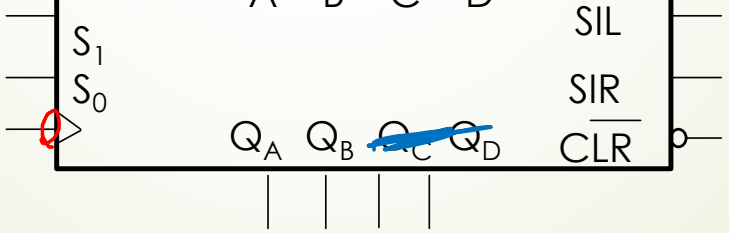
EGC220
Class Notes
5/5/2023

Baback Izadi
Division of Engineering Programs
bai@engr.newpaltz.edu

Problem 7 (set 23)

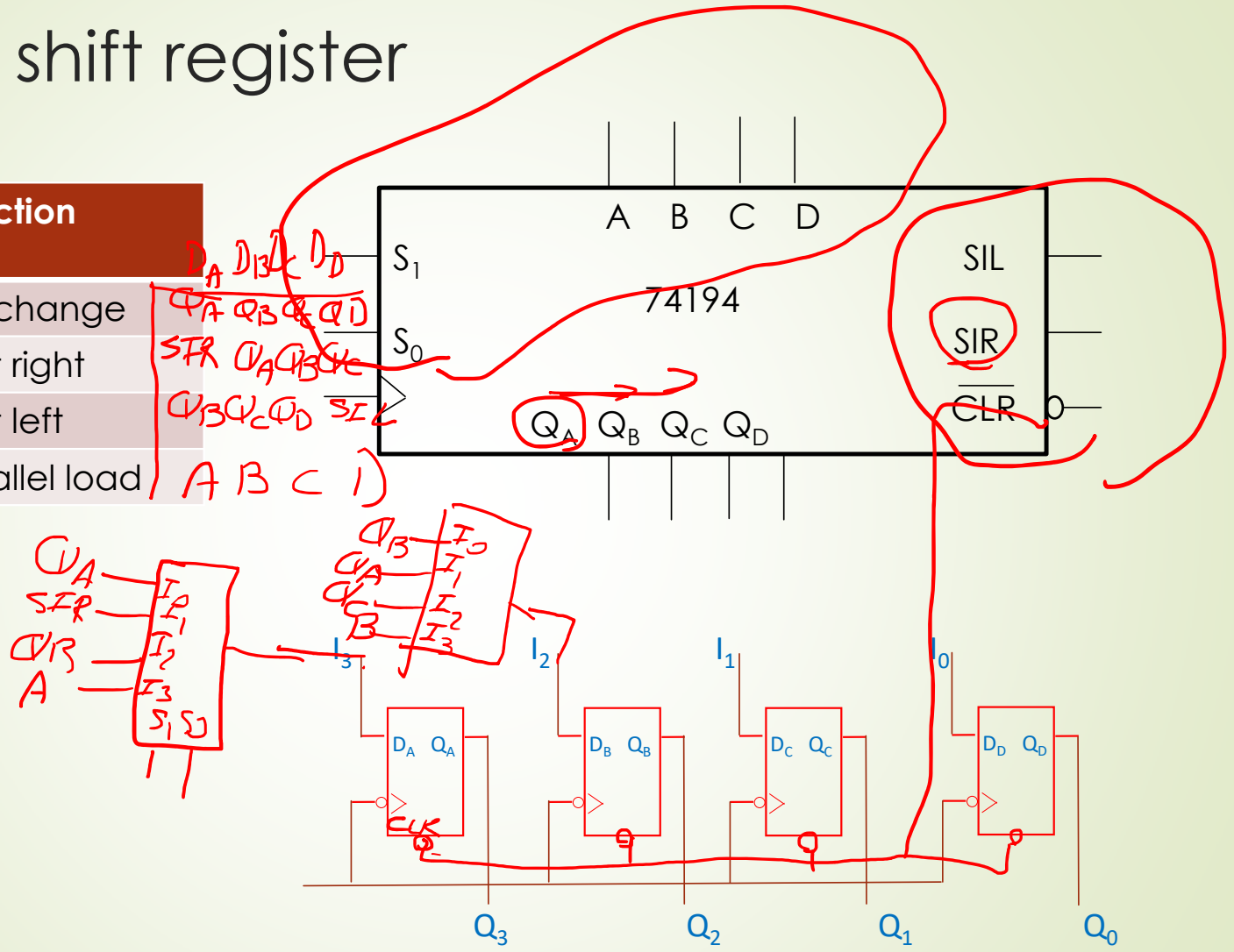
Using D flip-flops and Multiplexers, design a 4-bit register with the following functionality

