اشکان شکیبا (9931030)

Full Adder

```
module fullAdder(
    input x,
    input y,
    input ci,
    output co,
    output s
    );

       wire e1, e2, e3;

      xor #(10) (s, x, y, ci);

      and #(5) (e1, x, y);
      and #(5) (e2, x, ci);
      and #(5) (e3, y, ci);
      or #(5) (co, e1, e2, e3);

endmodule
```

Adder Subtractor

```
module adderSubtractor(
    input a,
    input b,
    input s,
    input cin,
    output cout,
    output sum
    );

      wire e;
      xor #(10) (e, s, b);
      fullAdder f(a, e, cin, cout, sum);

endmodule
```

Adder Subtractor 4 bit

```
module adderSubtractor_4bit(
    input [3:0] a,
    input [3:0] b,
    input sel,
    output cout,
    output [3:0] s
    );


      wire c1, c2, c3;


      adderSubtractor a1(.a(a[0]), .b(b[0]), .s(sel), .cin(sel),
.sum(s[0]), .cout(c1));
      adderSubtractor a2(.a(a[1]), .b(b[1]), .s(sel), .cin(c1),
.sum(s[1]), .cout(c2));
      adderSubtractor a3(.a(a[2]), .b(b[2]), .s(sel), .cin(c2),
.sum(s[2]), .cout(c3));
      adderSubtractor a4(.a(a[3]), .b(b[3]), .s(sel), .cin(c3),
.sum(s[3]), .cout(cout));


endmodule
```