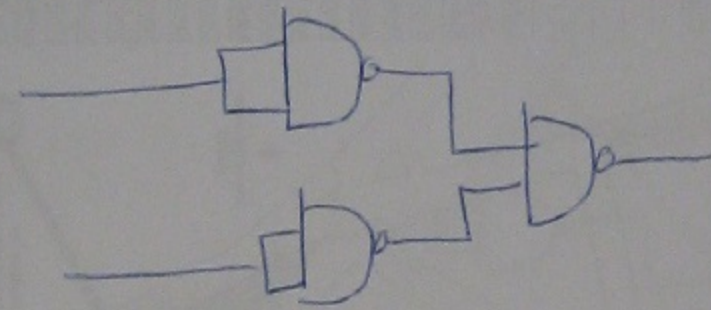
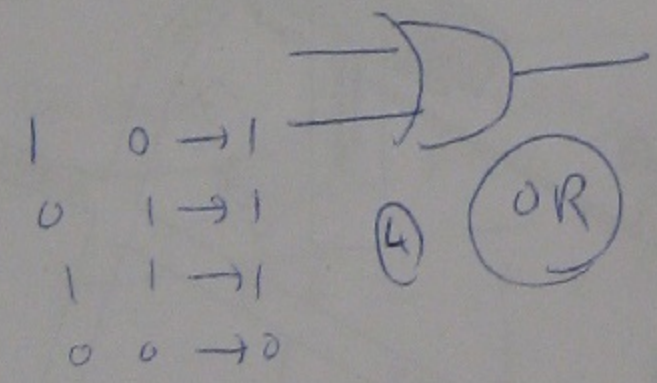


OR

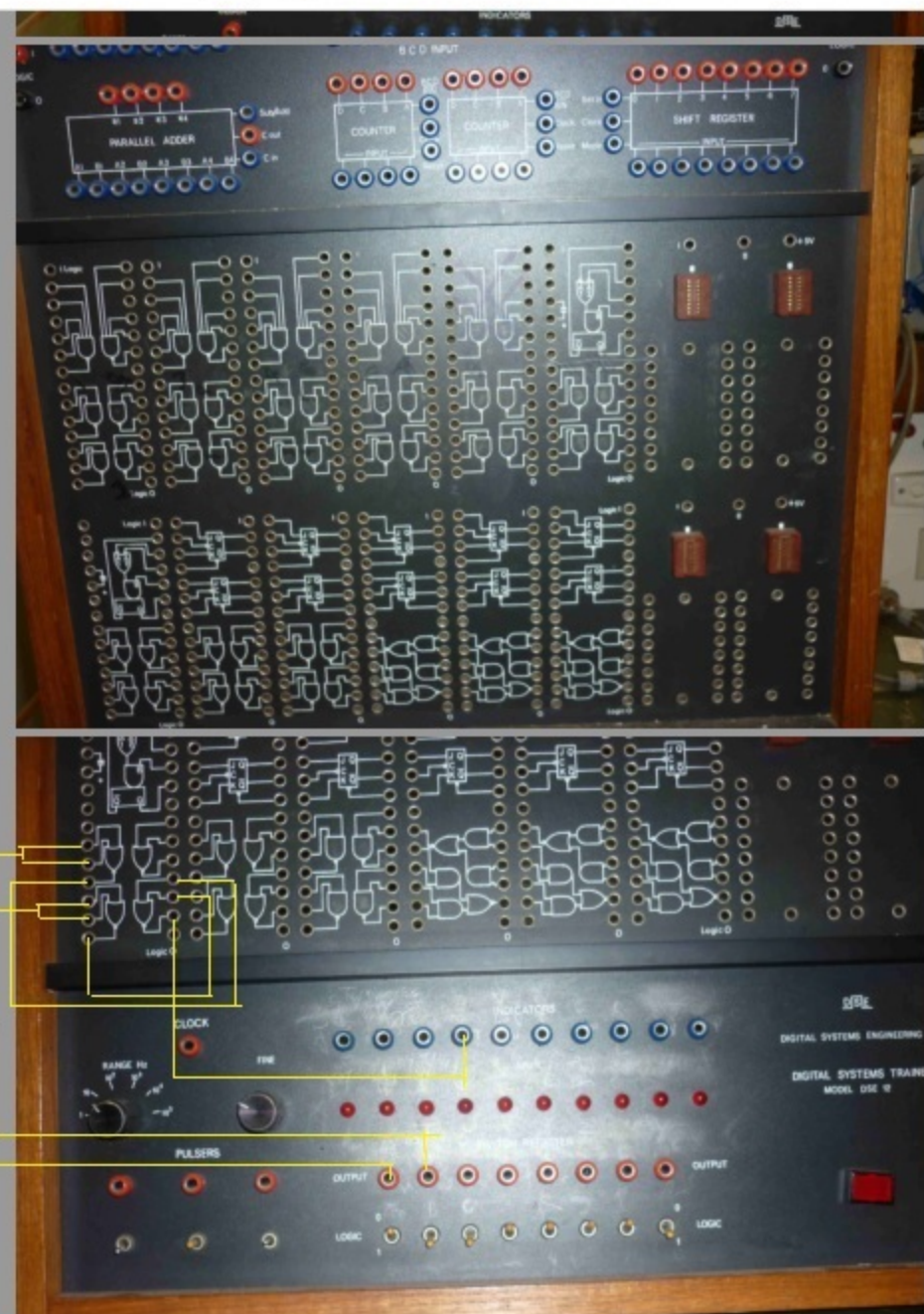


⇔

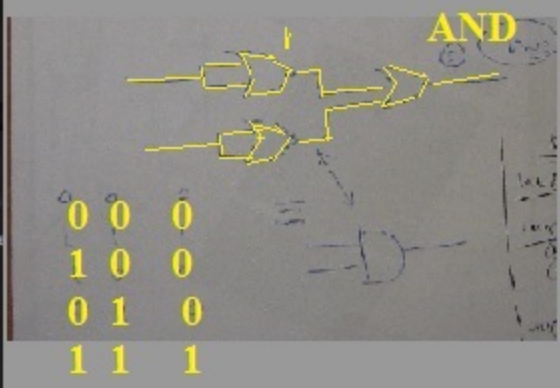


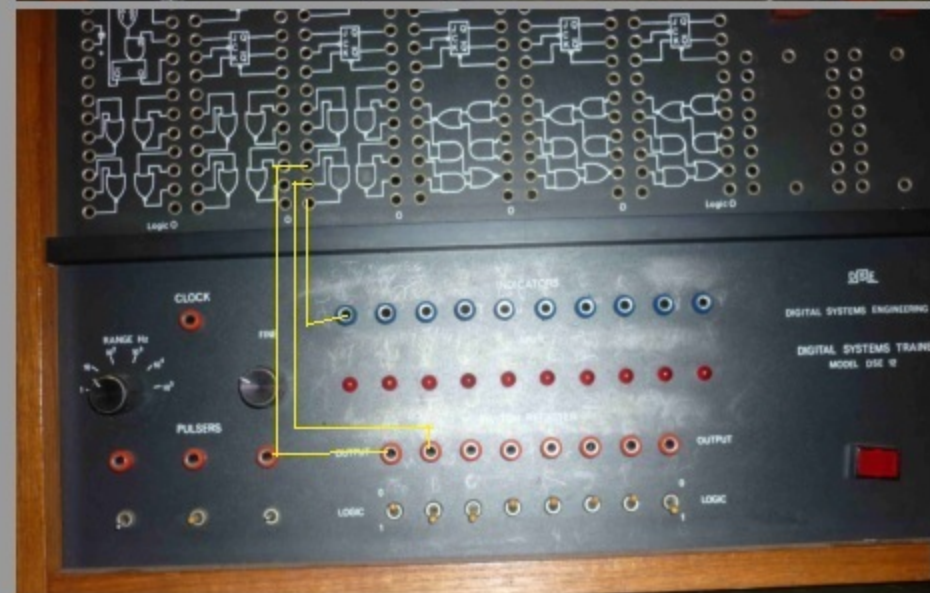
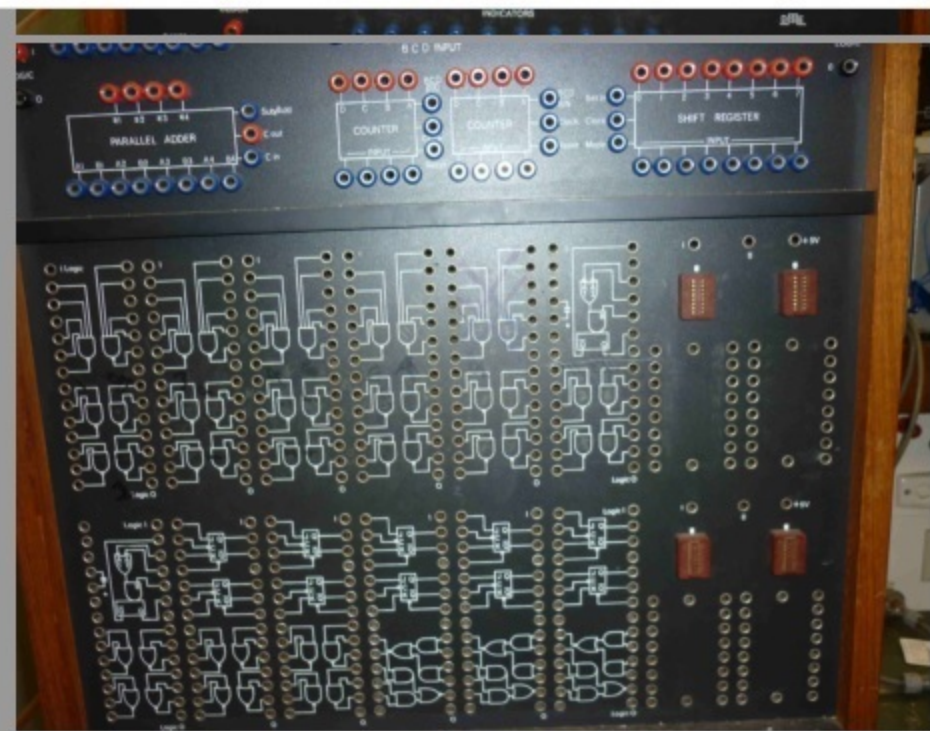
(L) (OR)





