Matching — Gavin Mulay

A. [illegible] parallelism
B. Embedded computer
C. Transistor
D. Moores' Law
E. Demands Scaling
F. Speedup
G. throughput
H. control Signal
I. Bench mark
J. speculative execution

2. Exa - 10^{18} giga 10^{9} micro 10^{-6} milli 10^{-3} kilo 10^{3}
nano - 10^{-9} peta 10^{15} pico 10^{-12} tera 10^{12} mega 10^{6}

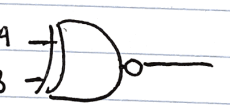
3. $(.6 \cdot 1) + (.1 \cdot 4) + (.2 \cdot 2) = 1.4$

4. $\frac{1.4}{.8(1.36)}$ $CPI_{new} = (.7 \cdot 1) + (.2 \cdot 4) + (.1 \cdot 2)$
$.7 + .8 + .2 = 1.7$
$= 1.029$
= 2.9% speedup

5. Amdahls law 20% cannot be enhanced
80% is 8x faster 10+20 = 30%
70% in program execution

6. $A'B'$
AB
Sum of Products
$= A'B' + AB$

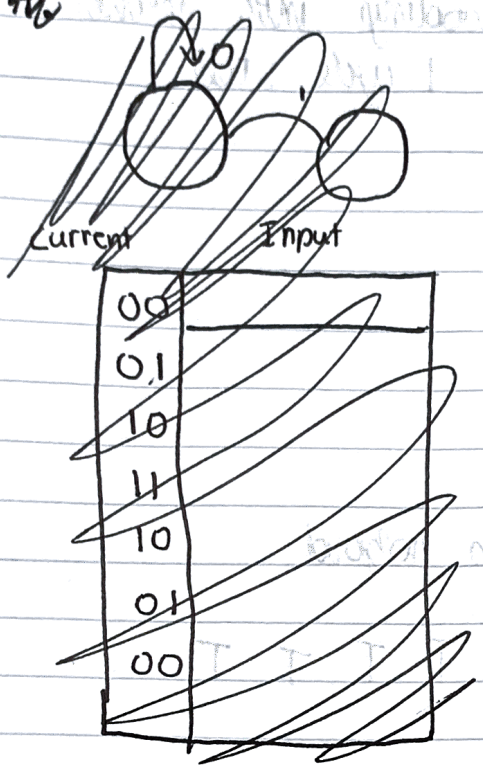
Circuit Xnor gate



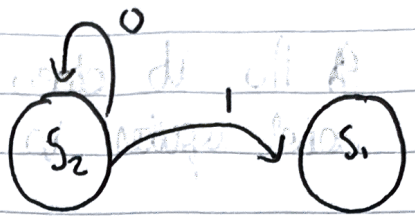
$S_1 = [00\ 01\ 10\ 11]$

$S_2 = [11\ 01\ 10\ 00]$ I, VNO

7.



A.



B. Q_1

Input	Curr	next
1	00	01
1	01	10
1	10	11
1	11	Done
0	11	10
0	10	01
0	01	00
0	00	DONE

Q_0

C.
```
i++;
i--;
```

8.

A	1	E	lower
B	1	f	lower
C	0	g	lower
D	0	h.	ADD

A No it does not. Loading into register + use of next register is still 1 cycle stall

B Forwarding Prediction

C 3?

D Control Hazard / Branch hazard

E T T T T T T T T T T

f. Gives compiler more instructions to schedule by reduces overall number of branches

10 lw Anti data dependency
sw output dependency
add
sub true data dependency

11.

no clue

E.C Macbook 2018 pro
CPU Clock 2.2 ghz
Size of main mem 16 gb
Size of hard disk 256 gb