CODE

module BillPaymentController (

  input wire clk,

  input wire reset,

  input wire [2:0] paymentMethod,

  output wire paymentSuccessful,

  output wire [7:0] billAmount

);

  reg [2:0] currentPaymentMethod;

  reg [7:0] currentBillAmount;

  reg paymentComplete;

  always @(posedge clk or posedge reset) begin

    if (reset)

      currentPaymentMethod <= 3'b000; // Default to cash payment method

    else

      currentPaymentMethod <= paymentMethod;

  end

  always @(currentPaymentMethod) begin

    case (currentPaymentMethod)

      3'b000: // Cash payment

        begin

          // Prompt user to input cash amount

          // Perform cash handling operations

          // Set paymentComplete and currentBillAmount

        end

      3'b001: // Credit card payment

        begin

          // Prompt user to swipe/enter credit card details

          // Validate credit card details

          // Process credit card payment

          // Set paymentComplete and currentBillAmount

        end

      3'b010: // Debit card payment

        begin

          // Prompt user to swipe/enter debit card details

          // Validate debit card details

          // Process debit card payment

          // Set paymentComplete and currentBillAmount

        end

      3'b011: // DD payment

        begin

          // Prompt user to enter DD details

          // Validate DD details

          // Process DD payment

          // Set paymentComplete and currentBillAmount

        end

      3'b100: // Net banking payment

        begin

          // Prompt user to enter net banking details

          // Validate net banking details

          // Process net banking payment

          // Set paymentComplete and currentBillAmount

        end

      3'b101: // UPI payment

        begin

          // Prompt user to enter UPI details

          // Validate UPI details

          // Process UPI payment

          // Set paymentComplete and currentBillAmount

        end

      default:

        begin

          // Invalid payment method selected

          // Set paymentComplete to 0 and currentBillAmount to 0

        end

    endcase

  end

  always @(currentBillAmount) begin

    billAmount <= currentBillAmount;

  end

  always @(posedge clk or posedge reset) begin

    if (reset)

      paymentComplete <= 0;

    else if (currentPaymentMethod != 3'b000)

      paymentComplete <= 1; // Payment complete for non-cash methods

    else

      paymentComplete <= 0;

  end

  assign paymentSuccessful = paymentComplete;

endmodule