AND



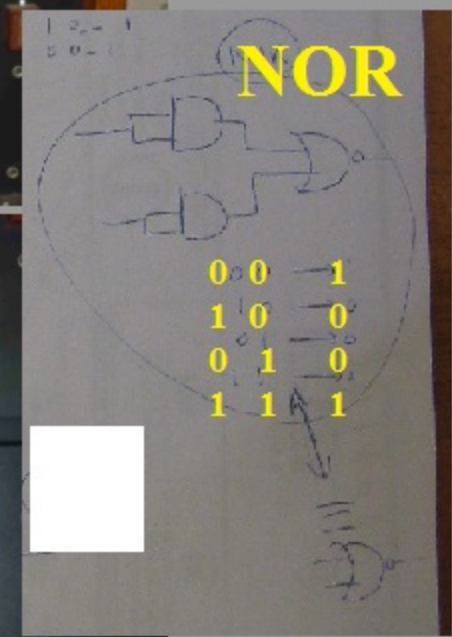
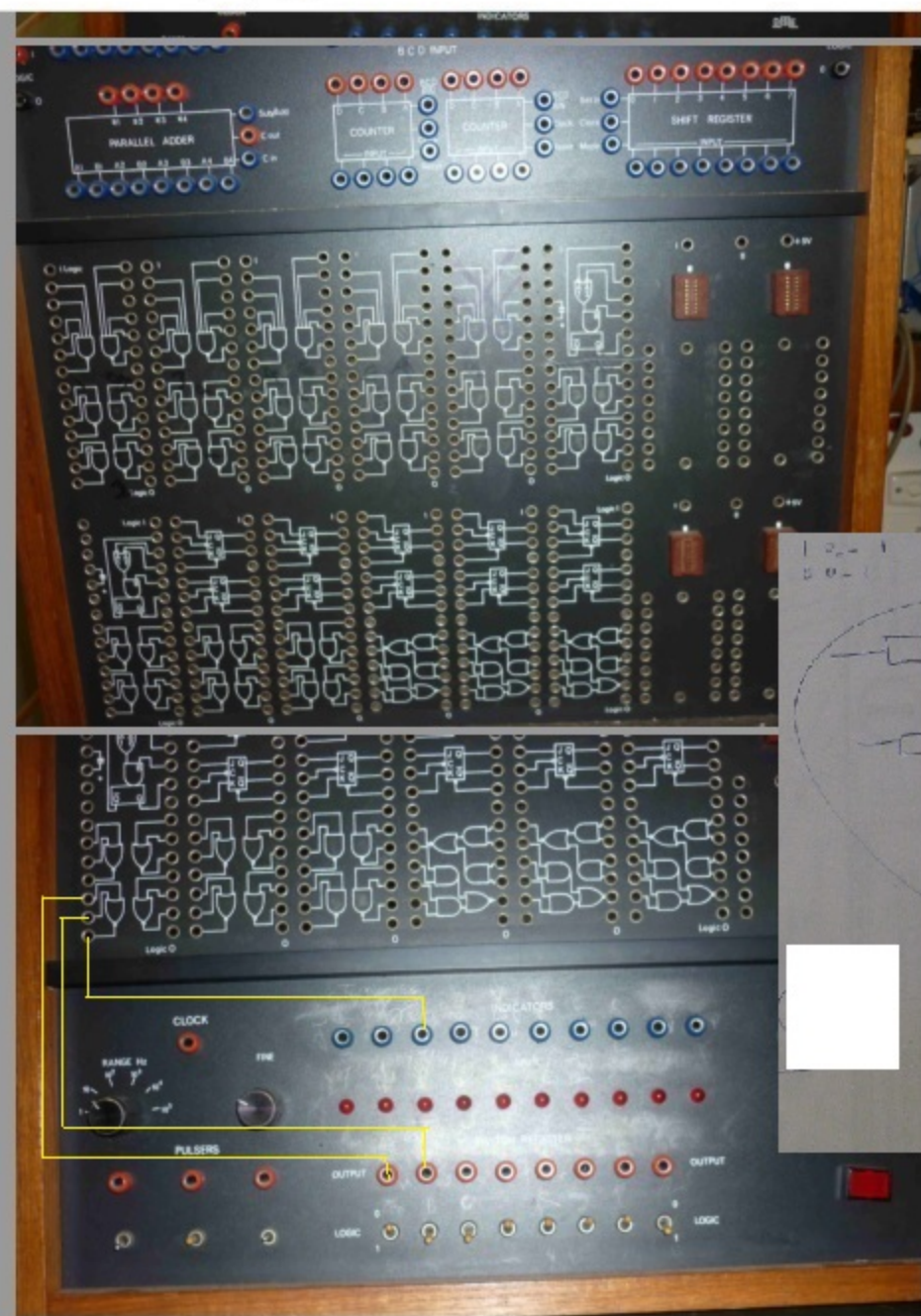


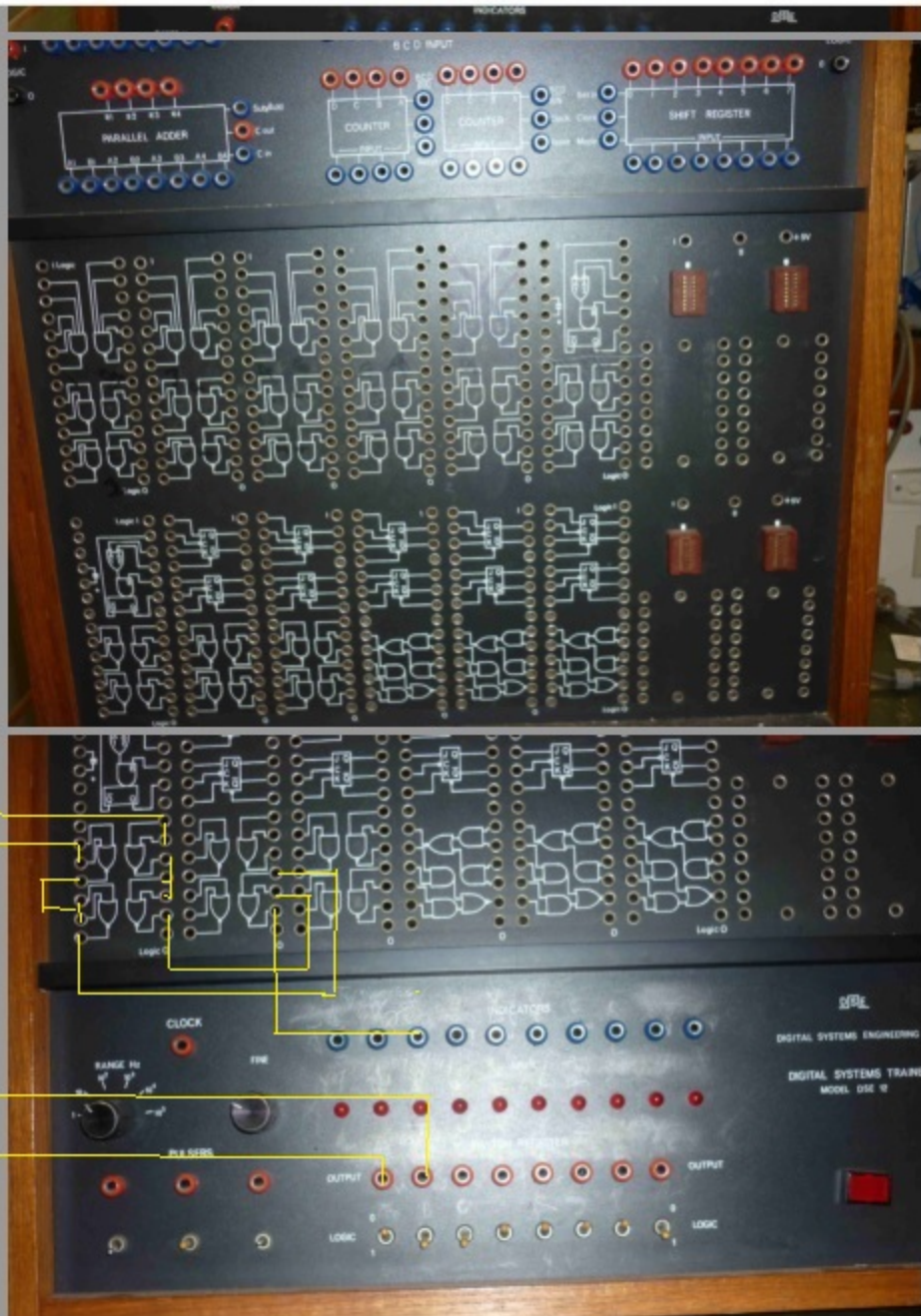
NAND

NAND

1	1	0
0	1	1
1	0	1
0	0	1





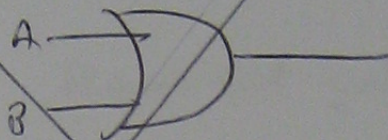




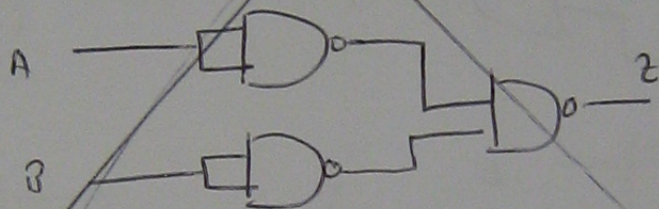
# Lab 2

Prove  $A + A \cdot B + \bar{A} \cdot B = A + B$  Practically

$A + B =$  OR gate



|||



A	B	Z
0	1	1
1	0	1
1	1	1
0	0	0

Then correct

## Lab 2 De Morgan

Practically Prove  $\overline{A \cdot B} = \bar{A} + \bar{B}$

Prove  $\overline{A \cdot B} = \bar{A} + \bar{B}$

$\downarrow$  NAND                       $\downarrow$  NOT                       $\downarrow$  NOT

