

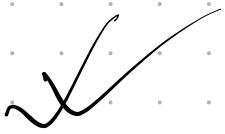
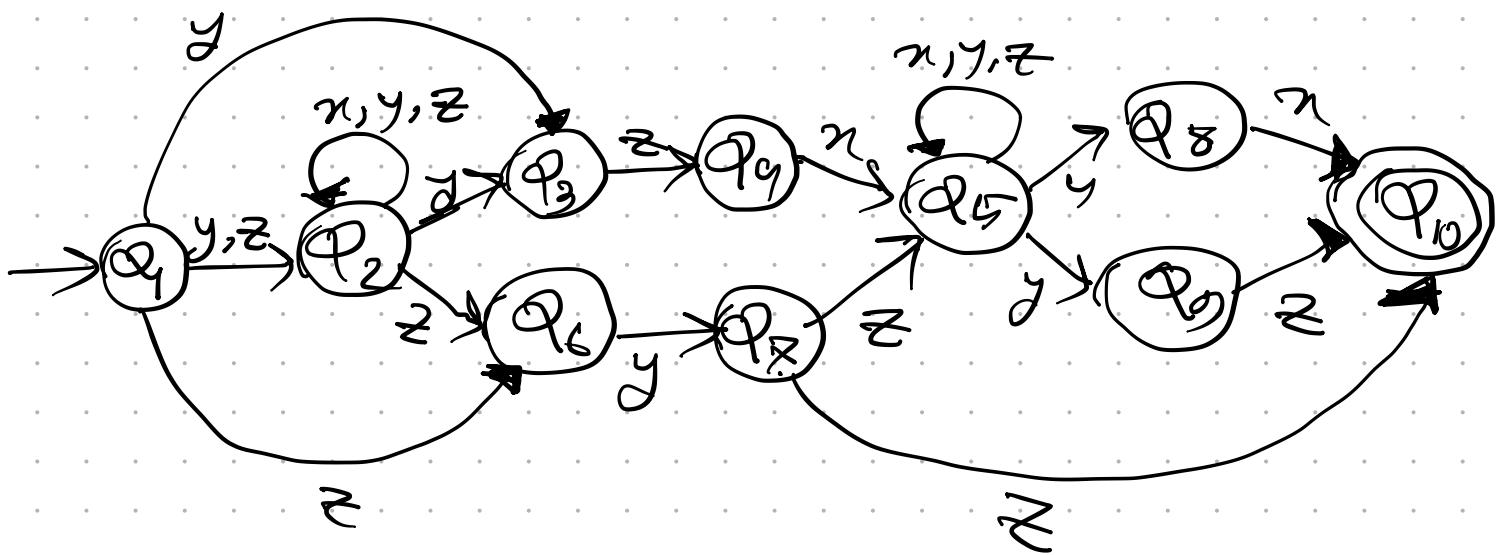
Fall - 2024

21
Q1 does not start with 'n', contains "yzx"
or "zyz" and ends with "yx" or "yz".
 $\Sigma = \{x, y, z\}$

Start: y / z

contain: yzx / zyz

ends: yx / yz

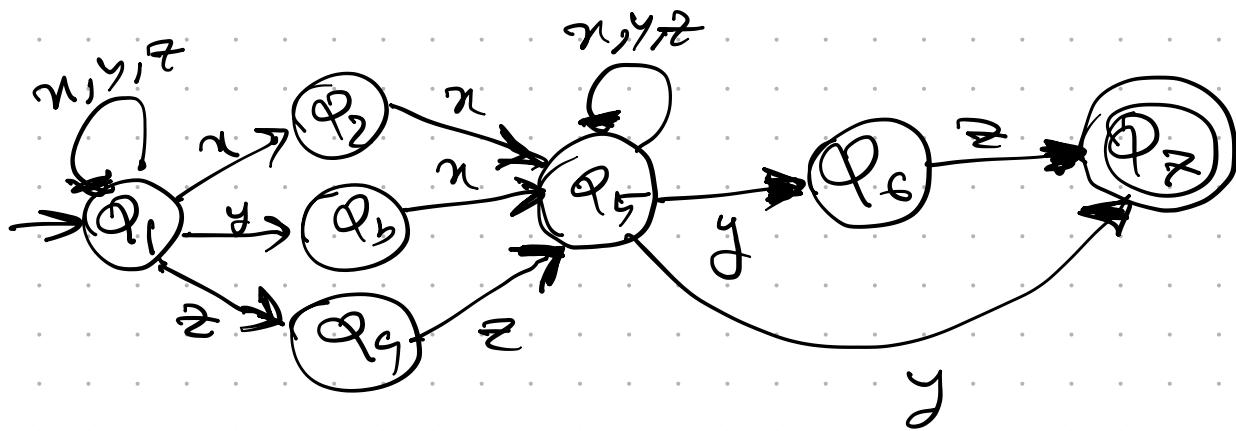


Aus

21 b1 contains '(nn)' or '(yn)' or '(zz)' and ends with 'yz' or 'y' | $\leq \Sigma^* x, y, z \Sigma$

contains: xx/y x/zz

ends: yz/y



Ans

31 every "00" is followed by atleast
 $1 \leq 2, 1, 1$

A.V:

