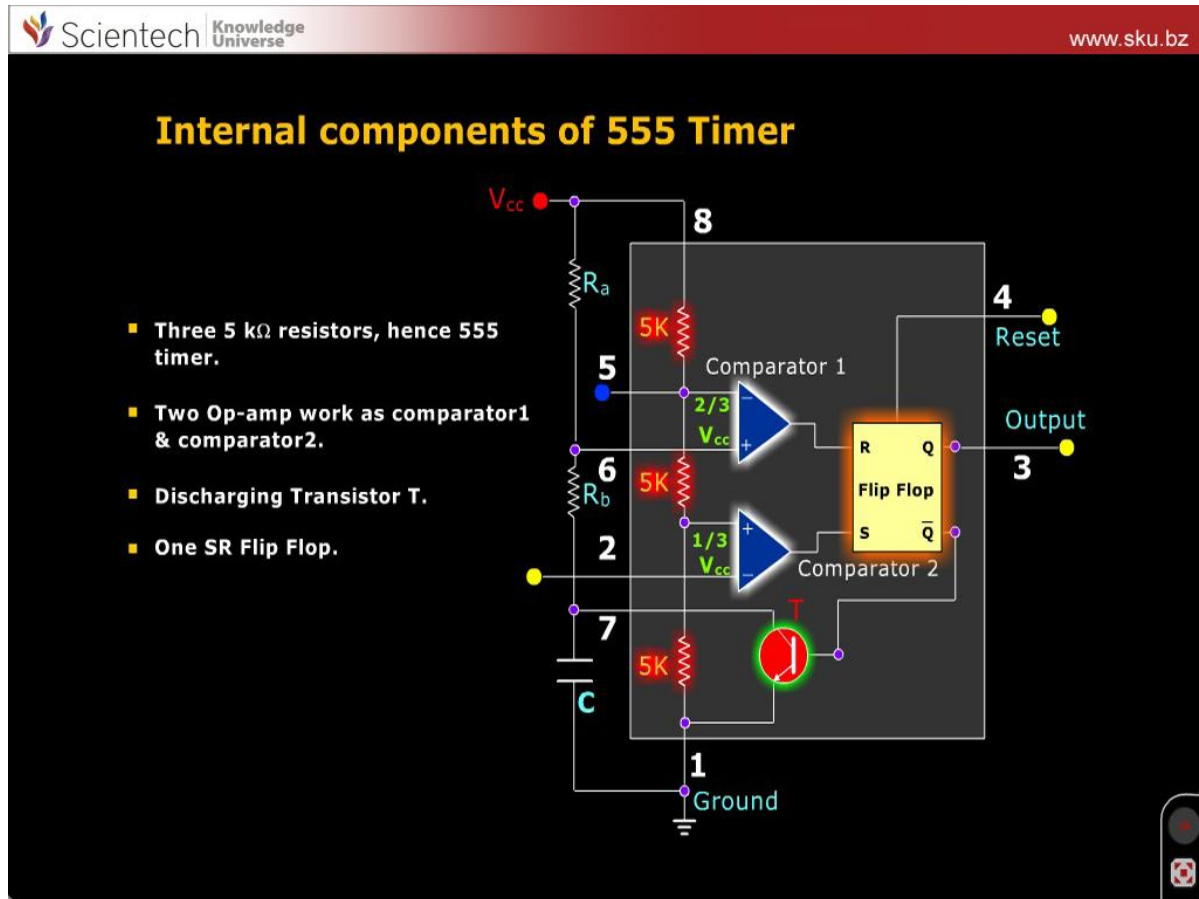


SKU-Digital Circuits & Systems-I

Digital electronics is essential for engineers and students to fully understand both the fundamentals and also the implementation and application principles of the same. This courseware introduces the fundamental concepts of digital systems which are illustrated by various animations and relevant examples for quick understanding of students along with the simplified theory. At the end of each topic relevant quizzes & FAQs are also given for the students to self estimate their understanding. It is helpful for the students to develop their base to deal with higher semester subjects as well.



Topics covered in SKU-Digital Circuits & Systems-I:

Number Systems & Boolean algebra

Topics covered: Various Number systems; Decimal, binary, octal, hexadecimal & conversion from one number system to another, codes, binary arithmetic, Boolean algebra, switching function, minimization of switching functions by Karnaugh map method, Quine & McCluskey's method (Tabulation method) & cases with don't care terms.

Logic gates & Adders

Topics covered: Introduction to various logic gates AND, OR, NOT, NAND, NOR, XOR & XNOR with their truth tables & electrical equivalents, half adder, full adder, half subtractor, full subtractor, BCD adders, look ahead carry generator, look ahead carry adder.

Multivibrators & Schmitt trigger

Topics covered: Monostable & astable multivibrators, their realization using gates & 555 timers, inverting & non inverting comparators, zero crossing detector, Schmitt trigger.