$I/P = \bar{A} \cdot \bar{B}$   
 Invert 2 I/P  $A \cdot B$   
 O/P =  $A \cdot B$   
 Invert O/P =  $\overline{A \cdot B}$   
 Chase sign  $\bar{A} + \bar{B}$

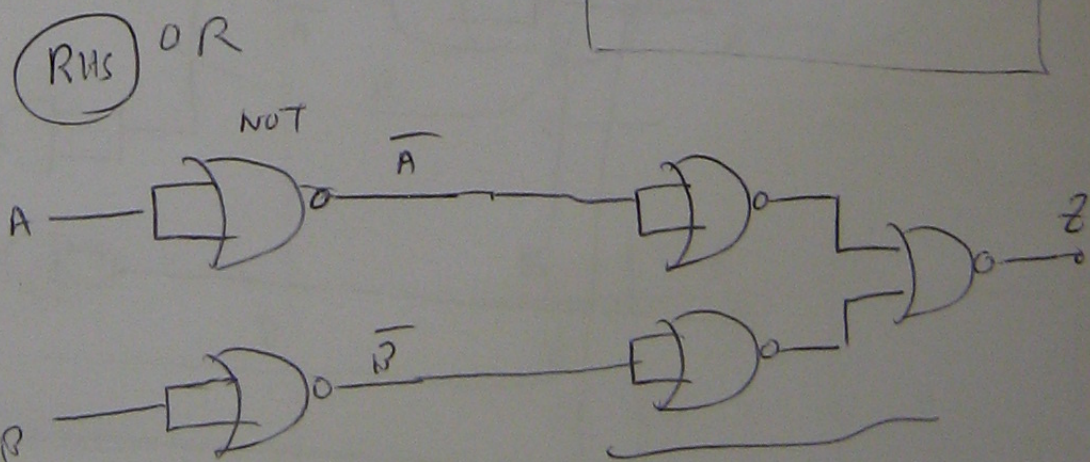
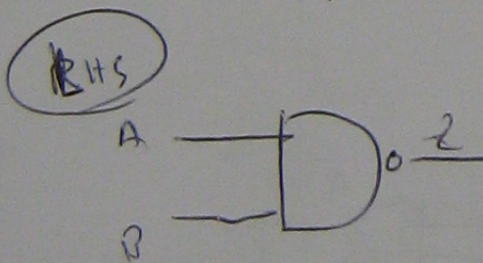


Table (1)

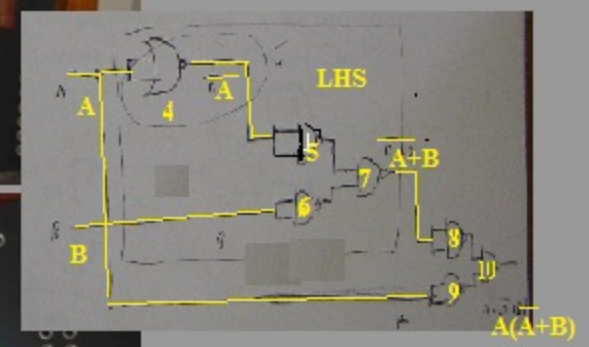
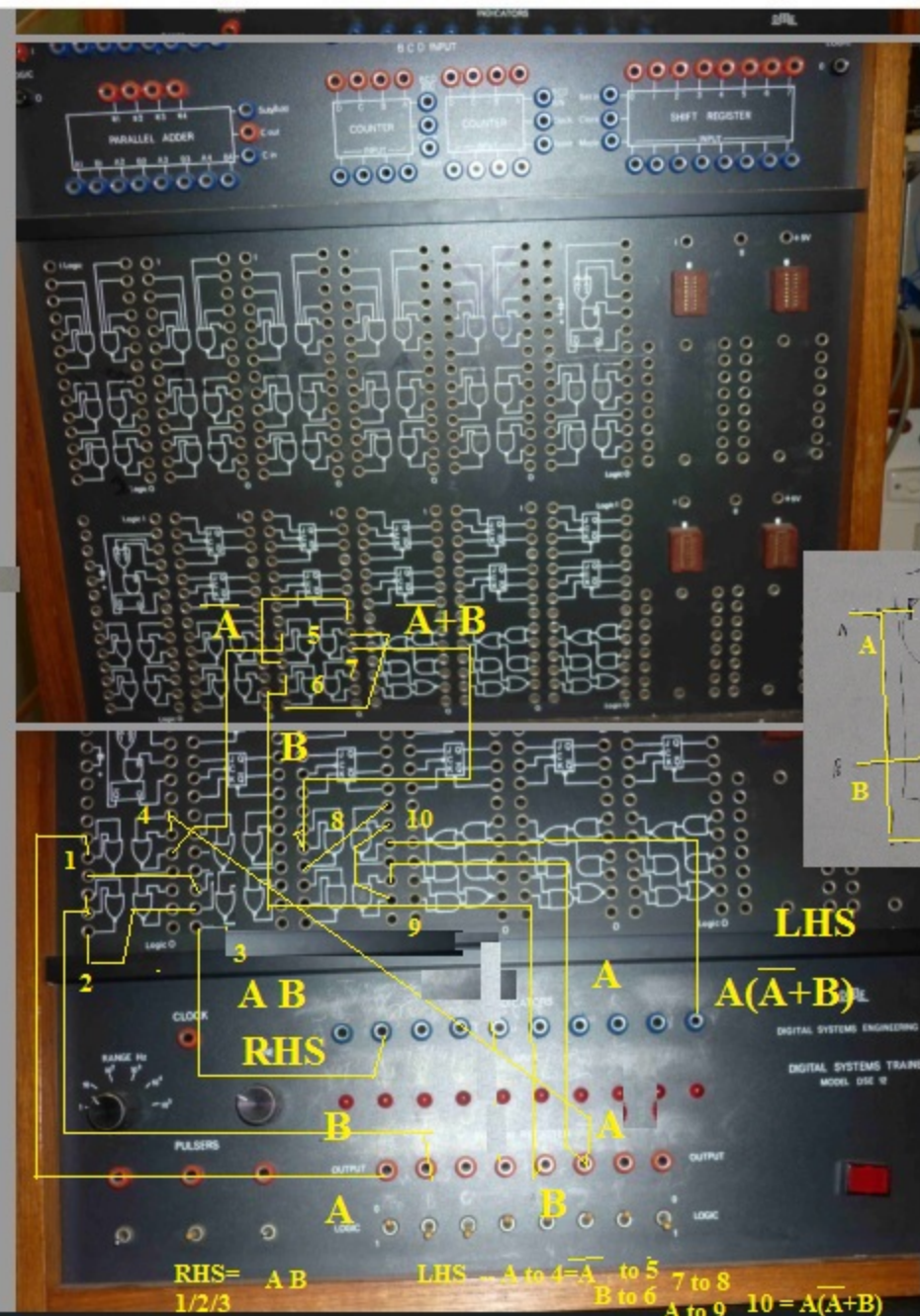
A	B	Z
1	0	
0	1	
0	0	
1	1	

Table (2) AND

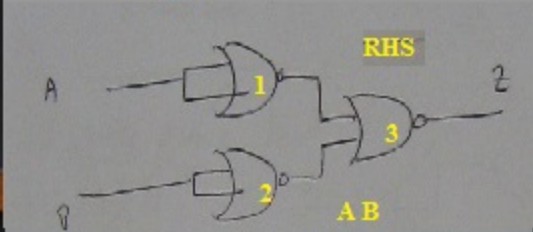
A	B	Z
1	0	
0	1	
0	0	
1	1	

compare Table (1) & (2)





$$\begin{aligned}
 A B &= A \cdot (\bar{A} + B) \\
 &= A \cdot \bar{A} + AB \\
 &= 0 + AB \\
 &= AB
 \end{aligned}$$



RHS =  $A B$       LHS = A to 4 =  $\bar{A}$  to 5    7 to 8  
 1/2/3                    B to 6    A to 9    10 =  $A(\bar{A} + B)$



Lab 3

Boolean Algebra

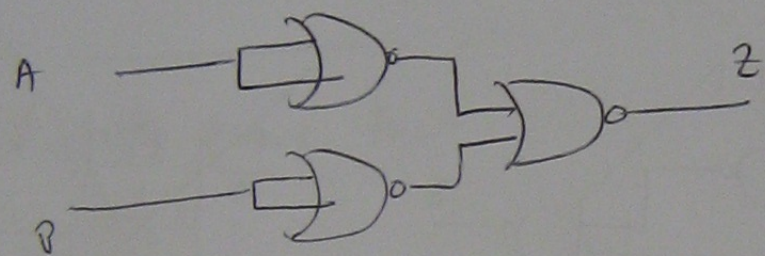
Practically prove  $A \cdot (\bar{A} + B) = AB$