001

01

10

101...
1

0

001001
0011111

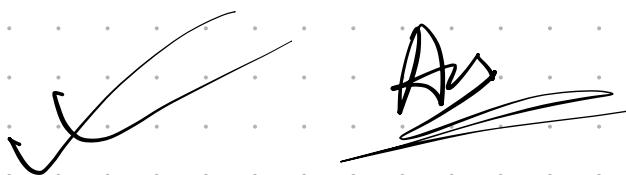
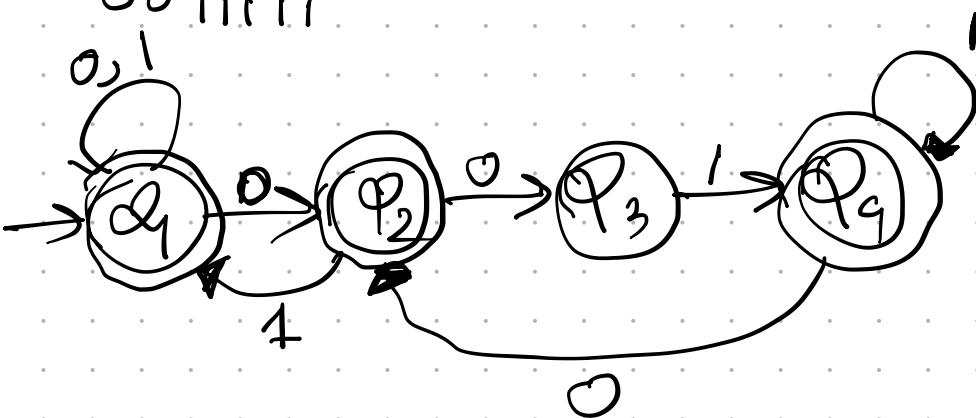
NT

000

1000

0001

00100



31 Already practiced on Note

A

Summer - 29

21 all starts with "12" or "32" and contains "222" or "111" or "333" and ends with "31" or "23" | $\{z=2, 1, 2, 3\}$

Ans:

starts: 12 / 32

contains: 222 / 111 / 333

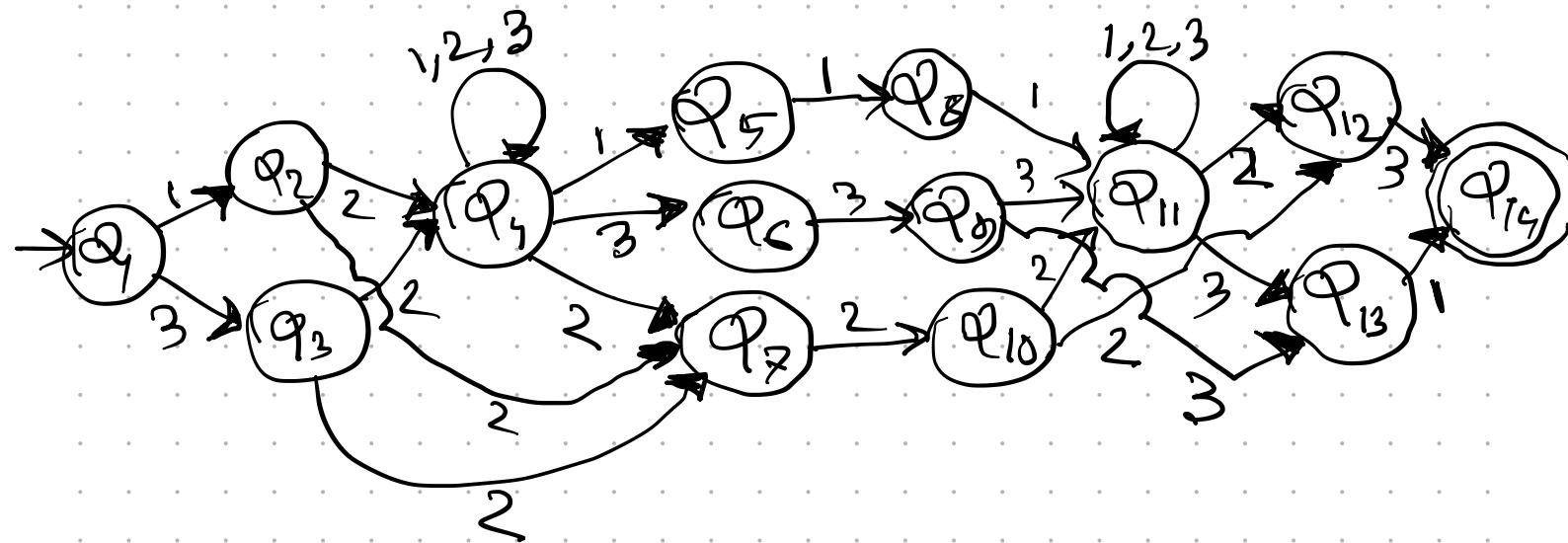
ends: 31 / 23

12223

1222

12 222

1,2,3
1,2,3



2/6 Double "1" is followed by triple "0" and starts with "0" /
 $\leq = 20, 14,$

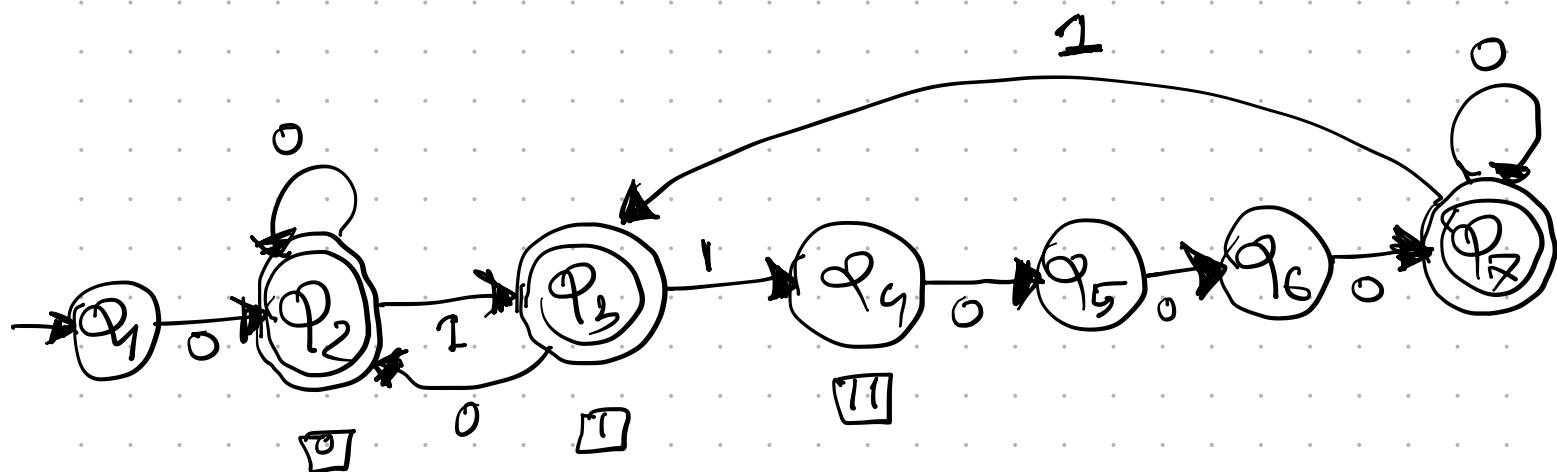
Ans:

Starts: 0

contain: if (11) \rightarrow (000)

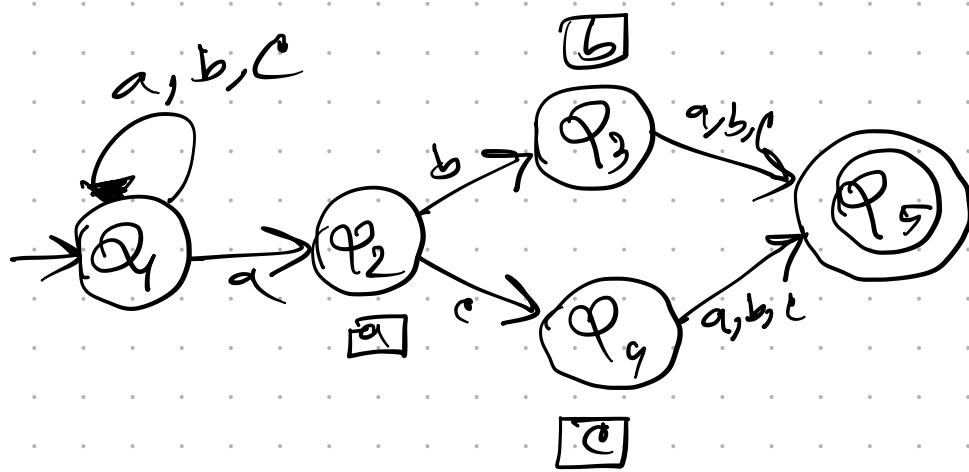
Av: 01, 001, 0011000, 01000

N/A: 0110, 01111. . .



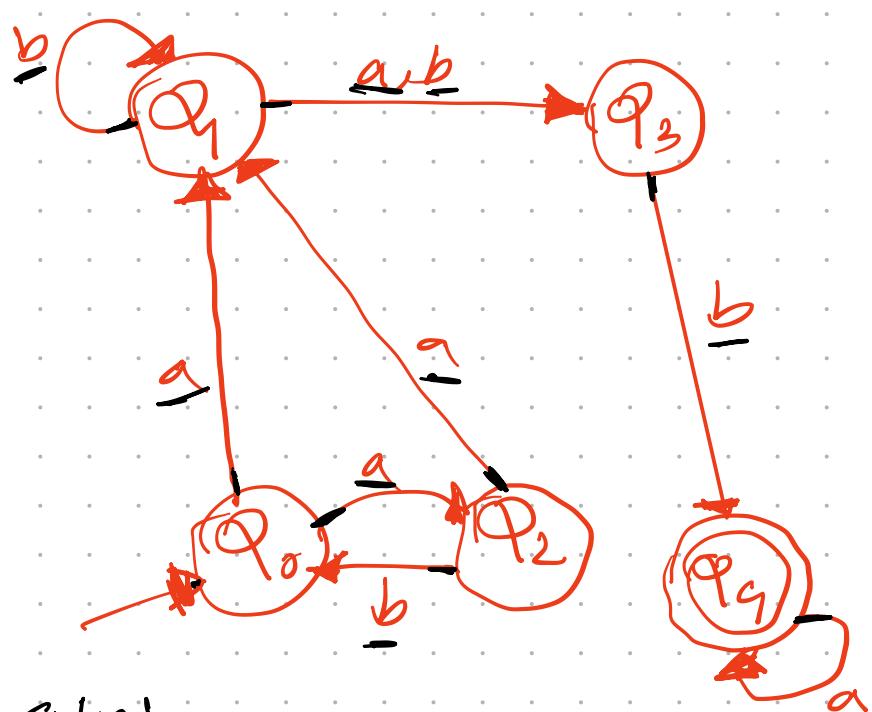
21C Third symbol from the right end
is always "a" and the second symbol
is either "b" or "c" $\lambda \geq -2a, b, c$

ends: $ab\square/ac\square$ $\underline{a} \underline{b} - / \underline{a} \underline{c} -$



