



DAY-39

#100DAYSRTL

“Aim”:-To design a Multi-Functional barrel shifter (rotates left or right)

“Design Code”:-

```
module barrel_shifter_multi(input [7:0] data,input [2:0] amt,input ctrl,output reg [7:0] out);
always @(*) begin
    if(ctrl) begin
        case (amt)
            3'd0: out = data;
            3'd1: out = {data[0], data[7:1]};
            3'd2: out = {data[1:0], data[7:2]};
            3'd3: out = {data[2:0], data[7:3]};
            3'd4: out = {data[3:0], data[7:4]};
            3'd5: out = {data[4:0], data[7:5]};
            3'd6: out = {data[5:0], data[7:6]};
            default out = {data[6:0], data[7]};
        endcase
    end
    else begin
        case (amt)
            3'd0: out = data;
            3'd1: out = {data[6:0], data[7]};
            3'd2: out = {data[5:0], data[7:6]};
            3'd3: out = {data[4:0], data[7:5]};
            3'd4: out = {data[3:0], data[7:4]};
            3'd5: out = {data[2:0], data[7:3]};
            3'd6: out = {data[1:0], data[7:2]};
            default out = {data[0], data[7:1]};
        endcase
    end
end
endmodule
```

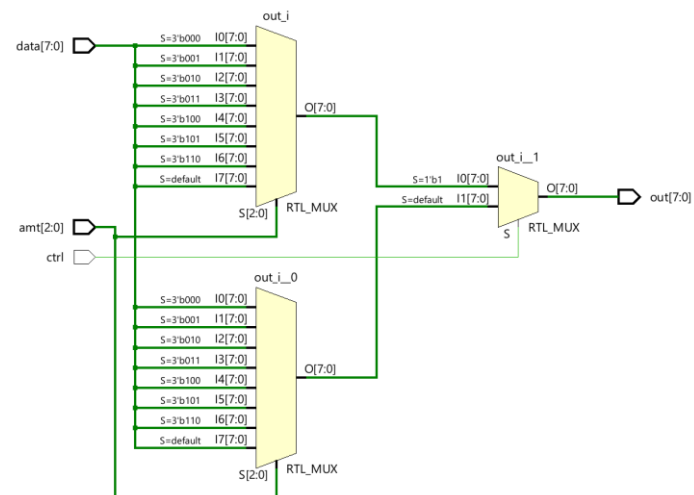
“Waveforms”:-

Name	Value	0.000 ns	10.000 ns	20.000 ns	30.000 ns	40.000 ns	50.000 ns	60.000 ns	70.000 ns	80.000 ns	90.000 ns
> data[7:0]	01100011	00100100	01100011	01100101	00001101	11101101	11000110	11100101	10001111	11101000	10111101
> amt[2:0]	101	001	101	010	110	100	101	111	010		101
ctrl	1										
> out[7:0]	01101100	01001000	01101100	10010101	01000011	11011110	00110110	11001011	11100011	01000111	10110111

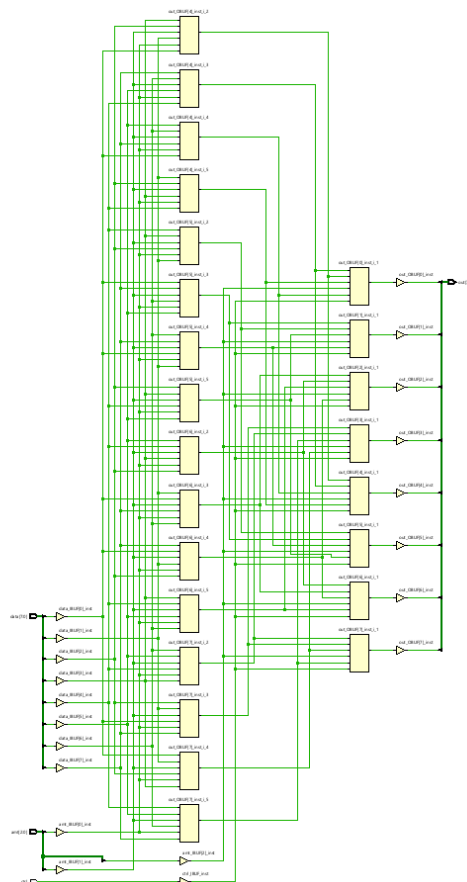
“Console”:-

```
Type=Left,data=00100100,amt=001,ctrl=1,out=01001000
Type=Left,data=01100011,amt=101,ctrl=1,out=01101100
Type=Left,data=01100101,amt=010,ctrl=1,out=10010101
Type=Left,data=00001101,amt=110,ctrl=1,out=01000011
Type=Left,data=11101101,amt=100,ctrl=1,out=11011110
Type=right,data=11000110,amt=101,ctrl=0,out=00110110
Type=right,data=11100101,amt=111,ctrl=0,out=11001011
Type=right,data=10001111,amt=010,ctrl=0,out=11100011
Type=right,data=11101000,amt=101,ctrl=0,out=01000111
Type=Left,data=10111101,amt=101,ctrl=1,out=10110111
```

“Elaborated Design”:-



“Implemented Design”:-



Summary

Power analysis from Implemented netlist. Activity derived from constraints files, simulation files or vectorless analysis.

Total On-Chip Power:	4.704 W
Design Power Budget:	Not Specified
Power Budget Margin:	N/A
Junction Temperature:	33.9°C
Thermal Margin:	51.1°C (27.0 W)
Effective θ JA:	1.9°C/W
Power supplied to off-chip devices:	0 W
Confidence level:	Low

[Launch Power Constraint Advisor](#) to find and fix invalid switching activity