Calculation  $A \cdot (\bar{A} + B) = A \cdot \bar{A} + AB = 0 + AB = AB$

RHS  
 $AB = \underline{\underline{\text{AND gate}}}$

Table 1

A	B	Z
1	0	
0	1	
1	1	1
0	0	0



LHS

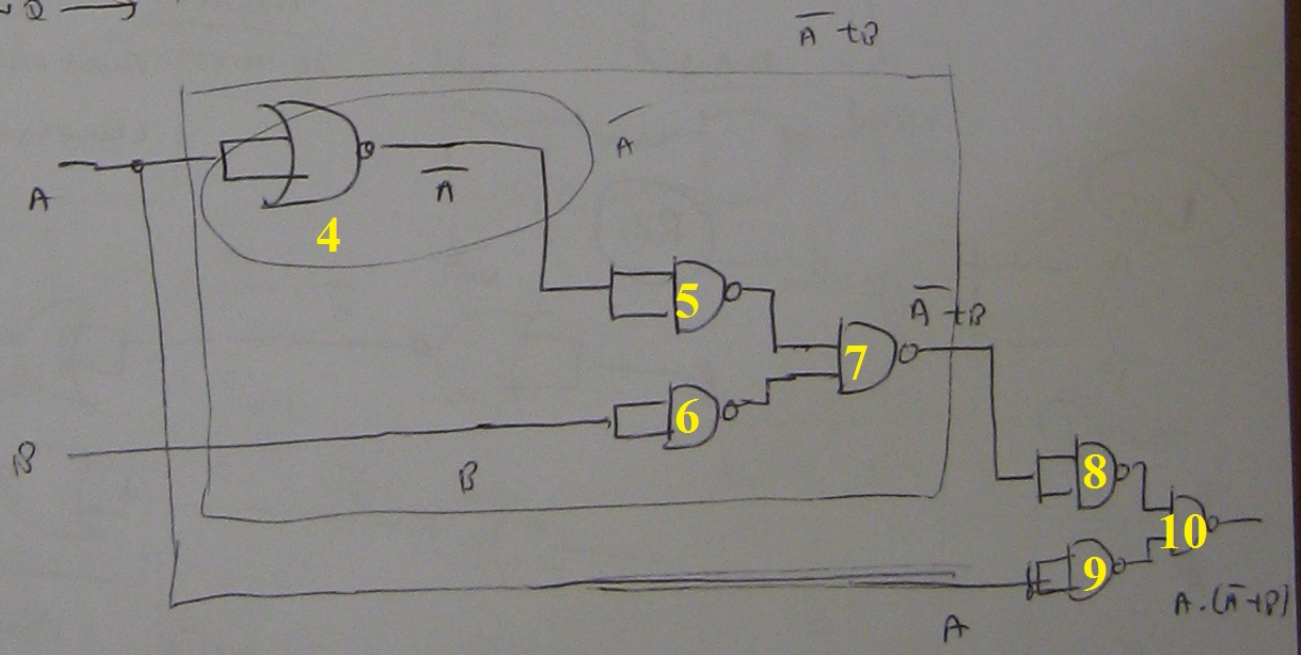
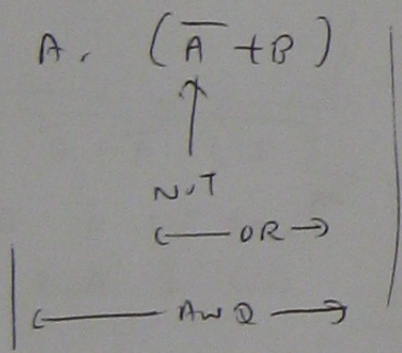


Table 2

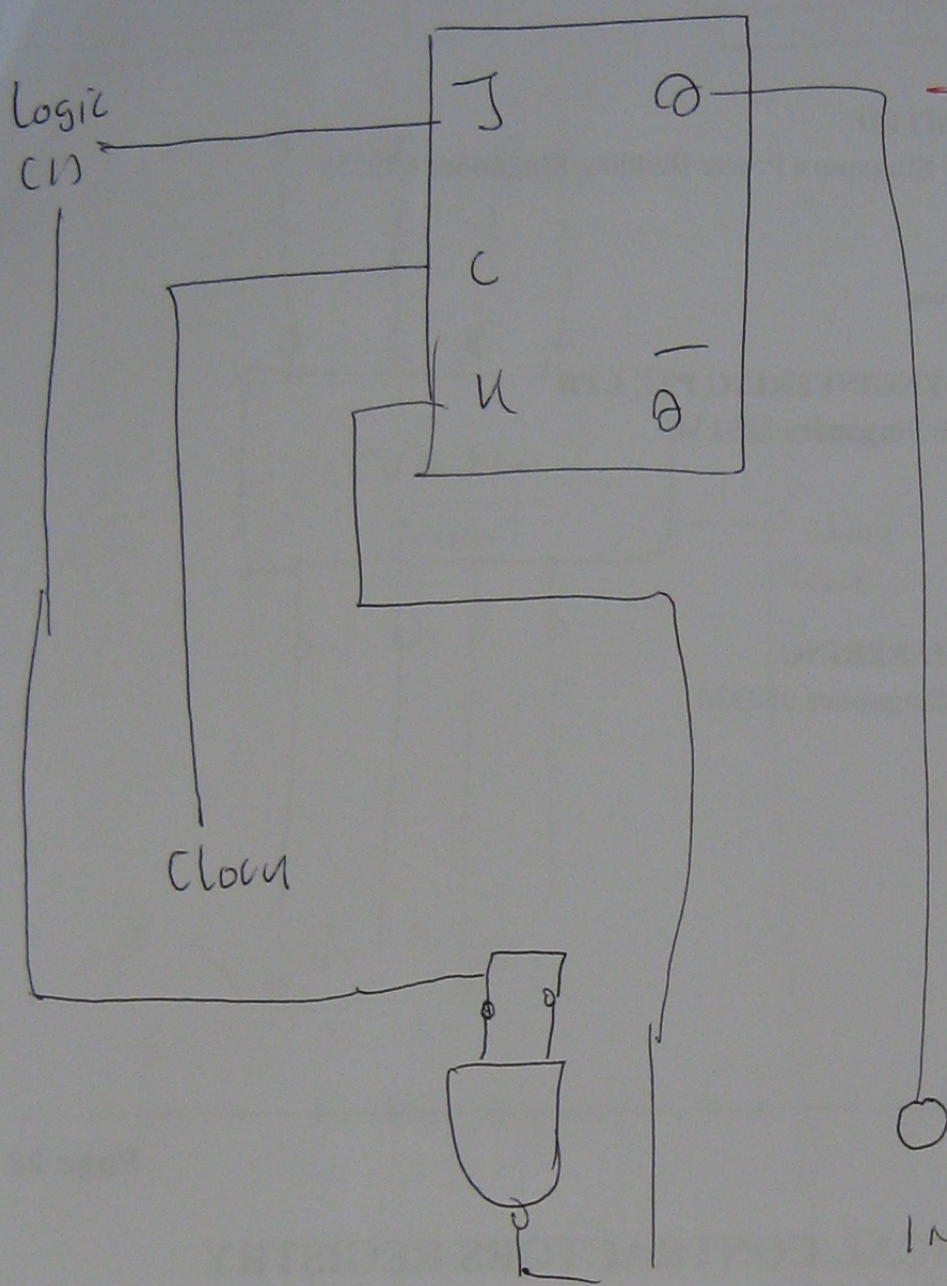
A	B	Z
1	0	
0	1	
1	1	1
0	0	0

Compare Table 1 & 2



# DIGITAL TRAINER

## DIGITAL (2) ELECTRONICS



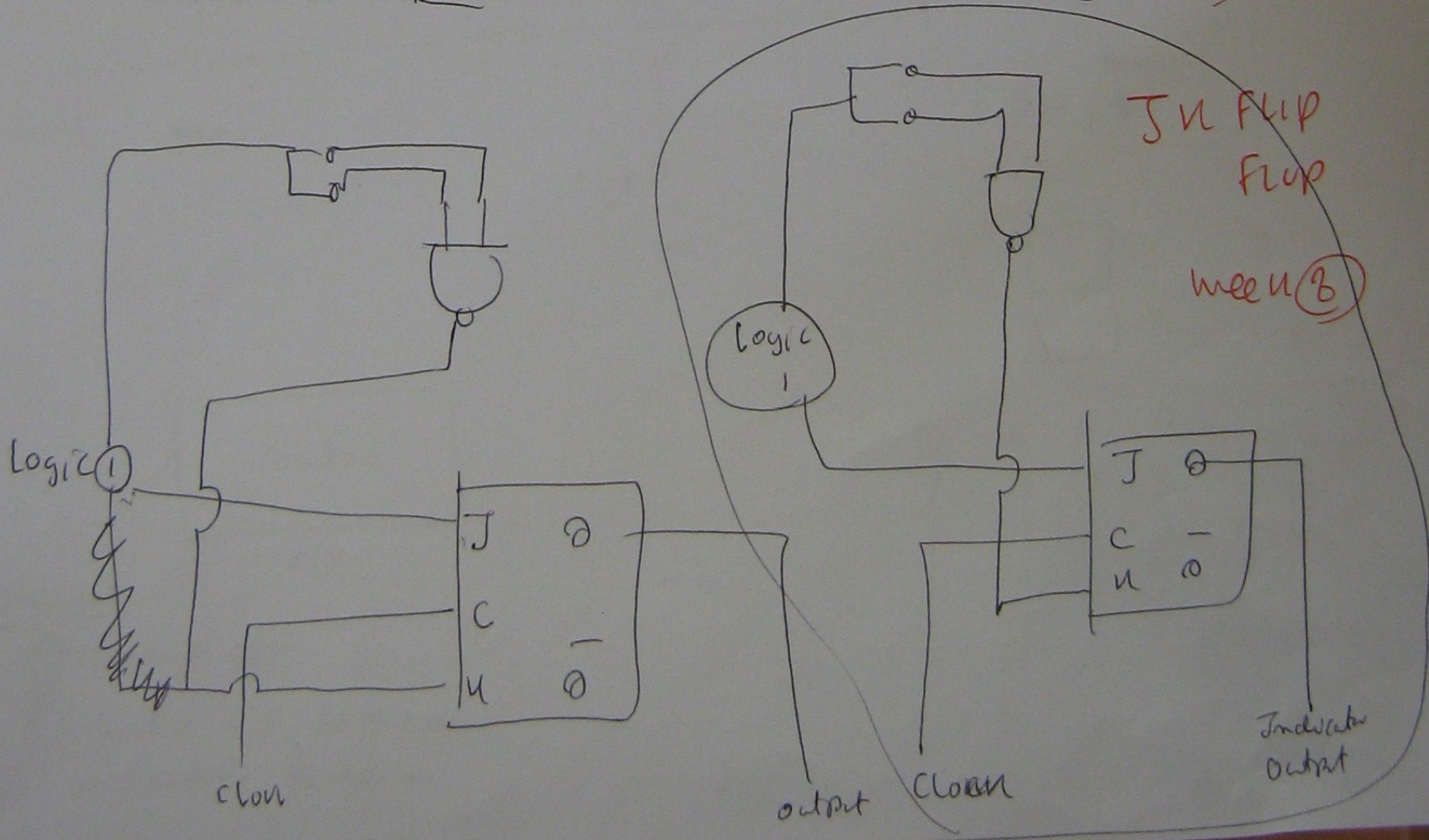
- Procedure
- 1) connect the given circuit
  - 2) pass the truth table

