

## Conclusion:

The purpose of the lab is to introduce us to sequential logic. Although the result is very similar to the previous lab, the processing of information is quite different. In the previous lab we have seen combinatorial logic. All input arrived at the same time. From now on, we have an overview of the sequential logic: data entered at the input of the first flip-flop propagates in the following flip-flops to each signal of the clock.

## Discussion

The system works. We thought we had a problem because the 4 digits were lit. The lab manual seemed to indicate that the result should be a simple hexadecimal counter. We thought only one digit would come on. That said, we did not want to change the piece of code given in manual. After a few attempts, the teacher told us that everything was normal. The only other problem is always to navigate the software. We often have to use the manual of previous labs.

To improve our system we could:

- Make a 4 digit hexadecimal counter rather than having the same digit on the 4 displays.
- Increase the frequency of the clock, to make our system even more responsive.

## Questions

1. What will happen if the "clock" signal is of very low frequency (1 Hz)?

There will have a big delay between the moment the button is pressed to the result. More precisely, we will have to wait until a rising edge. For a 1hz frequency, we may wait 0 to 1 sec.

2. Design a test-bench and verify the logic performance.

We have to test successively every input of the truth table. You can see our result on our waveform above.