INDIAN INSTITUTE OF TECHNOLOGY PATNA

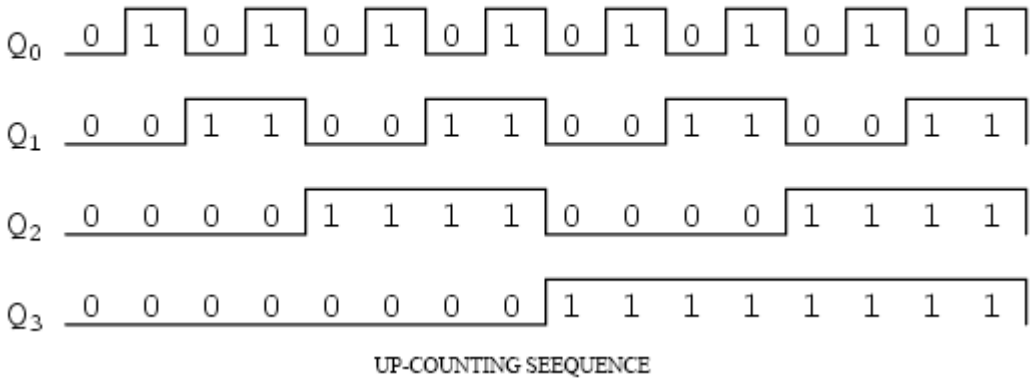
CS226- Lab 8

Q1: Design a 2-bit counter that behaves according to the two control inputs Io and I1 as follows. I0, I1 = 0,0: Stop counting; I0, I1 = 0,1: count up by one; I0, I1 = 1,0: count down by one; I0, I1 = 1,1: count by two. Implement using D,JK, RS and T flip flops. Show the design (hand written copy only)

(10+10+10+10=40 points)

Q2: Design a 4 bit asynchronous counter and test the output using a Seven segment display. Timing behavior is shown below. **(10 points)**

Timing Diagram:



UP-COUNTING SEEQUENCE

Q3: Design a 8 bit serial adder using Single full adder and registers.

Submission:

- Hand written design for Question 1 and **Simulation report** (screen shots of design and simulation output). The simulation files Q1.circ, Q1.circ, and Q2.circ,
- Zip the above files. file name is your role number.

Course work submission through:

https://u.pcloud.com/#page=puplink&code=BRo7ZmzzIgDyLJP45iJdTOLbwQ70GwVeV

This work is due 30th March 11.30 PM.