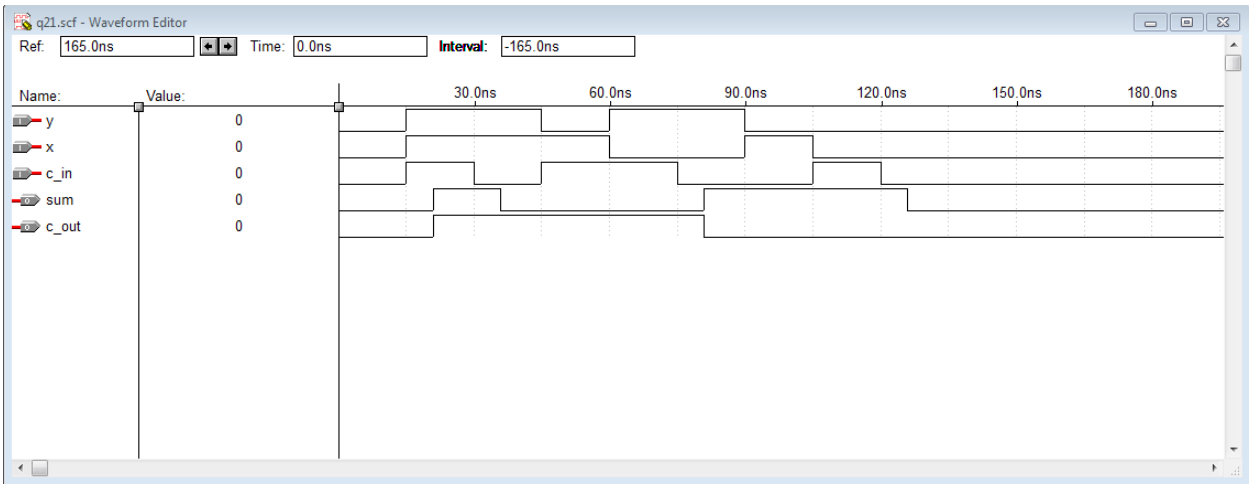
190905514 MOHAMMAD TOFIK

WEEK2 LAb2

1:

```
module  fulladder(cin,x,y,sum,cout);
  input cin,x,y;
  output sum,cout;
  assign sum = cin^x^y;
  assign cout =(x&y) | (x&cin) |(y&cin);
endmodule
```

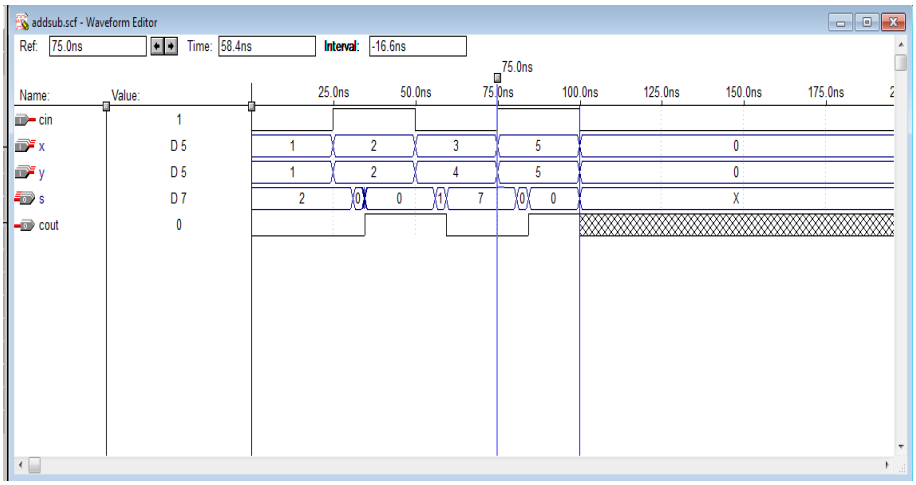


2:

```
module addsub(cin,x,y,s,cout);
  input cin;
  input[3:0]x,y;
  output[3:0]s;
  output cout;
  wire[3:1]c;
  fulladder stage0 (cin,x[0],y[0]^cin,s[0],c[1]);
```

```
  fulladder stage1 (c[1],x[1],y[1]^cin,s[1],c[2]);
  fulladder stage2 (c[2],x[2],y[2]^cin,s[2],c[3]);
  fulladder stage3 (c[3],x[3],y[3]^cin,s[3],cout);
endmodule

module  fulladder(cin,x,y,sum,cout);
  input cin,x,y;
  output sum,cout;
  assign sum = cin^x^y;
  assign cout =(x&y) | (x&cin) |(y&cin);
endmodule
```



