Lab Assignment-3

29-09-2018

Note:

- The assignment to be done in batches as indicated
- Maximum marks: 03
- Deadline: 15 to 20-10-2018
- Marking scheme: partial marks may be awarded (all the campuses will follow uniform policy).

Programmable square-wave generator

- A programmable square-wave generator is a circuit that can generate a square wave with variable ON (i.e., logic 1) and OFF (i.e., logic 0) intervals. The durations of the intervals are specified by two 4-bit control signals, **m** and **n**, which are interpreted as unsigned integers.
- The ON and OFF intervals are **m** ×10 ns and **n**×10 ns, respectively (recall that the period of the onboard oscillator is 10 ns).
- Design a programmable square-wave generator circuit. The circuit should be completely synchronous.
- Use Vivado ILA to verify the operation (else you require a logic analyser).
- You may use the DIP/PUSH switches or VIO for giving the **m** and **n** inputs.
- In order to verify the output, always generate the reference “clock/2” (20ns) as output and tap it using ILA. Your output can be verified against the reference clock.