AUS

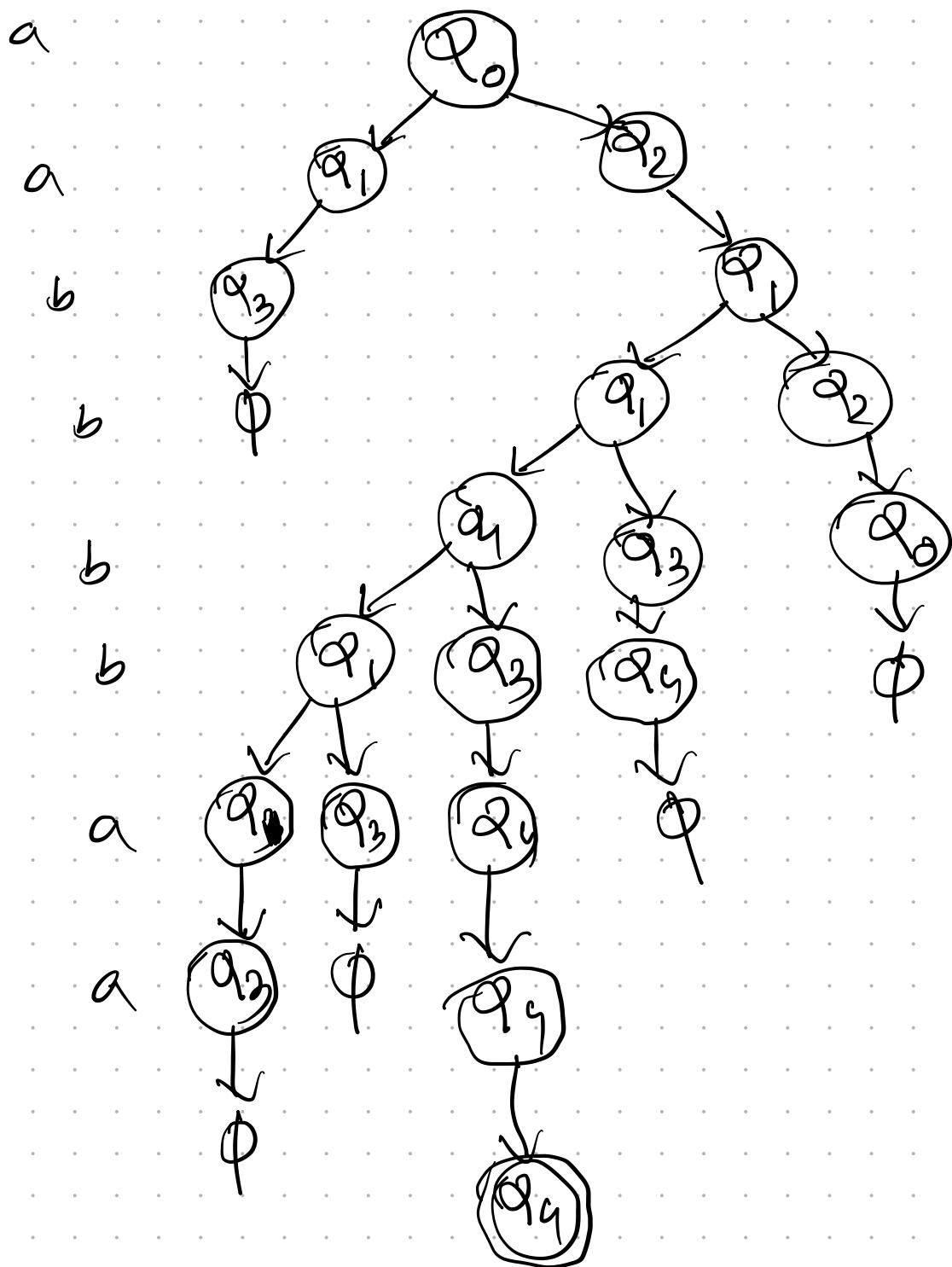
Q1 Consider the following NFA, and show with the help of NFA-tree the string "aabbbbaa" is accepted.



Soln:

① States	a	b
$\rightarrow Q_0$	Q_1, Q_2	\emptyset
Q_1	Q_3	Q_1, Q_3
Q_2	Q_1	Q_0
Q_3	\emptyset	Q_4
* Q_4	Q_4	Q

$\phi abbaabaa$



So the string is Accepted.

Ay

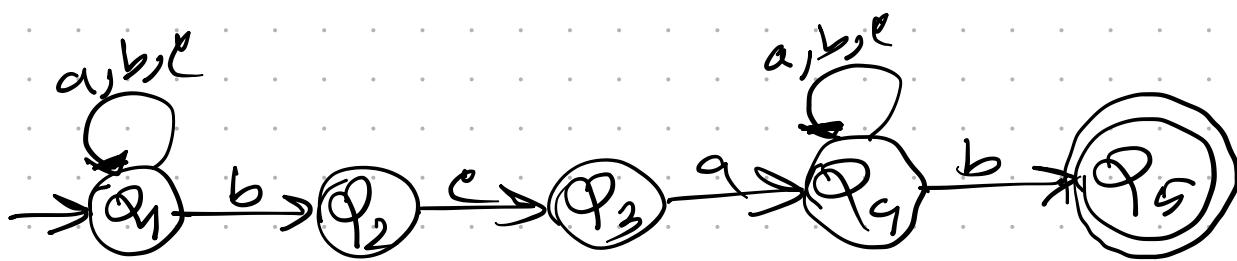
Spring -2029

21(a) ends with "b" and contains "bra"
 $\leq \#a,b,c\leq 1$.

