

# ELE1EDP 2007 Laboratory: Assembly of a Counter circuit

## 1 Aim

The purpose of this laboratory is to develop the skills to correctly and efficiently assemble a counter circuit from a schematic diagram.

## 2 Assessment

Assessment for this laboratory will be recorded on a completion sheet which you must hand in to a demonstrator before you leave the class. Marking will be based on the quality of your circuit assembly and on the demonstration that your circuit functions correctly.

If your Mark Sheet is not submitted at the end of the laboratory, or if the Parts Borrowed sheet is not in the possession of the demonstrators from the moment you place your order, then your marks for this laboratory session will be voided!

## 3 Parts List

Part	Quantity
5V DC power supply	1
Prototyping board	1
I/O Board	1
Pair of cutters	1
Pair of pliers	1
4040 Counter	1
555 Timer	1
10 $\mu$ F electrolytic capacitor	1
10 nF nonpolar capacitor	1
8k2 resistor	1
68k resistor	1

## 4 Instructions

1. Firstly, you **must thoroughly read** these instructions.

2. If you encounter any problems or have any questions regarding this laboratory, please **promptly** ask a demonstrator for help. Demonstrators must witness all your results, so be sure that they sign and mark for each task on your Mark Sheet.
3. **Order** the parts you need from a demonstrator: this demonstrator is henceforth your **responsible demonstrator** for this session: they are responsible to see that you take good care of the equipment and parts that you use, and return them all in good order. You must **sign** the Parts Borrowed sheet, ensure that the quantities you've ordered are correctly received and in good condition, and be sure immediately to **give** the **Parts Borrowed** sheet to your responsible demonstrator for safekeeping.
4. The circuit must be **color coded**: red for +5V, black for ground, and distinct colors to clearly distinguish the various signals in the circuit.
5. Place the two ICs (the **555** and the **4040**) the **correct** way round! The **half-moon notch** in one end **MUST** face the **top** of the board. Otherwise the ICs will **fry**!
6. If you damage or destroy components, you will lose marks!
7. Populate the board with the other components.
8. When completed, ensure that the power supply is **off**.
9. Then make sure that you **correctly** connect the +5V and GND wires to your circuit.
10. Turn on the power supply.
11. Verify that your circuit counts up correctly.
12. Test the RESET switch.

## 5 Clean Up

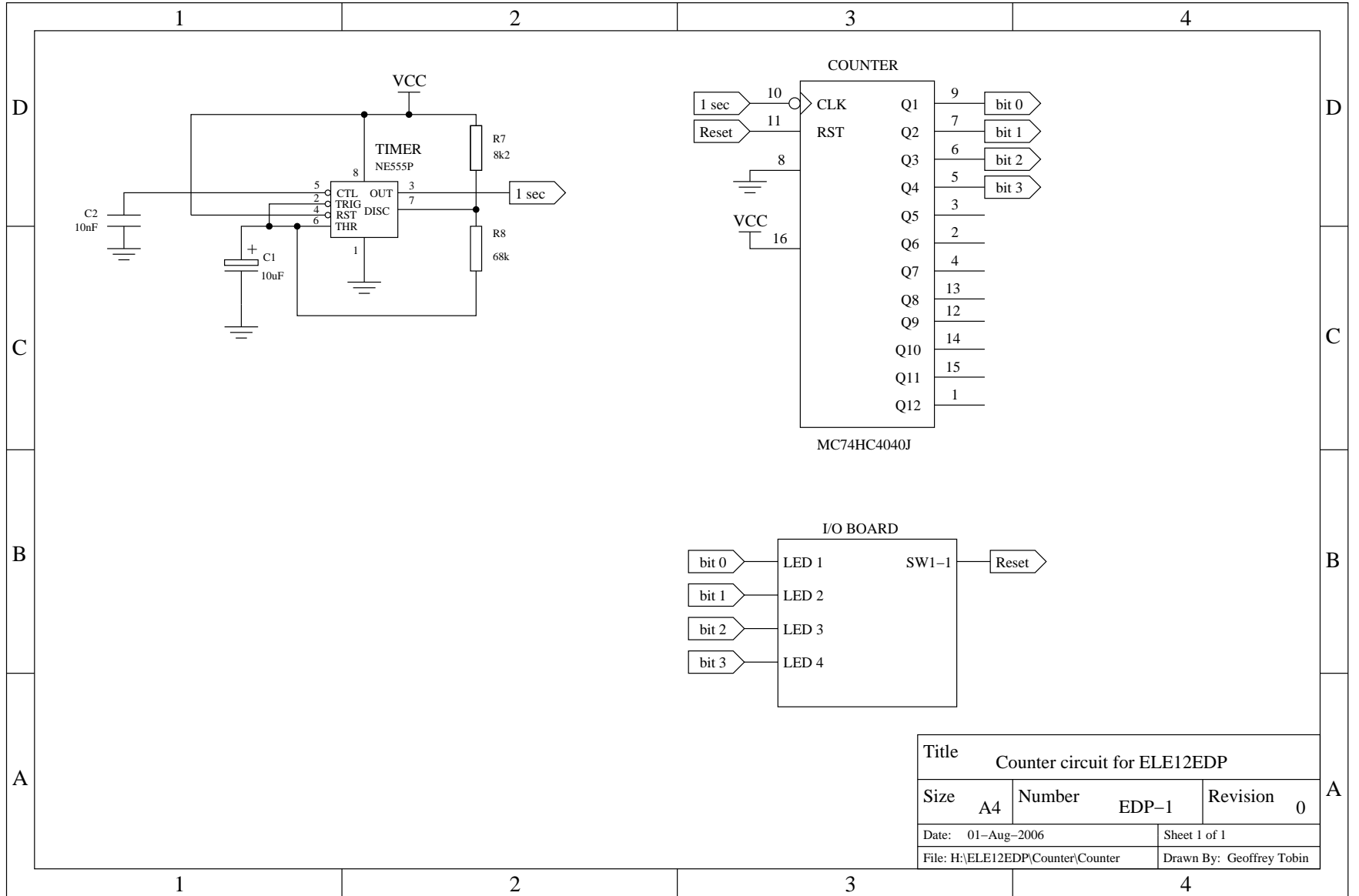
**Before you leave, you must:**

1. **Return** the protoboard and all tools and parts to your **responsible demonstrator**.
2. Ensure that s/he **checks** that you have returned all parts in **good condition** then **signs** for receipt.
3. **Check** that the Parts Borrowed **and** Marks Sheets are both **complete**.
4. **Give** the **Marks Sheet** to your responsible demonstrator. (Otherwise you effectively have **no** marks!)
5. Be sure that s/he also **keeps** the **Parts Borrowed** sheet. (Otherwise you will lose all your marks for this session!)

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Version 5

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Title				Counter circuit for ELE12EDP			
Size	A4	Number	EDP-1	Revision	0		
Date:	01-Aug-2006			Sheet 1 of 1			
File:	H:\ELE12EDP\Counter\Counter			Drawn By: Geoffrey Tobin			