

1-)

```
module tamtoplayici(s,cout,a,b,cin);
    input a,b,cin;
    output s,cout;
    wire w1,w2,w3;
    xor #(17)
    x1(w1,a,b),
    x2(s,cin,w1);
    and #(14)
    a1(w2,a,b),
    a2(w3,w1,cin);
    or #(15) (cout,w3,w2);

endmodule
```

2-)

```
module tamtoplayici(s,cout,a,b,cin);
    input a,b,cin;
    output s,cout;
    wire w1,w2,w3;
    xor #(17)
    x1(w1,a,b),
    x2(s,cin,w1);
    and #(14)
    a1(w2,a,b),
    a2(w3,w1,cin);
    or #(15) (cout,w3,w2);

endmodule

module tamtoplayici4(s,cout,a,b,cin);
    input [3:0] a,b;
    input cin;
    output [3:0] s;
    output cout;
    wire w1,w2,w3;
    tamtoplayici t0(s[0],w1,a[0],b[0],cin),
    t1(s[1],w2,a[1],b[1],w1),
    t2(s[2],w3,a[2],b[2],w2),
    t3(s[3],cout,a[3],b[3],w3);

endmodule
```

3-)

```
module PGgen(p,g,a,b);
    input a,b;
    output p,g;
    xor #(17) (p,a,b);
    and #(14) (g,a,b);

endmodule

module carrygen(c1,c2,c3,c4,p0,p1,p2,p3,g0,g1,g2,g3,cin);
    input p0,p1,p2,p3,g0,g1,g2,g3,cin;
    output c1,c2,c3,c4;
    wire w0,w1,w2,w3,w4,w5,w6,w7,w8,w9;
    and #(14) a1(w0,p0,cin);
    or #(15) o1(c1,g0,w0);
    and #(14) a2(w1,p1,g0);
    and #(16) a3(w2,p1,p0,cin);
    or #(17) o2(c2,g1,w1,w2);
    and #(14) a4(w3,p2,g1);
    and #(16) a5(w4,p2,p1,g0);
    and #(18) a6(w5,p2,p1,p0,cin);
    or #(19) o3(c3,w4,w5,w6,g2);
    and #(14) a7(w6,p3,g2);
    and #(16) a8(w7,p3,p2,g1);
    and #(18) a9(w8,p3,p2,p1,g0);
    and #(14) a10(w9,p3,w5);
    or #(19) o4(c4,w6,w7,w8,w9,g3);

endmodule

module fourbitscarrylookahead(cout,s,a,b,cin);
    input [3:0] a,b;
    input cin;
    output [3:0] s;
    output cout;
    wire [3:0] p,g;
    PGgen pg0(p[0],g[0],a[0],b[0]),
    pg1(p[1],g[1],a[1],b[1]),
    pg2(p[2],g[2],a[2],b[2]),
    pg3(p[3],g[3],a[3],b[3]);

    carrygen cg(c1,c2,c3,cout,p[0],p[1],p[2],p[3],g[0],g[1],g[2],g[3],cin);
    xor #(17)
    x1(s[0],p[0],cin),
    x2(s[1],p[1],c1),
    x3(s[2],p[2],c2),
    x4(s[3],p[3],c3);
endmodule
```