I/P		O/P	
CLK	J K	Q	Q̄
↓	L L		
↓	H L		
↓	L H	obscure	
↓	H H	Q̄	Q

(LAB 2) week 8

INDICATOR

G man



J-K FLIP FLOP

week 8

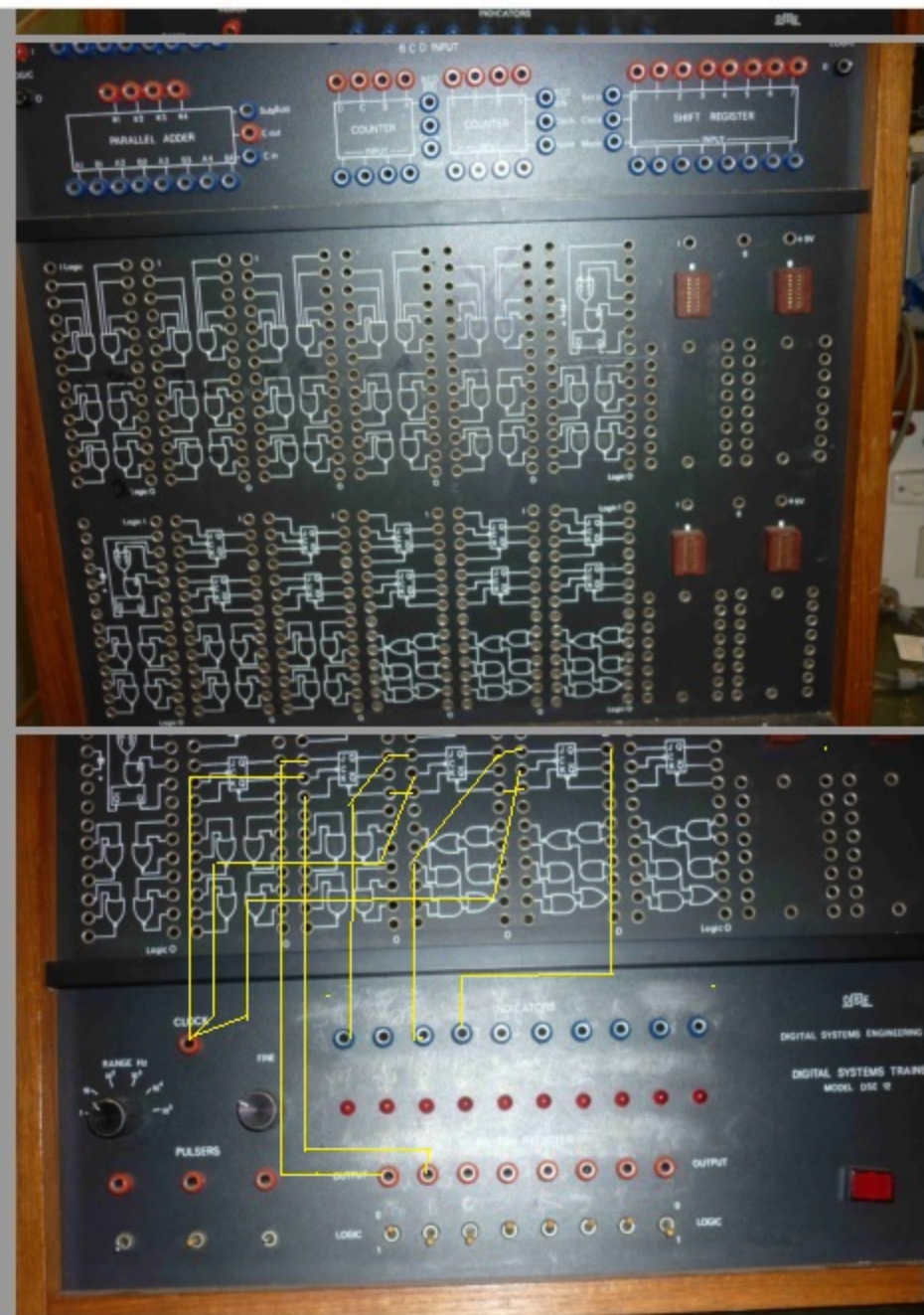
clock

output

clock

Indicator Output



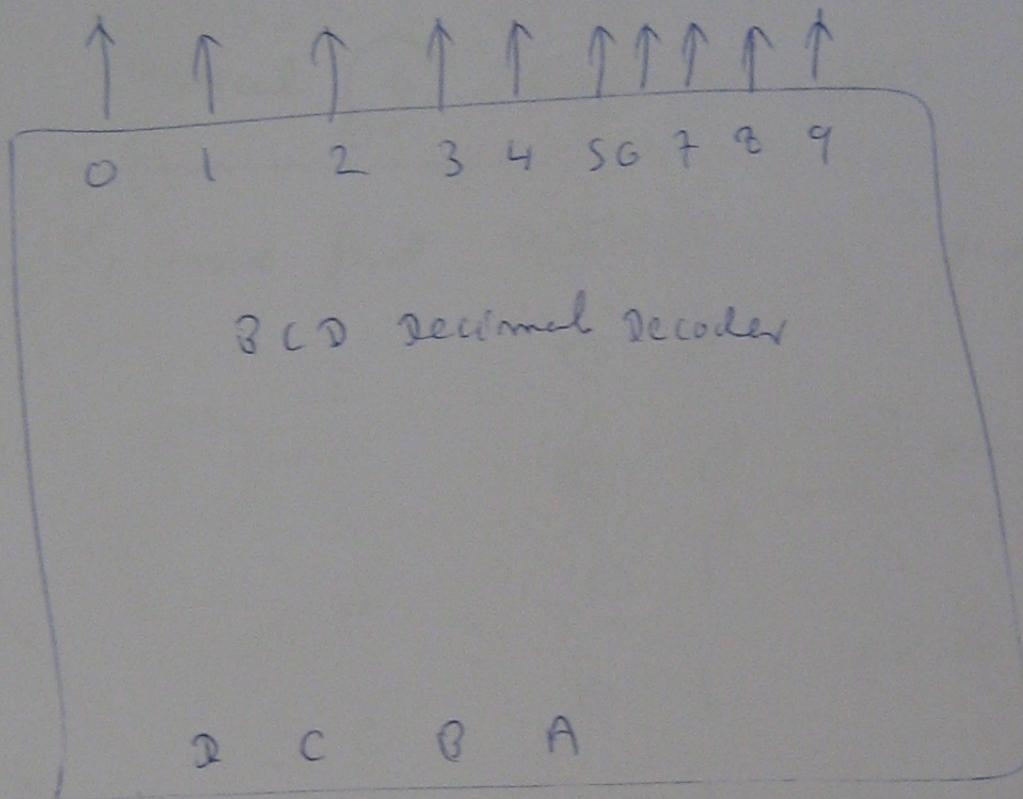




# BCD Decimal Encoder

DE1 Lab 5

LEDS



A	B	C	D	
0	0	0	0	0 no. →
1	0	0	0	1 no. →
1	1	0	0	3 no. →
1	1	1	0	7 no. →
1	1	1	1	8 no. →
0	1	0	0	2 no. →
0	1	1	0	6 no. →
0	1	1	1	4 no. →
0	0	1	0	5 no. →

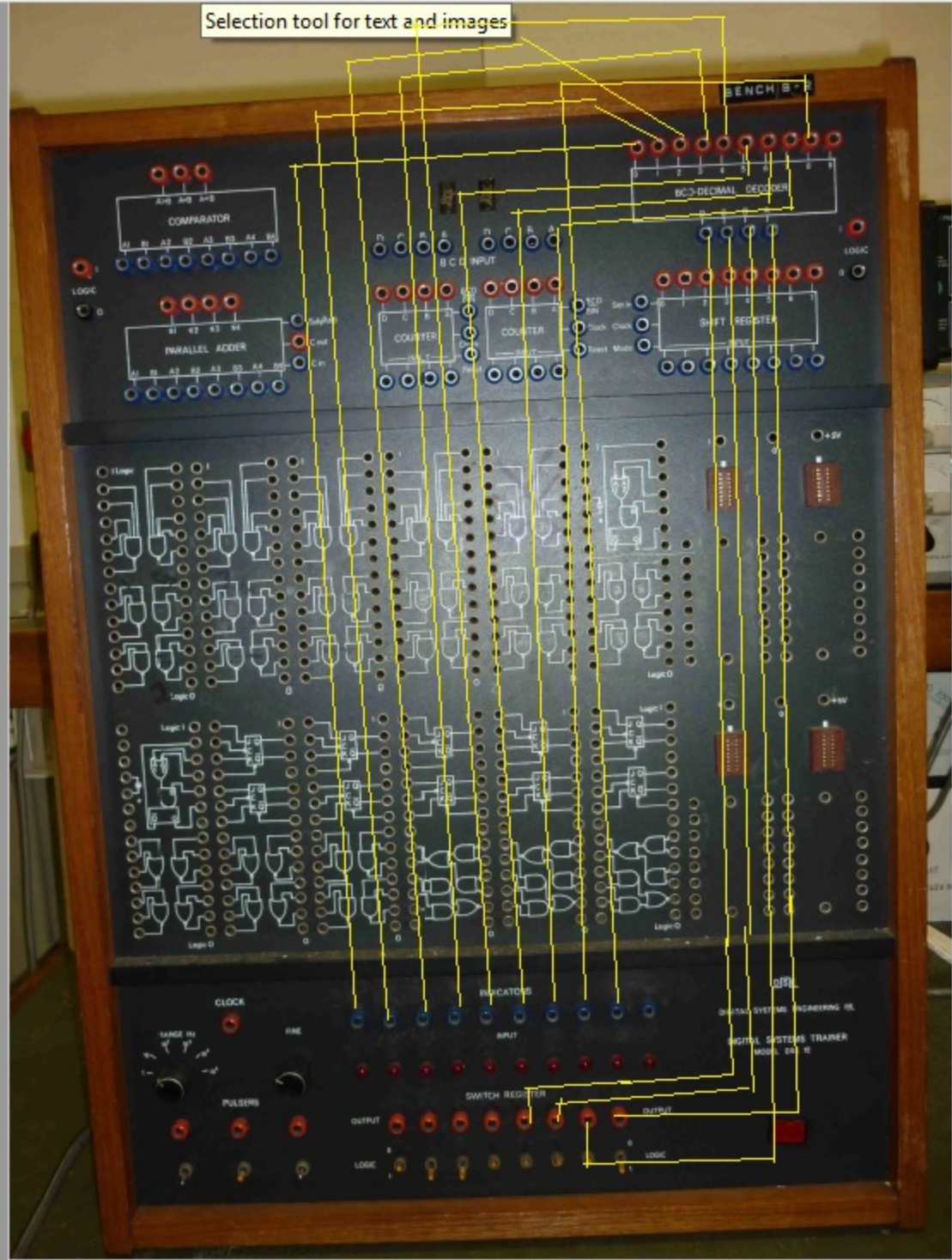
A	B	C	D	
1	0	1	0	→ 5
1	0	0	0	→ 1
0	1	0	1	→ 6
0	0	1	0	→ 4
0	0	1	1	→ 5
0	0	0	1	→ 3
1	0	0	1	→ 9