Soln:

contain: bca

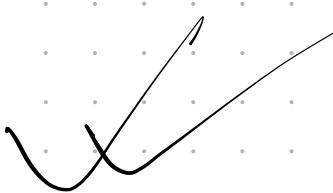
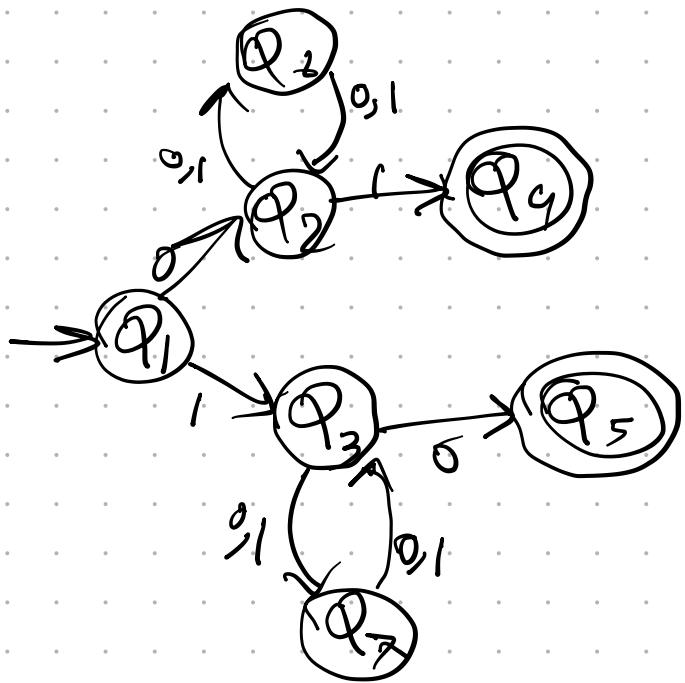
end : b



✓
A₅

b1 starts and ends with different symbols when the total length is a multiple of 2 | $\Sigma = \{0, 1\}$

Ans: 2, 9, 6, 8, ...



Ans

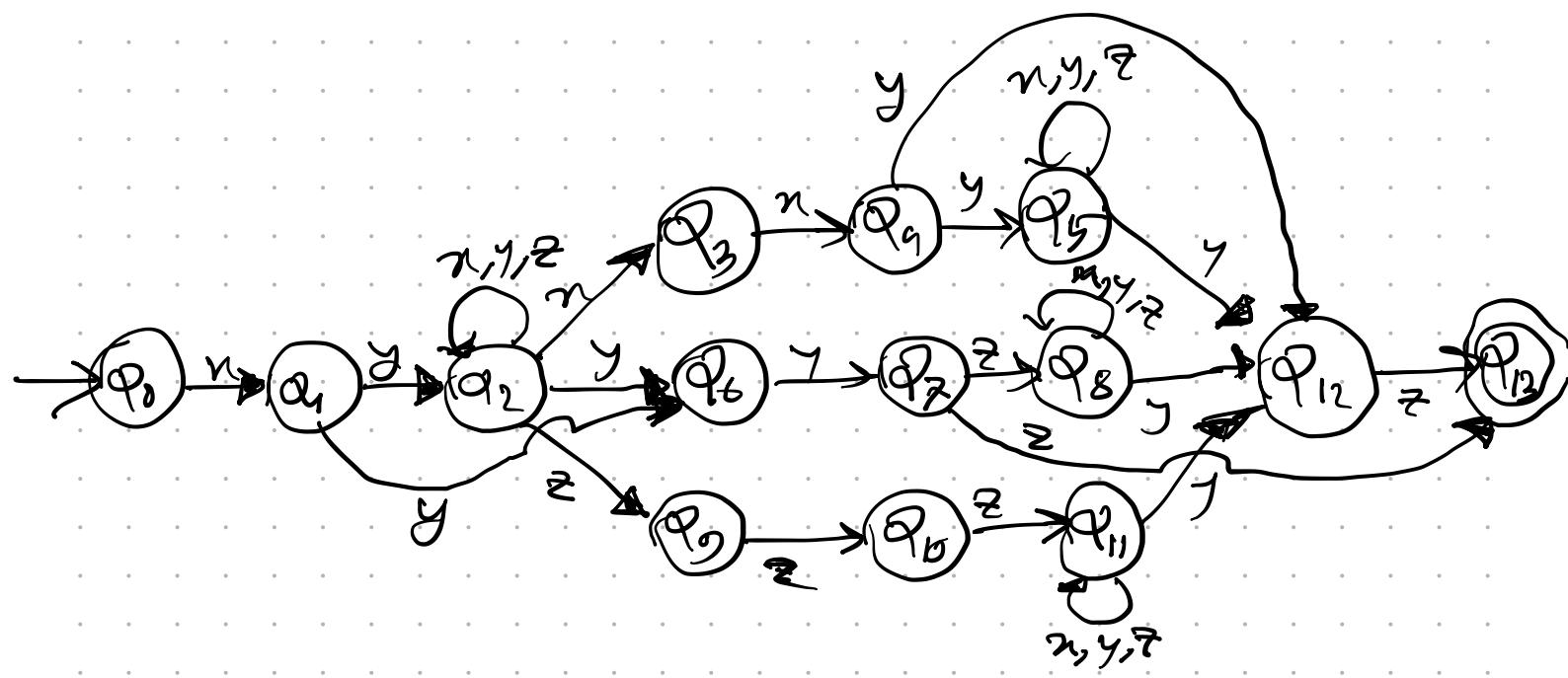
z1d starts with "xy" and contains "xxy"
or "yyz" or "zzx" and ends with
"yz". ($\leq = \{x, y, z\}$)

