEDs. Diodes are connected in

specific order to create a **logic**. To each count of CD4017, a pattern of LEDs is **ON** due to the logic derived from diodes.

The circuit is powered by a battery.

Conclusion :

The traditional dice can be replaced with a modern electronic dice. This ensures the players cannot **cheat** the game.

Reference :

- **50 555 Circuits** book by Colin Mitchell.
- **NE555** datasheet by STMicroelectronics.
- **CD4017** datasheet by TEXAS INSTRUMENTS.