# CDA 3201L – Computer Logic Design Laboratory

# Lab Exercise 7

# Sequential Logic Circuits ( III )

Design a nine-step counter to count in the following sequence using J$\overline{K}$ flip-flop (TTL 74LS109):
0011, 0101, 1001, 1000, 1011, 1010, 0110, 0100, 0111, 0011, 0101, ….
Include in the design a means for resetting the counter to 0011. Use the 7-segment LED to display the output. Use BCD-to-7 segment decoder (74LS247) to convert the 4-bit binary values to be displayed in the 7-segment LED.

**References:**

"Fundamentals of Logic Design", 7th Edition, by Charles H. Roth Jr. and Larry L Kinney, 2014, ISBN-13: 978-1133628477 or ISBN-10: 1133628478, CENGAGE Learning, Stamford, CT, USA

Notes:

1. You can use http://en.wikipedia.org/wiki/List of 7400 series integrated circuits to find the TTL chip you need.
2. Datasheets of some commonly used TTL chips can be found at the following sites:
    - http://www.jameco.com
    - http://www.ti.com/sc/docs/psheets/databook.htm
    - http://www.datasheetcatalog.com/fairchildsemiconductor/1/