7 segment

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **In A** | **In B** | **In C** | **In D** | **Out A** | **Out B** | **Out C** | **Out D** | **Out E** | **Out F** | **Out G** | **Out Dp** |
| 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 |
| 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 |
| 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |

`timescale 1ns / 1ps

module segment(

input a, b, c, d,

output ao, bo, co, do, eo, fo, go

);

assign ao = (~b&~d)+(a&~d)+(a&~b&~c)+(~a&b&d)+(~a&c)+(b&c);

assign bo = (~b&~c)+(~b&~d)+(~a&~c&~d)+(~a&c&d)+(a&~c&d);

assign co = (~a&b)+(a&~b)+(~c&d)+(~a&~c)+(~a&d);

assign do = (~b&~c&~d)+(~b&c&d)+(~a&c&~d)+(b&~c&d)+(a&b&~d);

assign eo = (~b&~d)+(c&~d)+(a&b)+(a&c);

assign fo = (~c&~d)+(b&~d)+(~a&b&~c)+(a&c)+(a&~b);

assign go = (~a&~b&c)+(c&~d)+(b&~c)+(a&d);

endmodule

