Implementation using Behavioral Verilog:

//Behavioral

module vend2(

Reset,

CLK,

Dime,

Nickel,

Dispense,

State

);

//inputs

input Reset;

input CLK;

input Dime;

input Nickel;

//outputs

output Dispense;

output [2:0] State;

reg Dispense;

reg [2:0] State;

//output reg [2:0] State;

//states

localparam State\_0 = 3'b000,

State\_1 = 3'b001,

State\_2 = 3'b011,

State\_3 = 3'b010,

State\_4 = 3'b101;

//State Registers

reg [2:0] Current;

reg [2:0] Next;

initial begin

Current = State\_0;

Next = State\_0;

end

always @ (posedge CLK) begin

if (!Reset)

Current <= State\_0;

else

Current <= Next;

State = Current;

end

always @ (\*) begin

Next = Current;

case (Current)

State\_0: begin

Dispense = 0;

if (!Reset)

Next = State\_0;

else if (Nickel)

Next = State\_1;

else if (Dime)

Next = State\_2;

else

Next = Current;

end

State\_1: begin

Dispense = 0;

if (!Reset)

Next = State\_0;

else if (Nickel)

Next = State\_2;

else if (Dime)

Next = State\_3;

else

Next = Current;

end

State\_2: begin

Dispense = 0;

if (!Reset)

Next = State\_0;

else if (Nickel)

Next = State\_3;

else if (Dime)

Next = State\_4;

else

Next = Current;

end

State\_3: begin

Dispense = 1;

if (!Reset)

Next = State\_0;

else

Next = State\_0;

end

State\_4: begin

Dispense = 1;

if (!Reset)

Next = State\_0;

else

Next = State\_1;

end

endcase

end

endmodule

Results for Behavioral

TERMINAL OUTPUT

0 CLK = 0 Dispense = 0 State = x Nickel = 0 Dime = 0 reset = 1

5 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

10 CLK = 0 Dispense = 0 State = 0 Nickel = 1 Dime = 0 reset = 1

15 CLK = 1 Dispense = 0 State = 0 Nickel = 1 Dime = 0 reset = 1

20 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

25 CLK = 1 Dispense = 0 State = 1 Nickel = 0 Dime = 0 reset = 1

30 CLK = 0 Dispense = 0 State = 1 Nickel = 1 Dime = 0 reset = 1

35 CLK = 1 Dispense = 0 State = 1 Nickel = 1 Dime = 0 reset = 1

40 CLK = 0 Dispense = 0 State = 1 Nickel = 0 Dime = 0 reset = 1

45 CLK = 1 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 1

50 CLK = 0 Dispense = 0 State = 3 Nickel = 1 Dime = 0 reset = 1

55 CLK = 1 Dispense = 1 State = 3 Nickel = 1 Dime = 0 reset = 1

60 CLK = 0 Dispense = 1 State = 3 Nickel = 0 Dime = 0 reset = 1

65 CLK = 1 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

70 CLK = 0 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

75 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

80 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 1 reset = 1

85 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 1 reset = 1

90 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

95 CLK = 1 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 1

100 CLK = 0 Dispense = 0 State = 3 Nickel = 0 Dime = 1 reset = 1

105 CLK = 1 Dispense = 1 State = 3 Nickel = 0 Dime = 1 reset = 1

110 CLK = 0 Dispense = 1 State = 3 Nickel = 0 Dime = 0 reset = 1

115 CLK = 1 Dispense = 0 State = 5 Nickel = 0 Dime = 0 reset = 1

120 CLK = 0 Dispense = 0 State = 5 Nickel = 0 Dime = 1 reset = 1

125 CLK = 1 Dispense = 1 State = 1 Nickel = 0 Dime = 1 reset = 1

130 CLK = 0 Dispense = 1 State = 1 Nickel = 0 Dime = 0 reset = 1

135 CLK = 1 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

140 CLK = 0 Dispense = 0 State = 2 Nickel = 0 Dime = 1 reset = 1

145 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 1 reset = 1

150 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

155 CLK = 1 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 1

160 CLK = 0 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 0

165 CLK = 1 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 0

170 CLK = 0 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 0

175 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 0

180 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

185 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

190 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 1 reset = 1

195 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 1 reset = 1

200 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

205 CLK = 1 Dispense = 0 State = 3 Nickel = 0 Dime = 0 reset = 1

210 CLK = 0 Dispense = 0 State = 3 Nickel = 1 Dime = 0 reset = 1

215 CLK = 1 Dispense = 1 State = 3 Nickel = 1 Dime = 0 reset = 1

220 CLK = 0 Dispense = 1 State = 3 Nickel = 0 Dime = 0 reset = 1

225 CLK = 1 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

230 CLK = 0 Dispense = 0 State = 2 Nickel = 1 Dime = 0 reset = 1

235 CLK = 1 Dispense = 0 State = 0 Nickel = 1 Dime = 0 reset = 1

240 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

245 CLK = 1 Dispense = 0 State = 1 Nickel = 0 Dime = 0 reset = 1

250 CLK = 0 Dispense = 0 State = 1 Nickel = 0 Dime = 1 reset = 1

255 CLK = 1 Dispense = 1 State = 1 Nickel = 0 Dime = 1 reset = 1

260 CLK = 0 Dispense = 1 State = 1 Nickel = 0 Dime = 0 reset = 1

265 CLK = 1 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

270 CLK = 0 Dispense = 0 State = 2 Nickel = 0 Dime = 0 reset = 1

275 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

280 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

285 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

290 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

295 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

300 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

305 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

310 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

315 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

320 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

325 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

330 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

335 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

340 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

345 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

350 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

355 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

360 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

365 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

370 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

375 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

380 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

385 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

390 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

395 CLK = 1 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1

400 CLK = 0 Dispense = 0 State = 0 Nickel = 0 Dime = 0 reset = 1