A	B	C	D	
0	0	0	0	0
1	0	0	0	1
0	1	0	0	2
1	1	0	0	3
0	0	1	0	4
1	0	1	0	5
0	1	1	0	6
1	1	1	0	7
0	0	0	1	8
1	0	0	1	9



Selection tool for text and images



Search Tools...

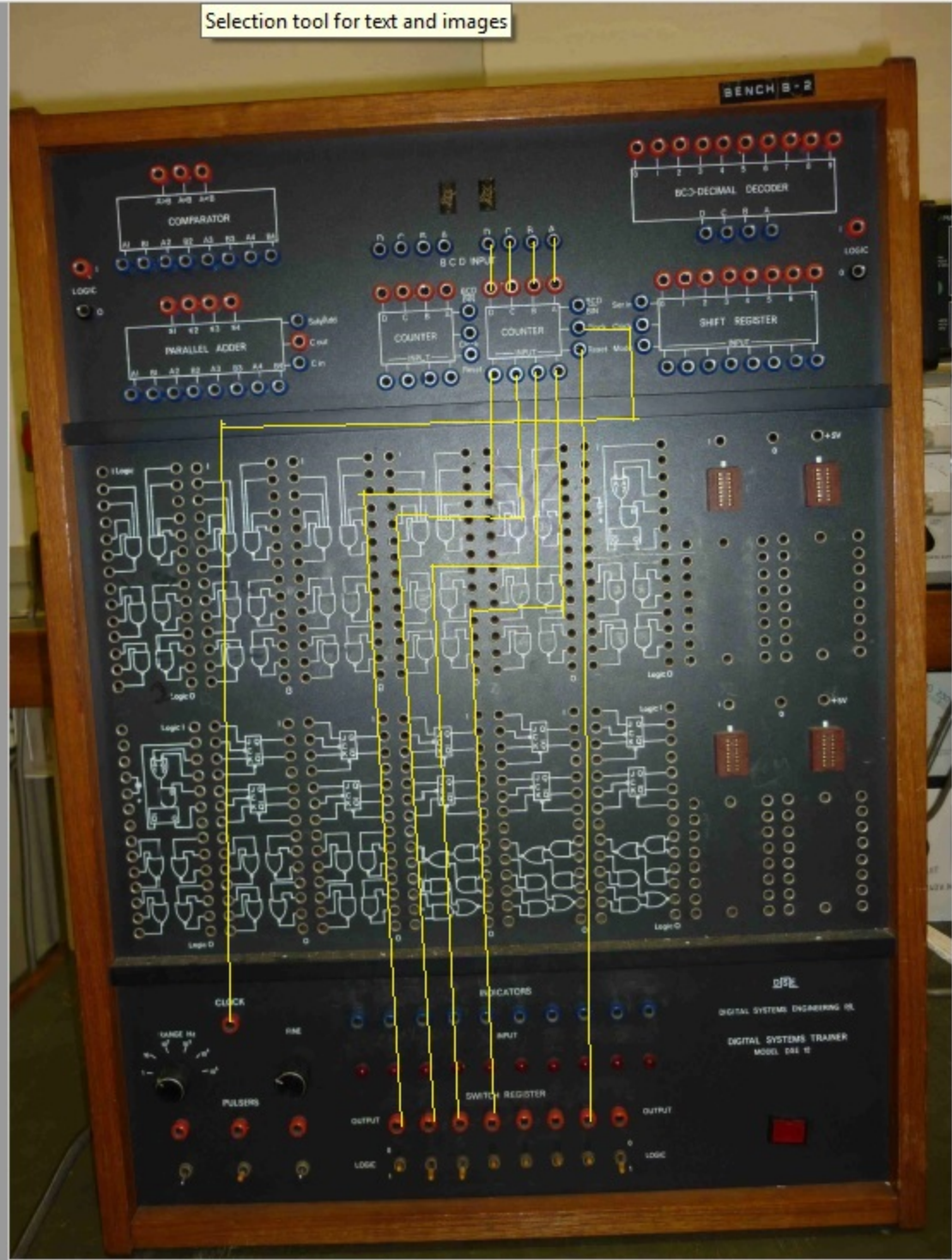
- Create PDF
- Edit PDF
- Export PDF
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- Organize Pages
- Enhance Scans
- Protect
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- Prepare Form
- Send for Signature
- Send & Track

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Selection tool for text and images



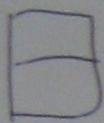
Search Tools...

- Create PDF
- Edit PDF
- Export PDF
- Comment
- Organize Pages
- Enhance Scans
- Protect
- Fill & Sign
- Prepare Form
- Send for Signature
- Send & Track

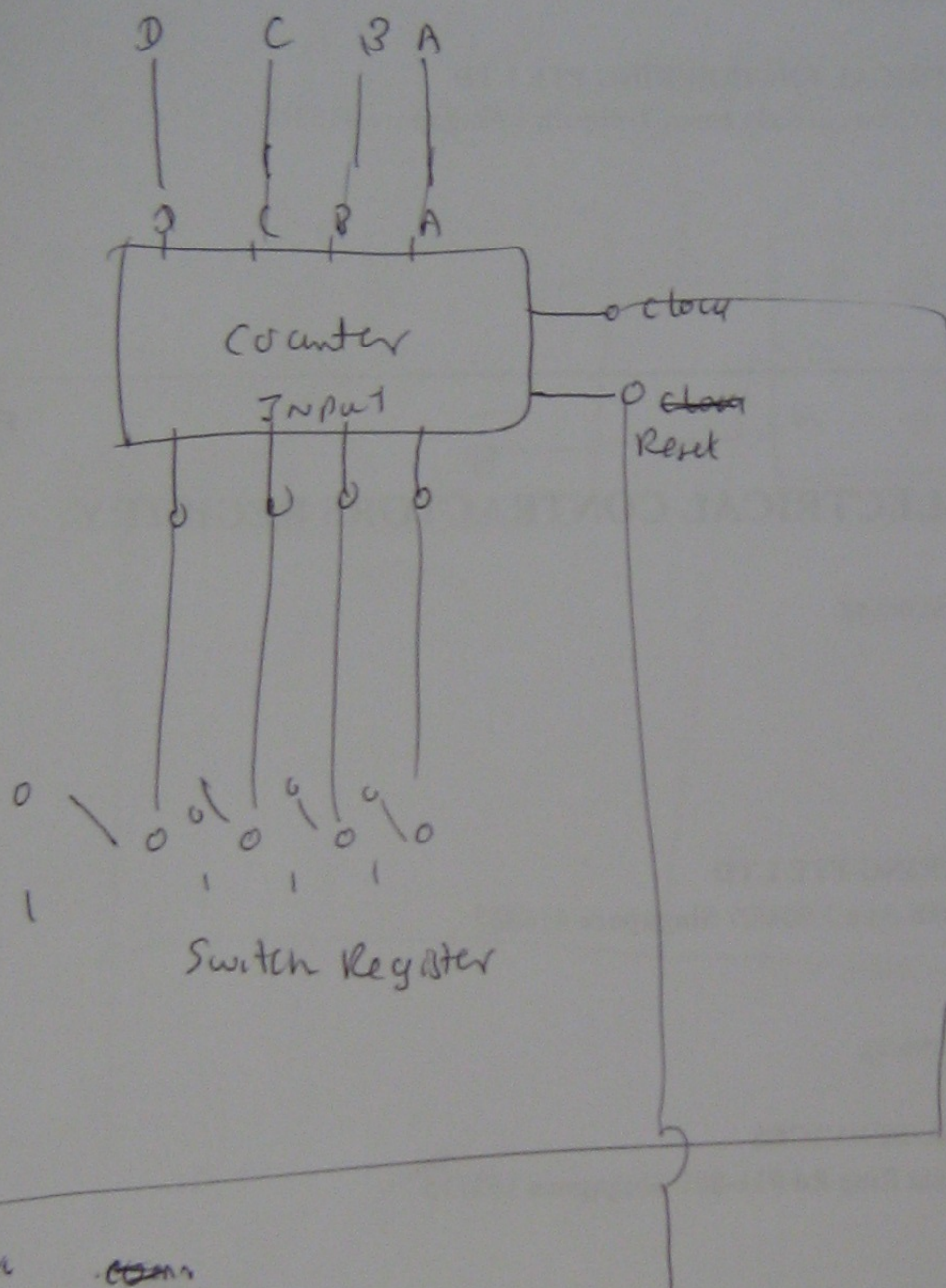
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LAB(3)