Aus:

Start: xy

contain: xxy / y(yz) / zzx

end: yz



Aus

z1 practice by myself -

Aus

Fall - 23

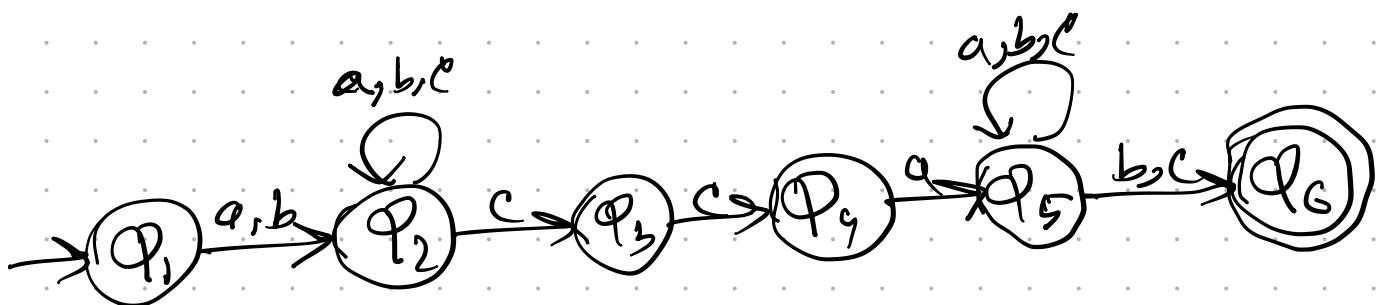
Q1 starts with "a" or "b" and contains "cca" and ends with "b" or "c" | $\Sigma = \{a, b, c\}$.

Ans:

Starts: a / b

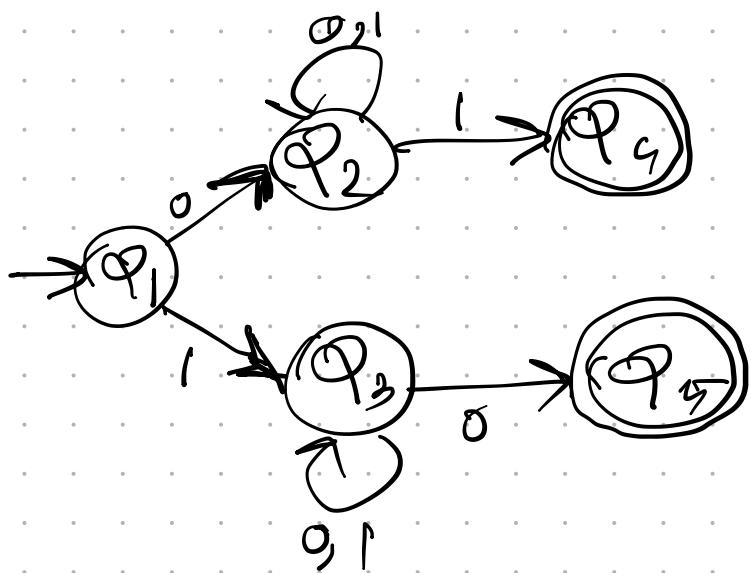
contains: cca

end: b / c



b starts and ends with different symbols
with total length of at least $2 \leq n, m$

Ans:

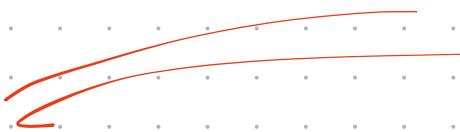


c Contains 'xyz' or 'yzn' or 'zxx' and
ends with 'yz' ($\leq n, y, z$)

\Leftarrow

Regular Rules

Soln



31 :- Soln

Summer -2023

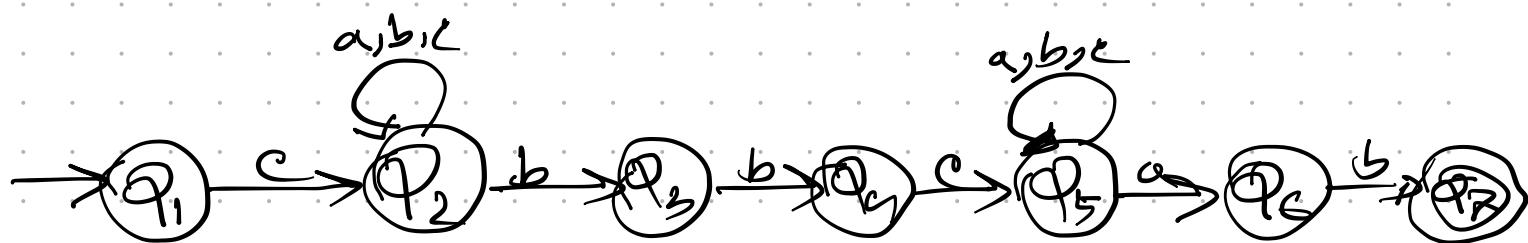
21 doesn't start "a" or "b" and contains "bbc" and ends with "ab" } $\Sigma = \{a, b, c\}$

Ans:

