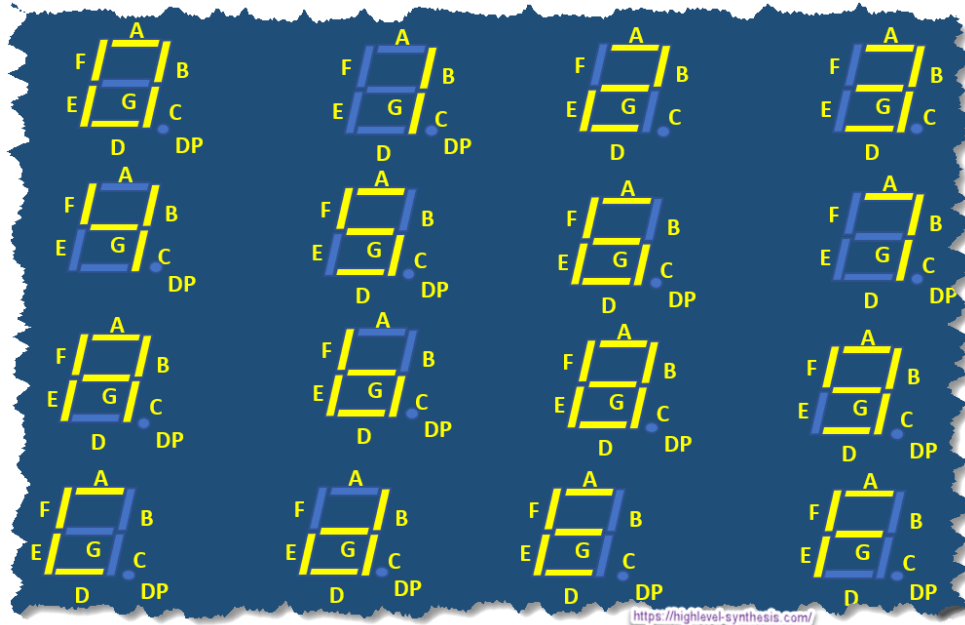


These are the 7-segments patterns from digit 0 to F.



We can use the `seven_segment_code` array that contains all the 7-segment codes from 0 to F.

```
const unsigned int seven_segment_code[16] = {
    0b11000000, // 0
    0b11111001, // 1
    0b10100100, // 2
    0b10110000, // 3
    0b10011001, // 4
    0b10010010, // 5
    0b10000010, // 6
    0b11111000, // 7
    0b10000000, // 8
    0b10010000, // 9
    0b10001000, // a
    0b10000011, // b
    0b11000110, // c
    0b10100001, // d
    0b10000110, // e
    0b10001110, // f
};
```

Then write the top-function as follows:

```
void single_hex_digit_7segment(ap_uint<8> digit, ap_uint<8> *code7segment,
ap_uint<4> *anodes) {
#pragma HLS INTERFACE ap_none port=digit
#pragma HLS INTERFACE ap_none port=code7segment
#pragma HLS INTERFACE ap_none port=anodes
#pragma HLS INTERFACE ap_ctrl_none port=return

    switch(digit) {
    case 0:
        *code7segment = seven_segment_code[0];
        break;
    case 1:
        *code7segment = seven_segment_code[1];
        break;
    case 2:
        *code7segment = seven_segment_code[2];
        break;
    case 3:
        *code7segment = seven_segment_code[3];
        break;
    case 4:
        *code7segment = seven_segment_code[4];
        break;
    case 5:
        *code7segment = seven_segment_code[5];
        break;
    case 6:
        *code7segment = seven_segment_code[6];
        break;
    case 7:
        *code7segment = seven_segment_code[7];
        break;
    case 8:
        *code7segment = seven_segment_code[8];
        break;
    case 9:
        *code7segment = seven_segment_code[9];
        break;
    case 10:
        *code7segment = seven_segment_code[10];
        break;
    case 11:
```

```
        *code7segment = seven_segment_code[11];
        break;
    case 12:
        *code7segment = seven_segment_code[12];
        break;
    case 13:
        *code7segment = seven_segment_code[13];
        break;
    case 14:
        *code7segment = seven_segment_code[14];
        break;
    case 15:
        *code7segment = seven_segment_code[15];
        break;

    default:
        *code7segment = 0b11111111;

}

*anodes = 0b1110;
}
```