

LAB'S THEORY

LAB 1 : Design of a 2-bit Logic unit.

ALU (Arithmetic Logic Unit): ALU is a combinational digital circuit that performs arithmetic and bitwise operations on integer binary numbers. An ALU consists of three types of functional parts: storage registers, operations logic, and sequencing logic.

Logic Unit is a part of an ALU. Logic unit performs logic micro operations. Logic micro operations are used for manipulating individual bits or a portion of a word stored in a register.

LAB 2 : Design of a 4-bit Arithmetic unit.

Arithmetic Unit is a part of an ALU. Arithmetic unit performs arithmetic operations.

LAB 4 : 4 Bit USR

Parallel load: Parallel-load registers are a type of register where the individual bit values in the register are loaded simultaneously. More specifically, every flip-flop within the register takes an external data input, and these inputs are loaded into the flip-flops on the same edge in a clock cycle

USR: When a register is able to transfer data both in the shift-right and shift-left, along with the necessary input and output terminals for parallel transfer, then it is called a shift register with parallel load or 'universal shift register'.

LAB 5 : Design of a 4-bit Up Down Counter.

Counter: Counter is a sequential circuit. A digital circuit which is used for counting pulses is known counter.

A register that goes through a predetermined sequence of states upon the application of input pulses is called a counter. They are used for generating time signals to control the sequence of operations in digital computers.

Binary Counter: A counter that follows the binary number sequence is called a binary counter.