DIGITAL TRAINER



1-2-3 4-5-6-7  
-8-9-0

Week 10 Practical 3  
Count

~~Shift Register~~

Counter

- connect ckt

- put Reset = 1  
clock In

Switch ZIP what happens to  
o/p number

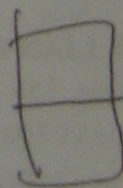
Then put Reset = 0, what happens

Reset 1 → 0 → 9

Reset 0 → 0

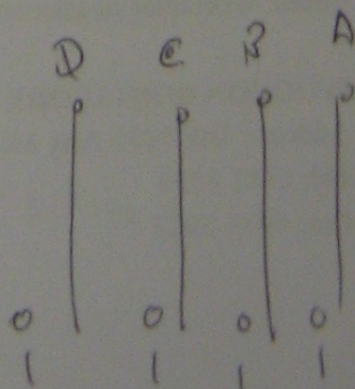
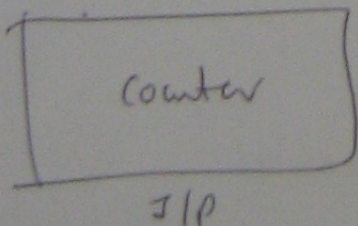
LAB(4)

7 segment  
display



Week 4/5

Practical  
Count



By switches 0 1 2 3 4 5 → 9  
clock

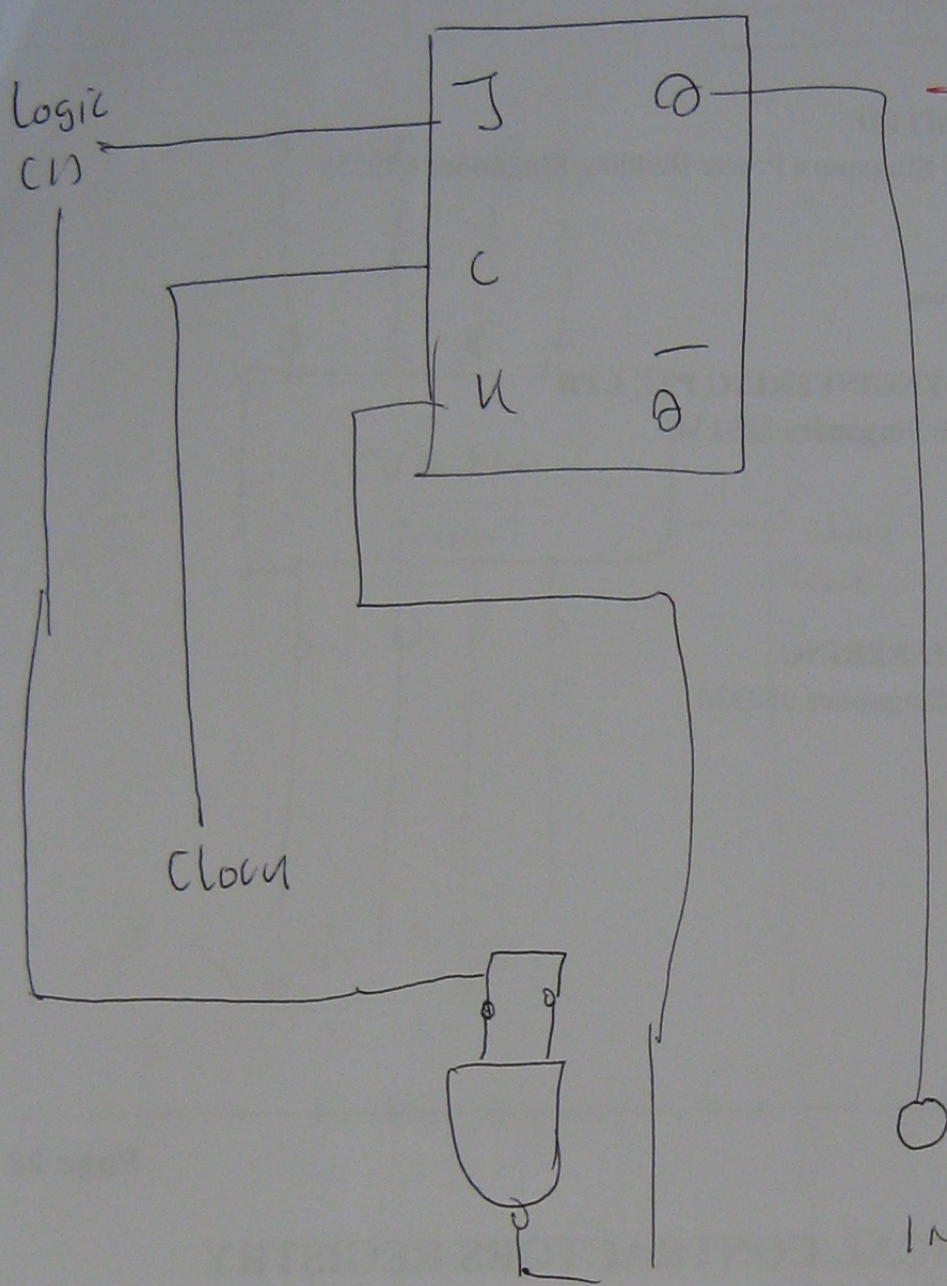
Procedure

- ① connect ckt
- ② switch ZIP to A B C  
what happens to number



# DIGITAL TRAINER

## DIGITAL (2) ELECTRONICS



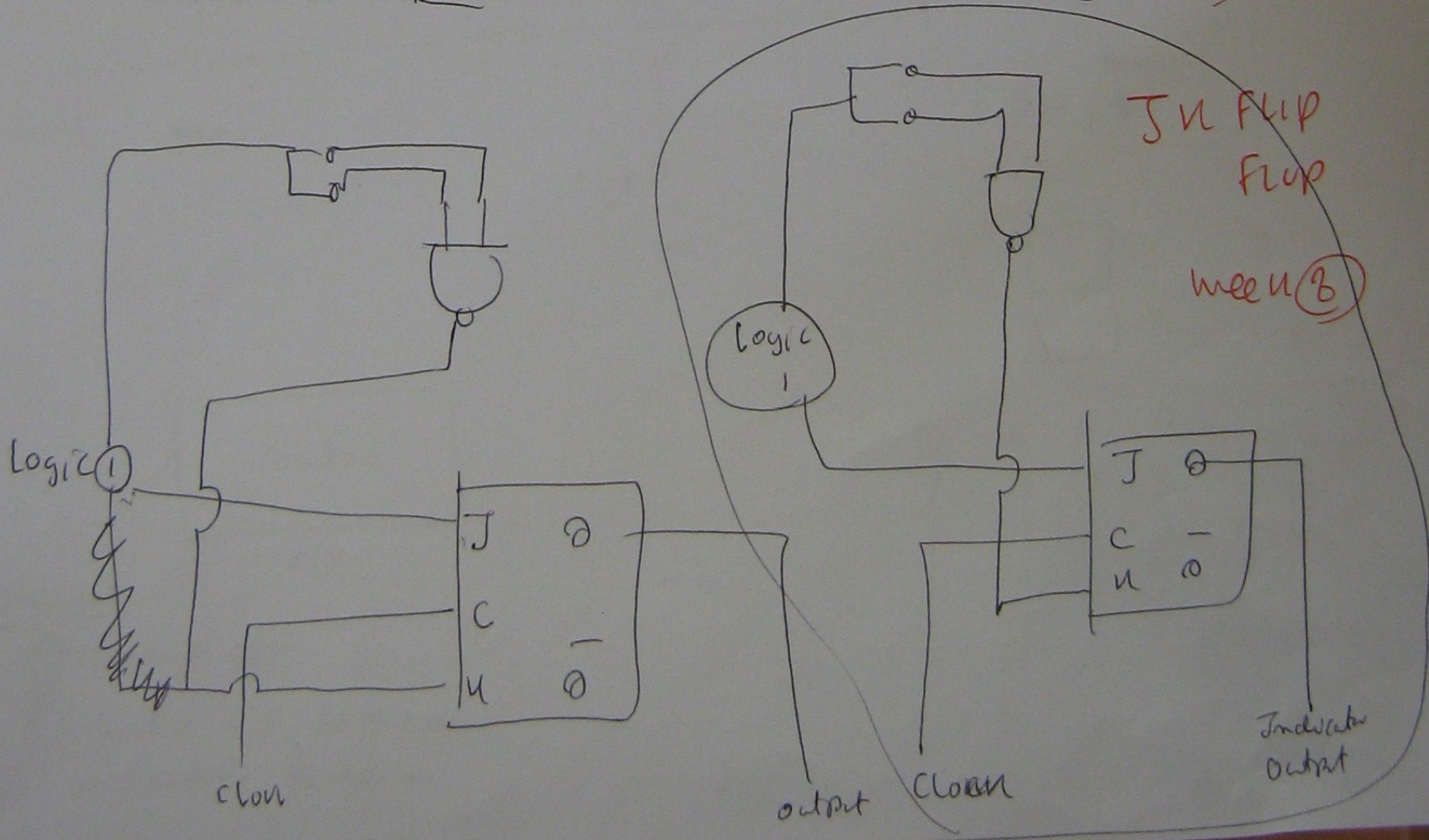
- Procedure
- 1) Connect the given circuit
  - 2) Pass the Test Table

I/P		O/P	
CLK	J K	Q	$\bar{Q}$
↓	L L		
↓	H L		
↓	L H	Observe	
↓	H H	Q	$\bar{Q}$

LAB (2) week (2)

INDICATOR

G man



J-K FLIP FLOP

week (2)

Logic (1)

