

# CS 207 Digital Logic - Spring 2019

## Lab 9 - Sequential Circuits

Monday, Apr. 15, 2019

### 1 Experiment A

Design a sequential circuit with two D flip-flops A and B, and one input  $x_{in}$ . When  $x_{in} = 0$ , the state of the circuit remains the same. When  $x_{in} = 1$ , the circuit goes through the state transitions from 00 to 11, to 01, to 10, back to 00, and repeats.

### 2 Experiment B

Design and verify a sequence detector which outputs 1 when a sequence 0101 is detected from the input.

**Assignment**

Save the source code and testbenches in `detector.v`. Assignment 2 requires the source file.

### 3 Experiment C

Design and verify a four-bit binary counter.

**Assignment**

Save the source code and testbenches in `counter.v`. Assignment 2 requires the source file.