نهار اباں ۹۹۳۱۰۰۴

```
module full_adder (sum, cout, a, b, sel, cin)
    input a, b, cin, sel;
    output sum, cout;
    wire w0, w1, w2, w3, w4;
    XOR #10 g1 (w0, b, sel);
    XOR #10 g2 (w1, w0, a);
    XOR #10 g3 (sum, cin, w1);
    OR #5 g4 (w2, a, w0);
    AND #5 g5 (w3, w2, cin);
    AND #5 g6 (w4, a, w0);
    OR #5 g7 (cout, w3, w4);
endmodule

module full_adder_4bit (A[3:0], B[3:0], sel, S3, S2, S1, S0, cout)
    input A[3:0], B[3:0], sel;
    output S3, S2, S1, S0, cout;
    wire w2, w1, w0;
    full_adder g1 (S0, w0, A[0], B[0], sel, sel);
    full_adder g2 (S1, w1, A[1], B[1], sel, w0);
    full_adder g3 (S2, w2, A[2], B[2], sel, w1);
    full_adder g4 (S3, cout, A[3], B[3], sel, w2);
endmodule
```