ATM Vending Machine

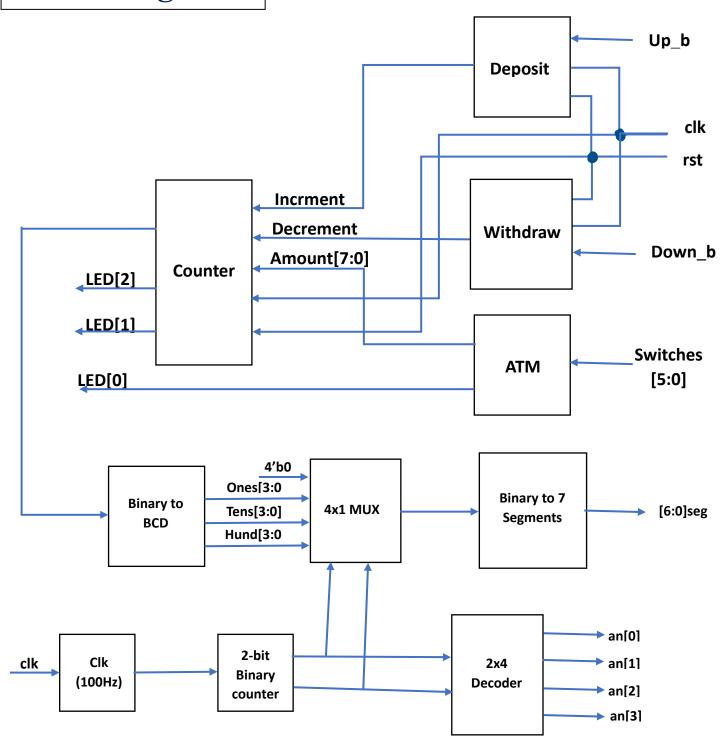
Project Features

- > ATM to deposit or withdraw money from an account.
- > Display the current balance on the seven segment display
- ➤ Use switches on the board to determine what type of Rs bill you would deposit/withdraw from the account.
- sw[0] = 1 Rs
- sw[1] = 5 Rs
- sw[2] = 10 Rs
- sw[3] = 20 Rs
- sw[4] = 50 Rs
- sw[5] = 100 Rs

Project Features

- ➤ We'll use an 8-bit counter for simplicity, the max amount we can deposit into the account is 255 Rs.
- > LED's indicates following:
- LED[0] Max. deposit amount has reached
- LED[1] Ensures that only one switch is selected at a time
- LED[2] Can't go below this amount
- > Push up button is for deposit the money
- > Push down button is for withdraw the money
- > Centre button to reset the ATM

Block Diagram:



Verilog Code for ATM Vending Machine

```
module ATM top(seg,an,dp,led,sw,push up,push down,rst,clk);
  input rst, clk;
  input push_up, push down;
  input [5:0] sw;
  output dp;
  output [2:0] led;
  output [6:0] seq;
  output [7:0] an;
  assign dp = 1'b1;
  parameter zeros = 4'b00000;
  wire s clk;
  wire up out, down out;
  wire inc, dec;
  wire [1:0] sel;
  wire [7:0] amount, count;
  wire [3:0] mux out, hunds, tens, ones;
  user clock M0(s clk,clk);
  debounce M1 (up out, push up, clk);
  debounce M2 (down out, push down, clk);
  deposite M3(inc,up out,rst,clk);
  withdraw M4 (dec, down out, rst, clk);
  ATM M5 (amount, led[0], sw);
  counter M6(count,led[2],led[1],amount,inc,dec,rst,clk);
  Binary to BCD converter M7 (hunds, tens, ones, count);
  counter 2bit M8 (sel, s clk);
  mux 4x1 M9 (mux out, zeros, hunds, tens, ones, sel);
  Decoder M10 (an, sel);
  Binary to 7seg M11(seg, mux out);
endmodule
```

RTL schematic М3 clk M1 rst inc clk pulse_out up_button push_b push_up deposite debounce M4 M2 clk clk pulse_out rst dec M6 push_b up_button push_down amount[7:0] debounce withdraw count[7:0] clk dec led1 led[2:0] rst 🗀 led2 inc M5 sw[5:0] amount[7:0] sw[5:0] counter led0 M7 clk 🗀 ATM hunds[3:0] in[7:0] ones[3:0] М9 M10 tens[3:0] in0[3:0] en[1:0] an[7:0] Binary_to_BCD_converter **-** an[7:0] in1[3:0] Decoder in2[3:0] out[3:0] M0 M8 M11 in3[3:0] s_clk clk sel[1:0] count[1:0] in[3:0] seg[6:0] seg[6:0] user_clock counter_2bit mux_4x1 Binary_to_7seg