Logic Families

Topics covered: RTL, DTL, all types of TTL circuits, ECL, I2L and PMOS, NMOS & CMOS logic. Gated flip-flops and gated multivibrators etc, interfacing between TTL to MOS & vice versa.

Shift Registers & Counters

Topics covered: Introduction to various registers shift registers; SISO, SIPO, PISO, PIPO, ring counters, Johnson counter, synchronous & asynchronous counters and designing of combinational circuits like code converters.

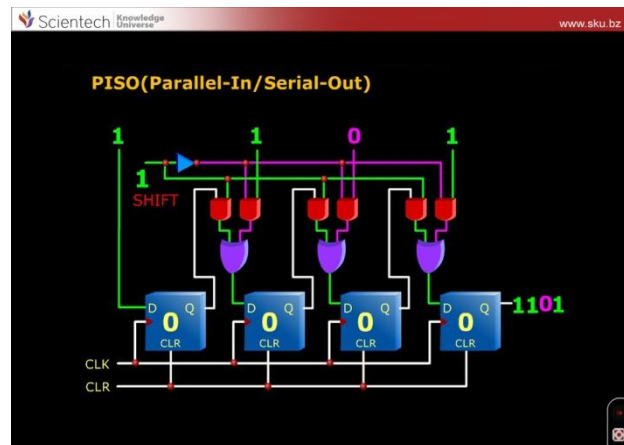
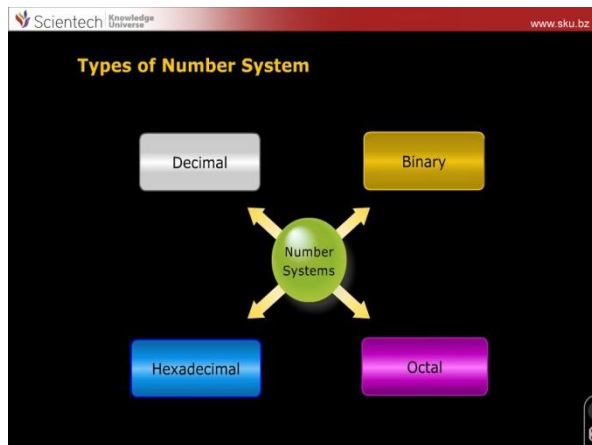
Semiconductor Memories

Topics covered: Introduction to various semiconductor memories; RAM, ROM, various types of RAMs & ROMs, decoders, encoders, multiplexers & demultiplexers

Analog to digital & Digital to analog converters

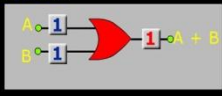
Topics covered: Introduction to D/A & A/D converters, Various types of Analog to Digital & Digital to Analog converters, sample & hold circuit and V-F converters.

Print Shots of SKU-Digital Circuits & Systems-I:



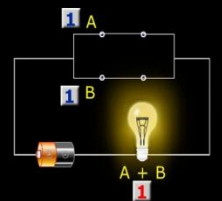
OR gate

Logic Gate

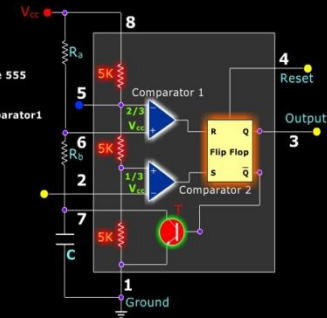


Truth Table

A	B	A+B
0	0	0
0	1	1
1	0	1
1	1	1

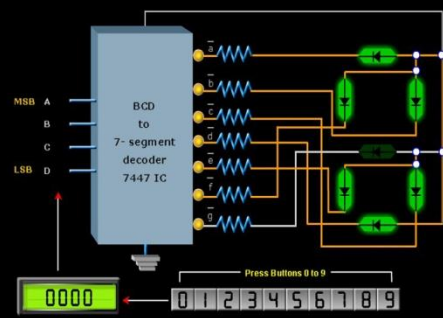


Internal components of 555 Timer



- Three 5 kΩ resistors, hence 555 timer.
- Two Op-amp work as comparator 1 & comparator 2.
- Discharging Transistor T.
- One SR Flip Flop.

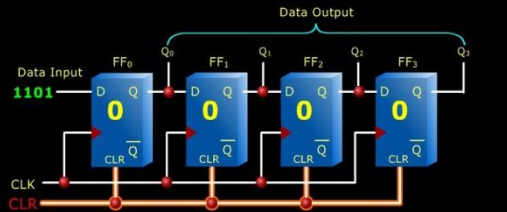
BCD to 7 segment Decoder



MSB A
B
C
LSB D

Press Buttons 0 to 9

SIPO (Serial-In/Parallel-Out)



Data Input: 1101

CLK: CLR

Data Output: Q0, Q1, Q2, Q3

WRITE	Q0	Q1	Q2	Q3
1101	0	0	0	0