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;
	}
}
```