

```
//status: COMPLETE
```

```
module TurkeyCounter(
```

```
    input Add,
```

```
    input Subtract,
```

```
    input clk,
```

```
    output Negative,
```

```
    output [7:0]Turkeys
```

```
);
```

```
    wire utc, utc2, dtc, dtc2, zero, MAX;
```

```
    wire [11:0] out;
```

```
    wire increment, decrement, negative;
```

```
    assign increment = (Add & !negative & !MAX) |  
(Subtract & (negative | zero) & !MAX);
```

```
    assign decrement = (Add & negative) |  
(Subtract & !negative & !zero);
```

```
    assign MAX = out[0] & out[1] & out[2] & out[3] &  
out[7] & out[6];
```

```
    countUD4L counter (.Up(increment),  
.Dw(decrement), .LD(1'b0), .Q(4'b0),  
.clk(clk), .UTC(utc),  
.DTC(dtc), .Qout(out[3:0]));
```

```
    countUD4L counter2 (.Up(increment&utc),  
.Dw(decrement&dtc), .LD(1'b0), .Q(4'b0),  
.clk(clk), .DTC(dtc2),  
.Qout(out[7:4]));
```

```
    assign zero = dtc&dtc2;
```

```
    FDRE #(.INIT(1'b0)) neg (.C(clk), .R(1'b0),  
.CE(zero), .D(Subtract), .Q(negative)); //adds a  
negative sign
```

```
    assign Negative = negative;
```

```
assign Turkeys[4] = 1'b0;  
assign Turkeys[3:0] = out[3:0];  
assign Turkeys[7:5] = out[7:5];
```

```
endmodule
```