Logic 1

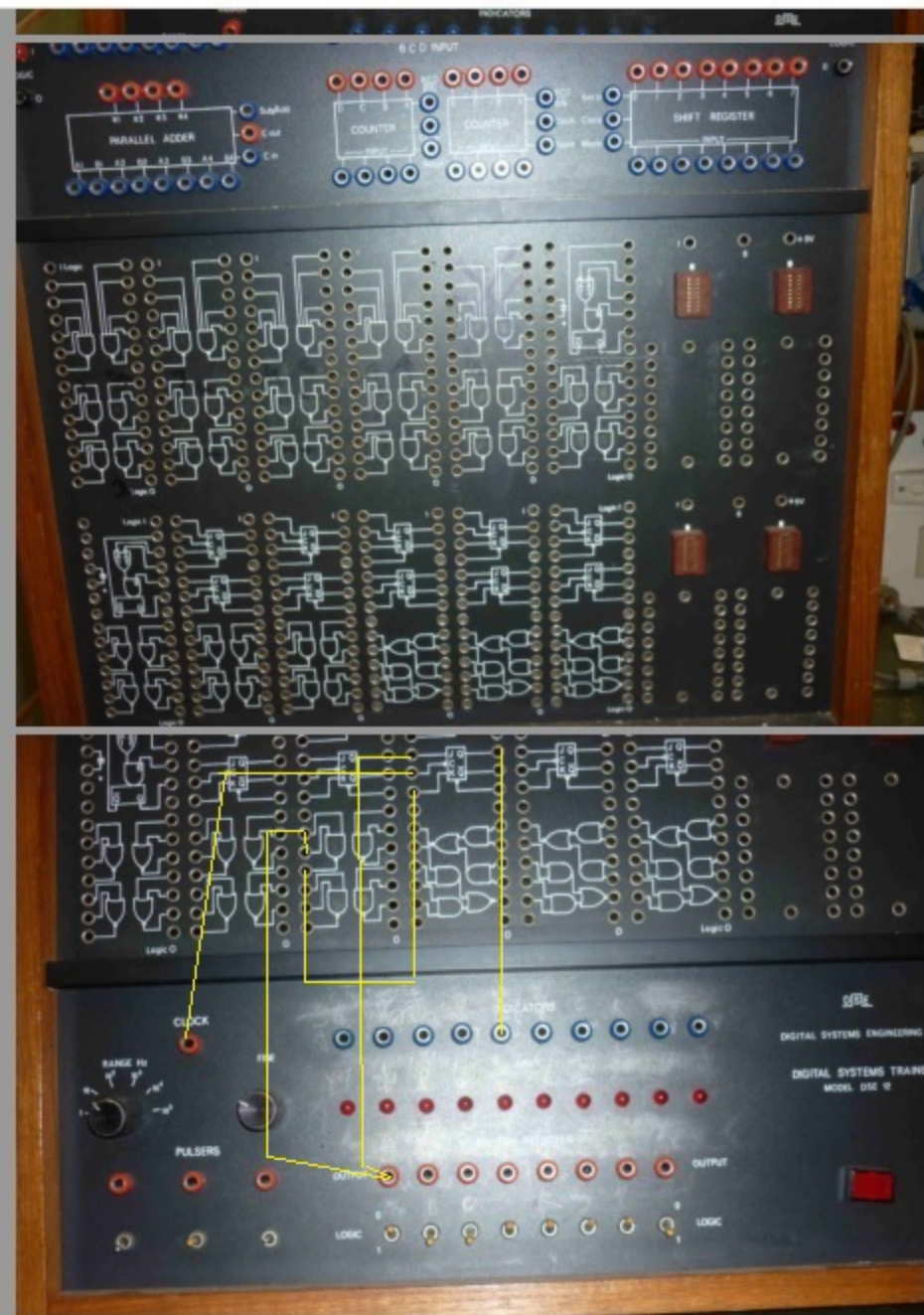
clock

output

clock

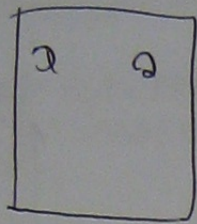
Indicator Output



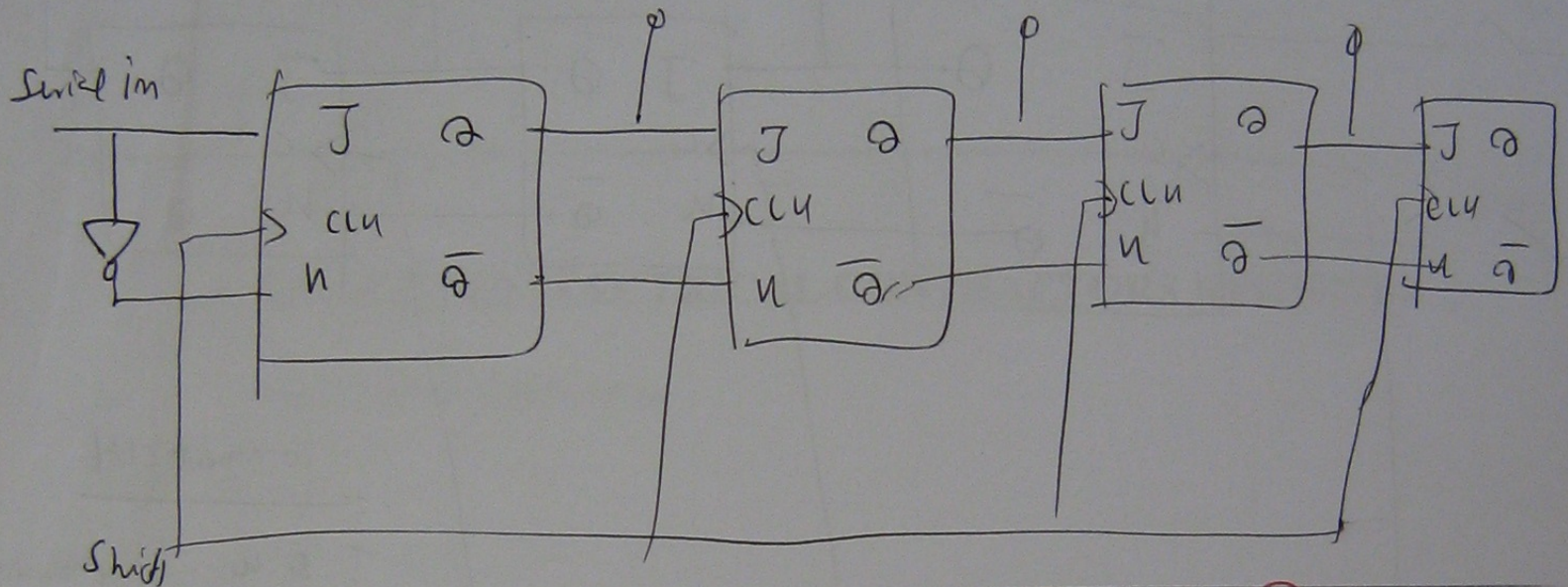




# SHIFT Register

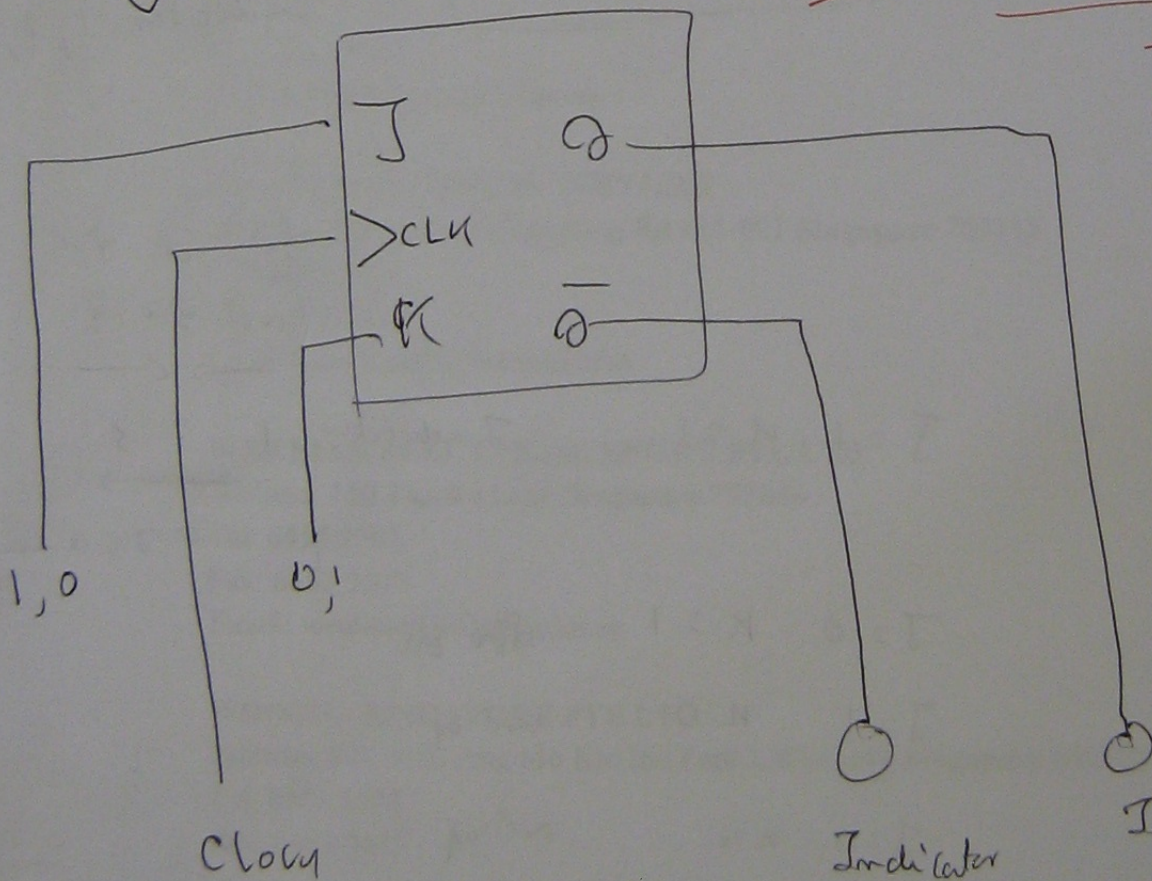


parallel out



FLIP / FLOP

LAB (5) week 8



JK FLIP FLOP

connect out

J, K IP provide what a clock IP what happens to  $Q$  &  $\bar{Q}$

$J=1, K=1$

$Q$  &  $\bar{Q}$  a 74.0 ~ 0

$J=0, K=1, \bar{Q}=1$  (0)

$J=1, K=0, Q=1$

$J=0, K=0 \rightarrow Q=1$



