

# Solutions PDF Generated from: solutions-openai-generated/labs/lab-03-solutions-set- 03.json

## Question A

Fill in the truth table that converts a binary number to a 7-segment encoding. Note that a segment should glow when the corresponding output is logic-0.

Binary Input	A	B	C	D	E	F	G
0	0	0	0	0	0	0	1
1	1	0	0	1	1	1	1
2	0	0	1	0	0	1	0
3	0	0	0	0	1	1	0
4	1	0	0	1	1	0	0
5	0	1	0	0	1	0	0
6	0	1	0	0	0	0	0
7	0	0	0	1	1	1	1
8	0	0	0	0	0	0	0
9	0	0	0	0	1	0	0

## Question B

Write Verilog code for 7-segment decoder.

```
module seven_segment_decoder(input [3:0] input, output reg [6:0] seg);

reg [6:0] code;

always @* begin
    case(input)
        4'b0000: code = 7'b1000000;
        4'b0001: code = 7'b1111001;
        4'b0010: code = 7'b0100100;
        4'b0011: code = 7'b0110000;
        4'b0100: code = 7'b0011001;
        4'b0101: code = 7'b0010010;
        4'b0110: code = 7'b0000010;
        4'b0111: code = 7'b1111000;
        4'b1000: code = 7'b0000000;
        4'b1001: code = 7'b0010000;
        4'b1010: code = 7'b0001000;
        4'b1011: code = 7'b0000011;
        4'b1100: code = 7'b1000110;
        4'b1101: code = 7'b0100001;
        4'b1110: code = 7'b0000110;
        4'b1111: code = 7'b0001110;
    endcase
end
```

```
        default: code = 7'b00000000;  
    endcase  
    seg = code;  
end  
  
endmodule
```

## Execution Time

0:00:25.476034

## OpenAI Parameters

Model: text-davinci-003, Max. Tokens: 1024, Temperature: 1, N: 1