S1	S0	Function
0	0	Clear
0	1	load
1	0	Shift right
1	1	Shift left



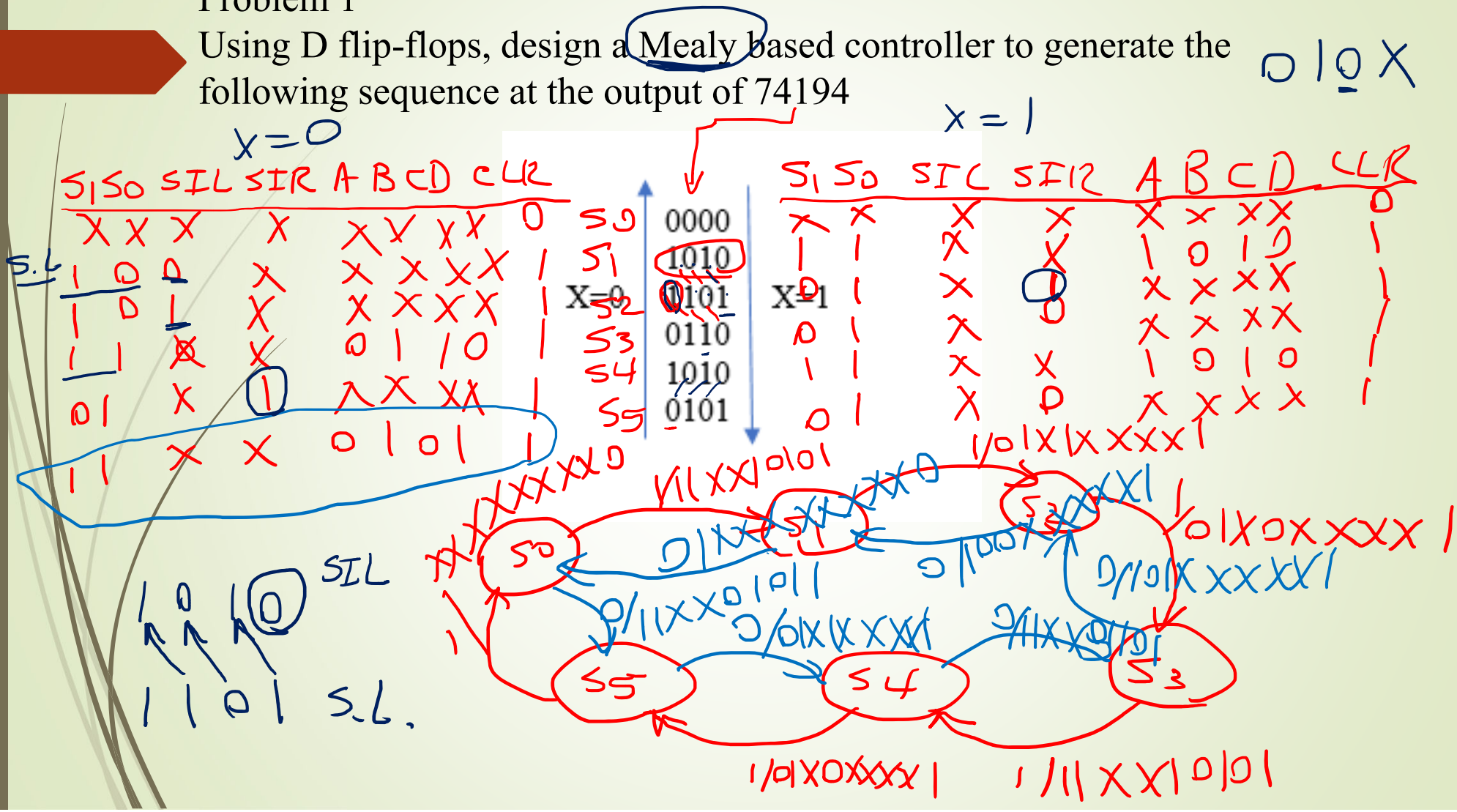
74194 shift register

S_1	S_0	Function
0	0	No change
0	1	Shift right
1	0	Shift left
1	1	Parallel load



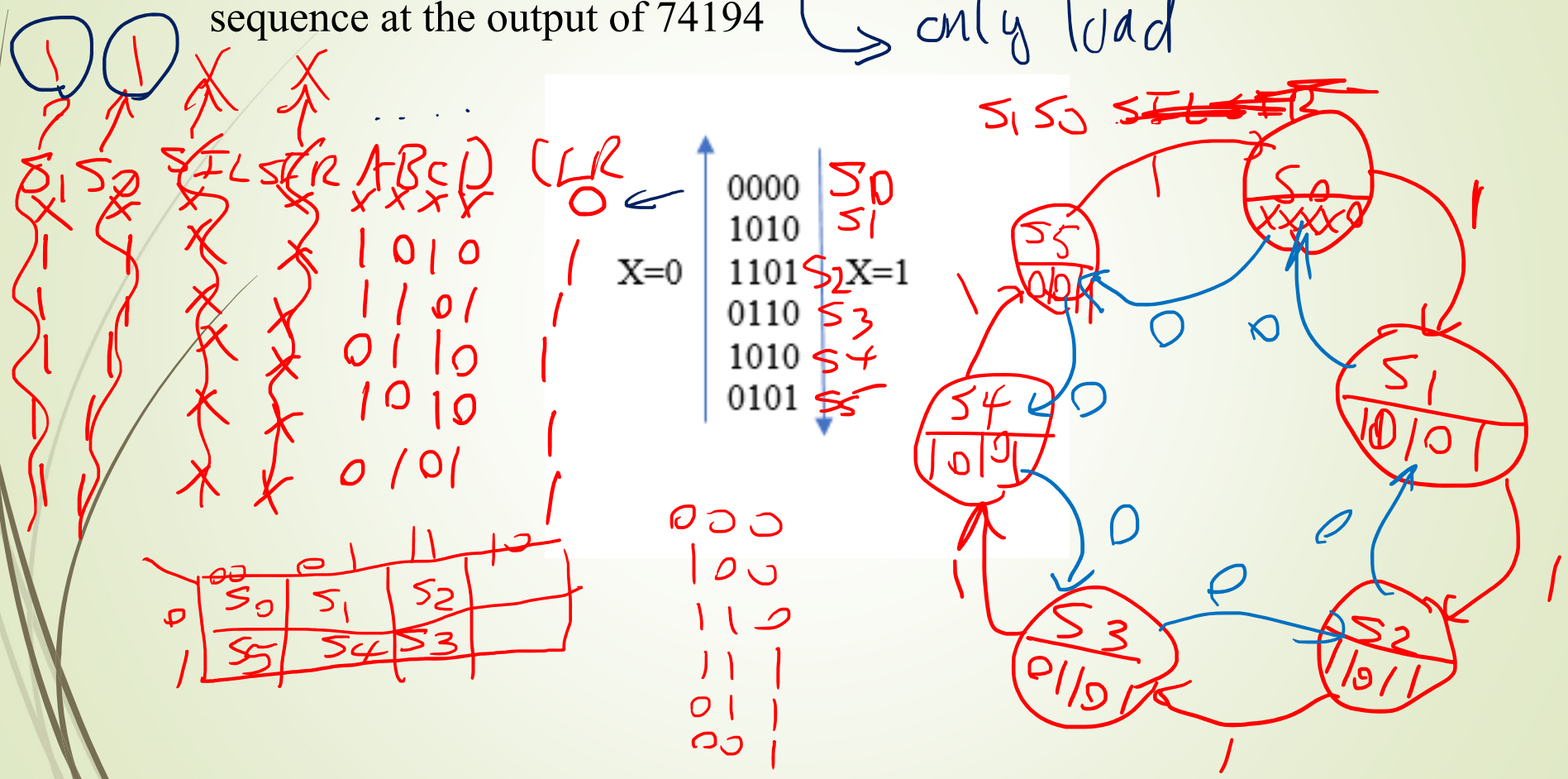
Problem 1

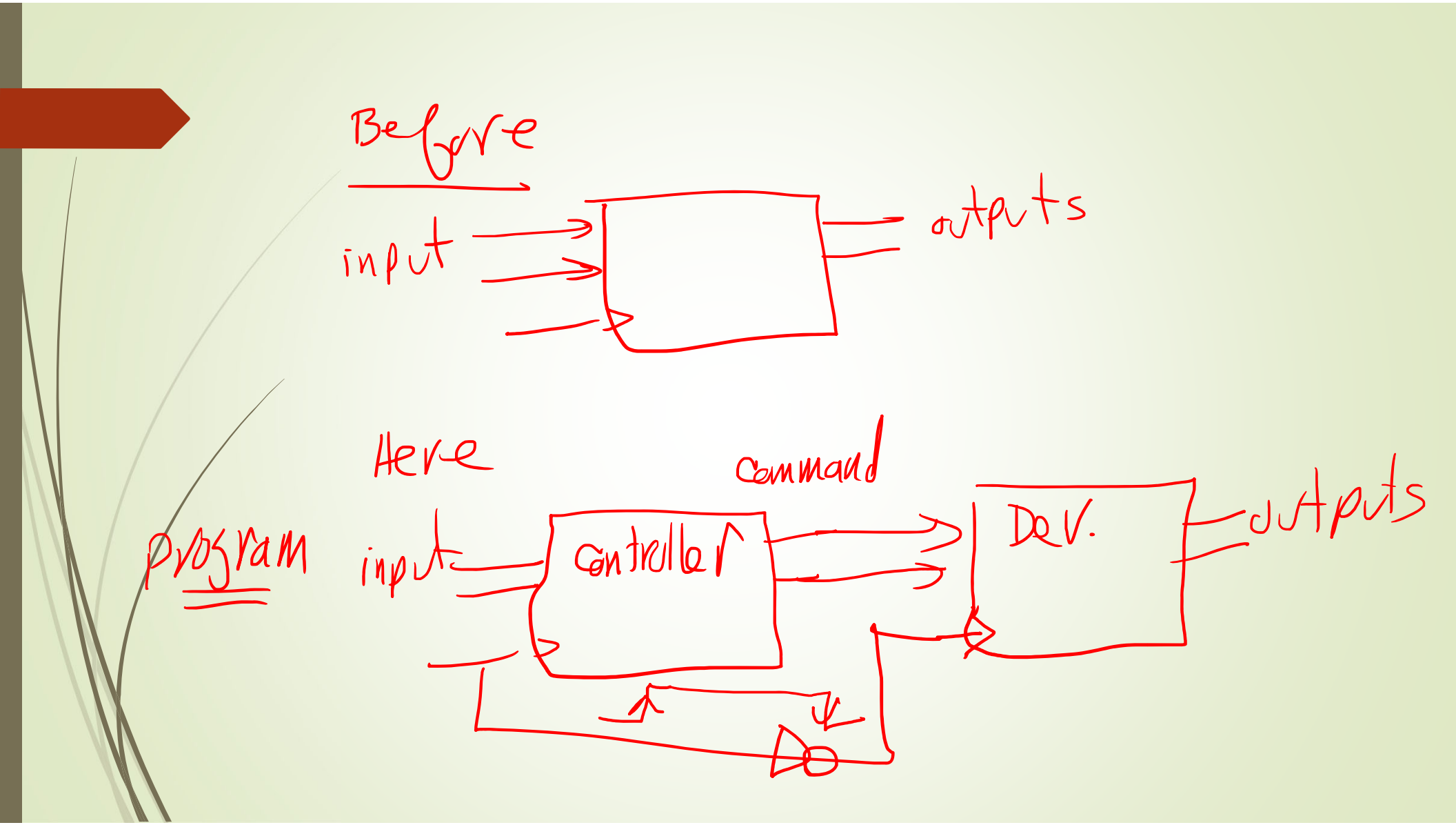
Using D flip-flops, design a Mealy based controller to generate the following sequence at the output of 74194



Problem 2

Using D flip-flops, design a Moore based controller to generate the following sequence at the output of 74194




Before
input
outputs
Here
Program
input
controller
command
DEV.
outputs

Final

- Number systems
- Simplification using K-map
  - SOP, POS, Standard SOP and POS, Min. SOP and POS
- Design of combinational circuits
- Circuit conversion to all NAND or NOR gates
- Multiplexers, Demultiplexers, Decoders, Encoders
- Design of combinational circuits using PLD's

- Latch and flip flops characteristics and excitation tables, design of ripple counters
- Analysis of sequential circuits
- Design of sequential circuits
  - Design using Mealy and Moore model
  - Design of a sequence detector
  - Design of a shift register
  - Design of a controller