3:

```
module bcdadd(cin,a,b,sum,cout);
  input [3:0]a,b;
  input cin;
  output [3:0]sum;
  output cout;
 wire[3:0]z;
```

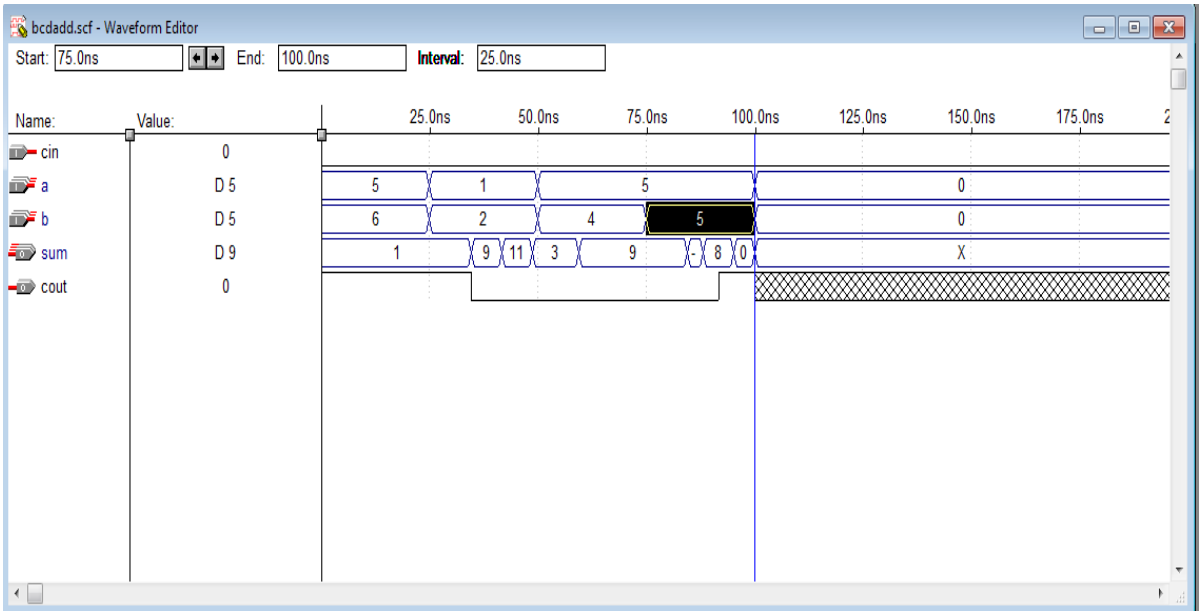
```
 wire m;
 wire[3:1]k;
 wire[3:0]h;
 adderm1 stage0 (cin,a,b,z,m);
 assign k[1]=z[3]&z[2];
 assign k[2]=z[3]&z[1];
 assign k[3]=(m|k[1]|k[2]);
 assign h[0]=0,h[1]=k[3],h[2]=k[3],h[3]=0;
 adderm1 stage1 (cin,z,h,sum,cout);
endmodule


module adderm1(cin,x,y,s,cout);
  input cin;
  input [3:0]x,y;
  output cout;
  output [3:0]s;
  wire[3:1]c;
  fulladder stage0 (cin,x[0],y[0],s[0],c[1]);
  fulladder stage1 (c[1],x[1],y[1],s[1],c[2]);
  fulladder stage2 (c[2],x[2],y[2],s[2],c[3]);
  fulladder stage3 (c[3],x[3],y[3],s[3],cout);

endmodule

module  fulladder(cin,x,y,sum,cout);
  input cin,x,y;
  output sum,cout;
  assign sum = cin^x^y;
  assign cout =(x&y) | (x&cin) |(y&cin);
```

endmodule


bcdadd.scf - Waveform Editor
Start: 75.0ns
End: 100.0ns
Interval: 25.0ns
Name:
Value:
25.0ns
50.0ns
75.0ns
100.0ns
125.0ns
150.0ns
175.0ns
cin
0
a
D 5
5
1
5
0
b
D 5
6
2
4
5
0
sum
D 9
1
9
11
3
9
8
0
X
cout
0