Multiplexer: Encoder, Decoder: Quiz Solution

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An 8x3 binary encoder gets an 8-bit input and returns a 3-bit output. The following function implements an 8x3 encoder using a switch-case statement. Note that only one bit of the encoder input can have the value of 1.

```
void encoder8x3(ap_int<8> a, ap_int<3> &d) {
switch(a) {
case 0b00000001:
       d = 0b000;
     break;
case 0b00000010:
    d = 0b001;
    break;
case 0b00000100:
       d = 0b010;
       break;
case 0b00001000:
       d = 0b011;
       break;
case 0b00010000:
       d = 0b100;
       break;
case 0b00100000:
       d = 0b101;
       break;
case 0b01000000:
       d = 0b110;
       break;
case 0b10000000:
       d = 0b111;
       break;
default:
       d = 0b000;
       break;
}
```