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

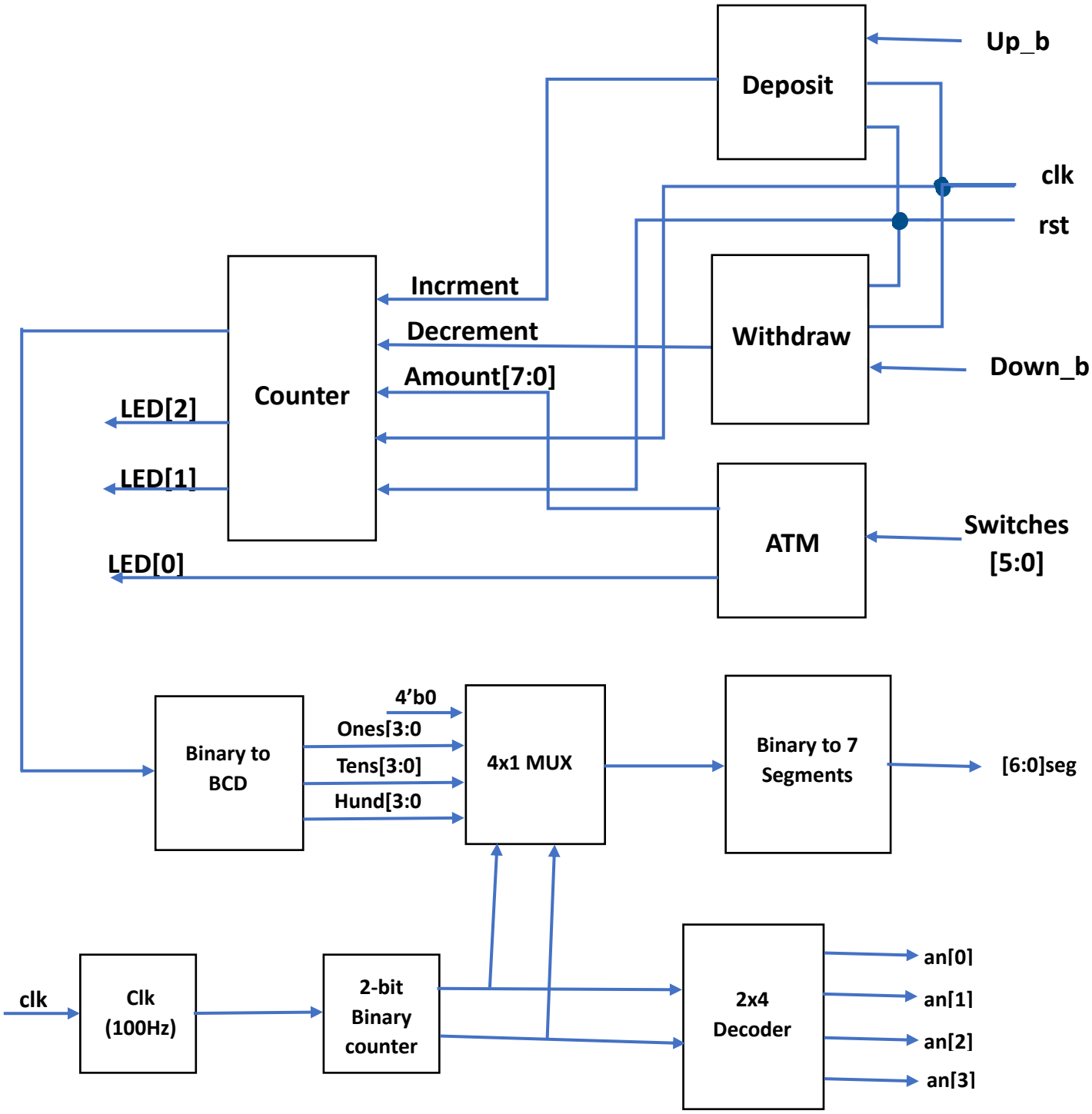
- We'll use an 8-bit counter for simplicity, the max amount we can deposit into the account is 255 Rs.

- 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] seg;
  output [7:0] an;
  assign dp = 1'b1;
  parameter zeros = 4'b0000;
  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