Start: C

contain: bbc

end: ab

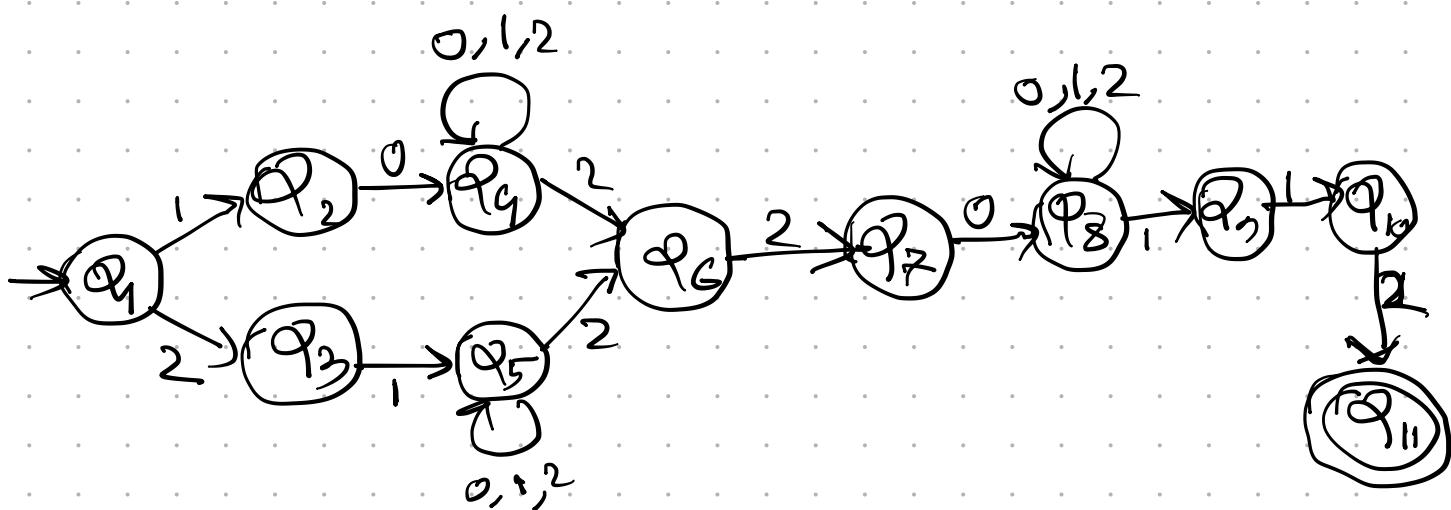


b1 starts with "10" or "21" and contains "220" and ends with "112". $\Sigma = \{0, 1, 2\}$

Start: 10/21

contain: 220

end: 112



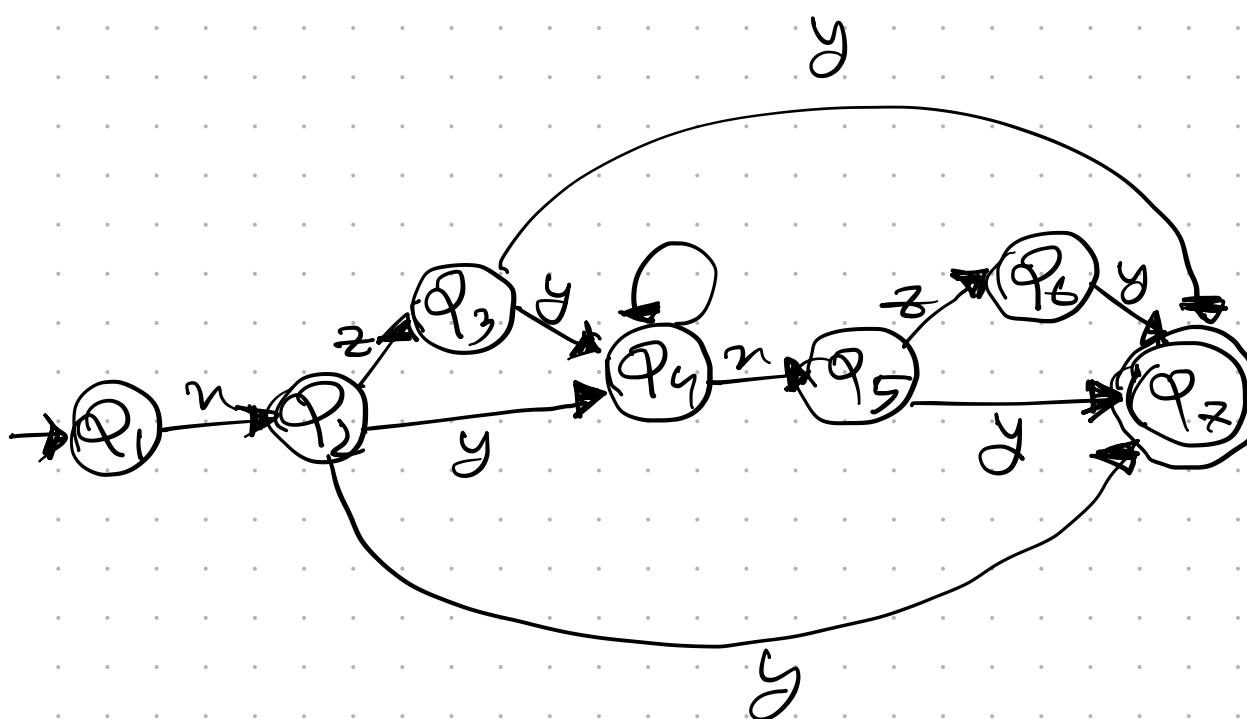
Ans

Q start and ends with either 'xz' or 'xy' | $\Sigma = \{x, y, z\}$

Ans:

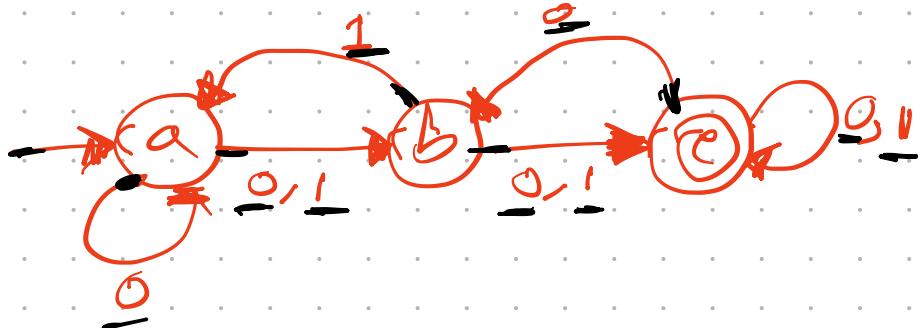
start: xzy / any

end: xzy / any



Ans

31 Consider the following NFA, and show with the help of NFA-tree whether the string "0100110" is accepted or not.

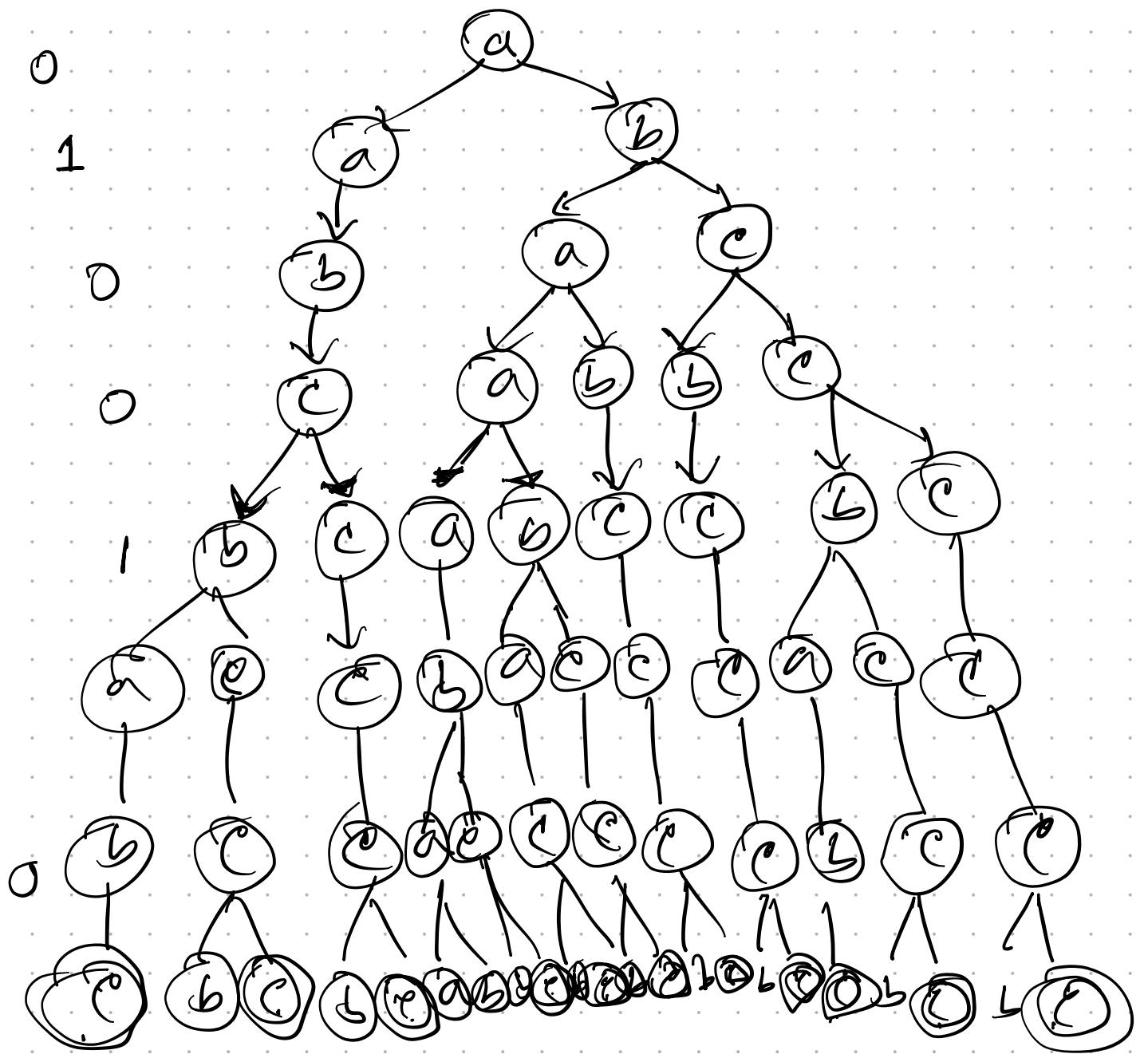


Soln:

Inputs	0	1
Starts		
$\rightarrow a$	a, b	b
$\rightarrow b$	c	a, c
$\star c$	b, c	c

Inputs	0	1
Starts		
$\rightarrow a$	a, b	b
$\rightarrow b$	c	a, c
$\star c$	b, c	c

$\emptyset \times \emptyset \times \emptyset \times \emptyset$



So the string is Accepted

Boe