//Structural

module vend2(

Reset,

CLK,

Dime,

Nickel,

Dispense,

State

);

//inputs

input Reset;

input CLK;

input Dime;

input Nickel;

//outputs

output Dispense;

output [2:0] State;

//var

wire nDime,nNickel,nReset,vcc,g0,g1,g2,g3,g4,g5,nq0,nq1,nq2,h0,h1,h2,h3,i0,j0,j1,j2;

wire Dispense;

wire [2:0] State;

not(nDime,Dime);

not(nNickel,Nickel);

not(nq0,State[0]);

not(nq1,State[1]);

not(nq2,State[2]);

assign vcc = 1;

//state[0]

and (g0,State[0],State[2],nq1);

and (g1,State[0],State[1],nq2,nNickel);

and (g2,nq2,State[0],nq1,nDime);

xor (g3,Dime,Nickel);

and (g4,nq2,nq0,nq1,g3);

or (g5,g0,g1,g2,g4);

DFF d0(g5,CLK,Reset,vcc,State[0]);

//state[1]

and (h0,State[0],State[1],nq2,nDime);

and (h1,State[0],nq2,Nickel);

and (h2,nq1,nq2,Dime);

or (h3,h0,h1,h2);

DFF d1(h3,CLK,Reset,vcc,State[1]);

//state[2]

and (i0,State[0],State[1],nq2,Dime);

DFF d3(i0,CLK,Reset,vcc,State[2]);

//Dispense

and (j0,nq2,State[1],nq0);

and (j1,State[2],nq1,State[0]);

or (Dispense,j1,j0);

//Dispense = j2;

Endmodule

Results for Structural

TERMINAL OUTPUT

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

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

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

40 CLK = 0 Dispense = 0 State = 3 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 = 2 Nickel = 1 Dime = 0 reset = 1

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

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

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

90 CLK = 0 Dispense = 0 State = 3 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 = 5 Nickel = 0 Dime = 1 reset = 1

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

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

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

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

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

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

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

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

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

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

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

200 CLK = 0 Dispense = 0 State = 3 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 = 2 Nickel = 1 Dime = 0 reset = 1

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

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

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

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

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

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

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

270 CLK = 0 Dispense = 0 State = 0 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