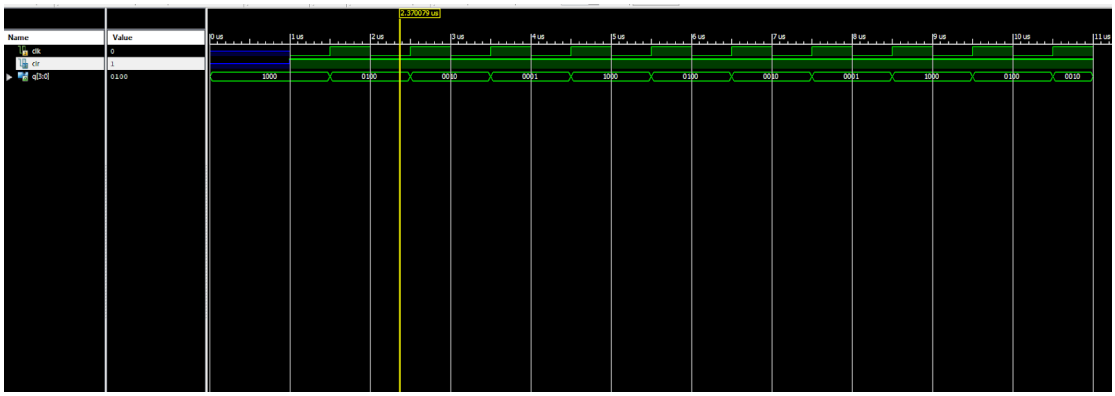
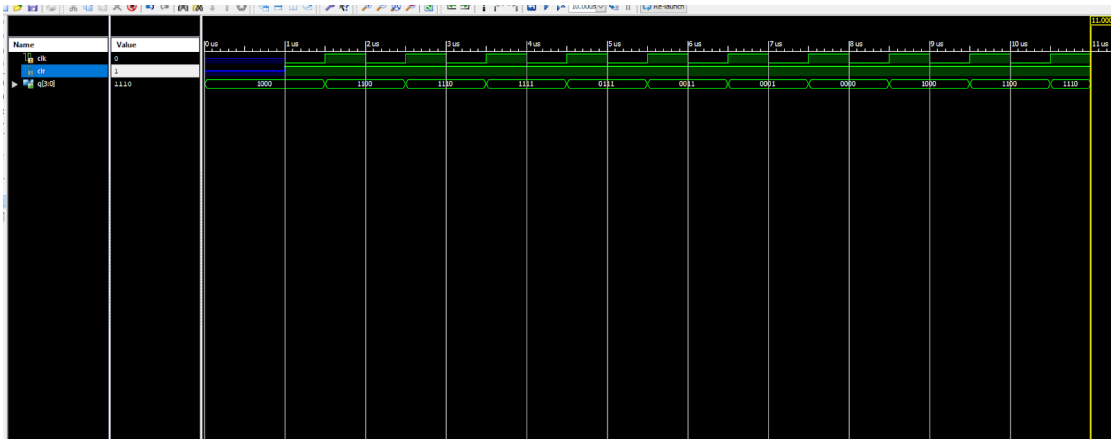
```
module ringcounter(q,clk,clr);
input clk,clr;
output reg [3:0]q;
initial
begin
q=4'b1000;
end
always@(posedge(clk))
begin
if(clr==0)
begin
q<=4'b0000;
end
else
begin
q[3]<=q[0];
q[2]<=q[3];
q[1]<=q[2];
q[0]<=q[1];
end
end
endmodule
```




```
module johnsoncounter(q,clk,clr );
input clk,clr;
output reg [3:0]q;
initial
begin
q=4'b1000;
end
always@(posedge(clk))
begin
if(clr==0)
begin
q<=4'b0000;
end
else
begin
q[3]<=~q[0];
q[2]<=q[3];
q[1]<=q[2];
q[0]<=q[1];
end
end
```

endmodule


Name
Value
clk
0
clr
1
q[3:0]
1110
0 us
1 us
2 us
3 us
4 us
5 us
6 us
7 us
8 us
9 us
10 us
11 us
1000
1100
1110
1111
0111
0011
0001
0000
1000
1100
1110