Shift Register with variable modes of operation

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***Abstract*- The paper presents the design of a shift register with variable modes of operation. We can load and shift the bits of input accordingly with the help of control input. Design is comprised of variable shifts like left shift, right shift, rotate right shift, rotate left shift etc. A positive edge trigged clock is incorporated in the design. This design is used to implement variable shift operations automatically without any human error.**

keywords- Shift Register, clock signal, load signal, Shift Operations

I. DESCRIPTION

A register is a set of flip-flops with each flip-flop adequate for saving one bit of data. An n-bit register has a set of n flip-flops and is adequate for saving any binary data of n bits. The shift registers are used for temporary data storage.These are also used for data transfer and data manipulation. The design executes different shift operations like right,left,rotate right and left shifts according to the control input.

II. CIRCUIT DESIGN OF SHIFT REGISTER

The circuit design of shift register is given in fig 1. Load signal, clock signal, reset, 3 bit data input, selection line input are the inputs given to the shift register. A 3 bit ouput pin is also associated in the register. A multiplexer is used to control the performance of different operations. If load signal is high the input is parallely transferred to the output. The reset signal sets the output to zero. A 4:1 mux is used to control the shifting operations. The selection line input in this register is having four cases.

1. for case 00 it shifts the output to left.
2. for case 01 it shifts the output to right.
3. for case 10 it rotates the output to left.
4. for case 11 it rotates the output to right.

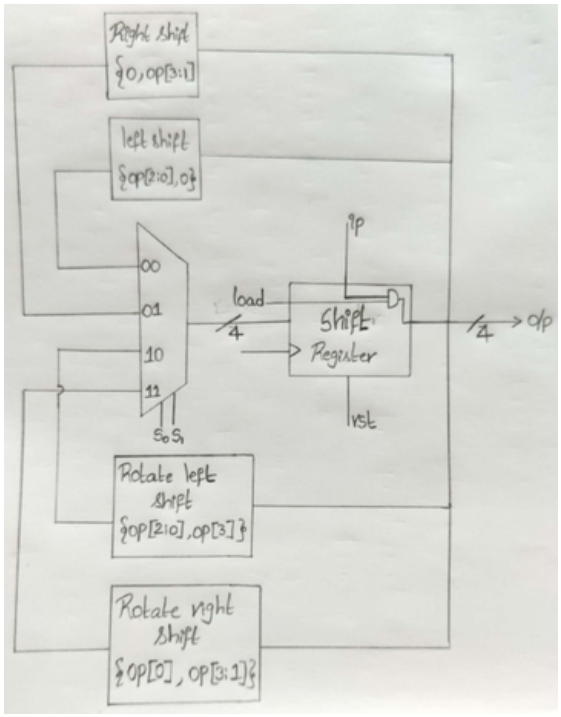

fig 1. Circuit Design of shift register

III.WAVEFORM

The figure 2 shows the output wave after run of the code. Reset input is high, output is zero. c shifts left and gives the output 8. 8 is loaded and output is obtained as 8. c shifts right and gives the output 4. a is loaded and output is obtained as a. a rotates left and gives output 5.

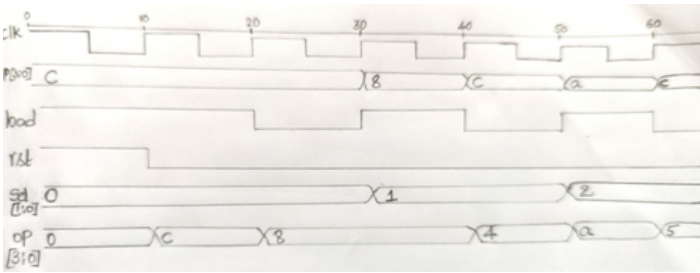

fig 2. wave form of shift register

REFERENCES

github link - https://github.com/Madala-Neha03/CTB-Hackathon
eda link - https://www.edaplayground.com/x/d9Th