Ex.1

1. $\Sigma = \{o, h, u, c, g\}$
2. $\Sigma = \{a, p, l, e, r, 4, 7, !\}$
3. $\Sigma = \{0, 1\}$

Ex.2

1. λ and the language of all binary strings.
2. $L = \{\lambda, a, aa, aaa, \ldots\}$ λ and the language which contains only a's
3. $L = \{\lambda\}$ The language which contains only λ

Ex.3

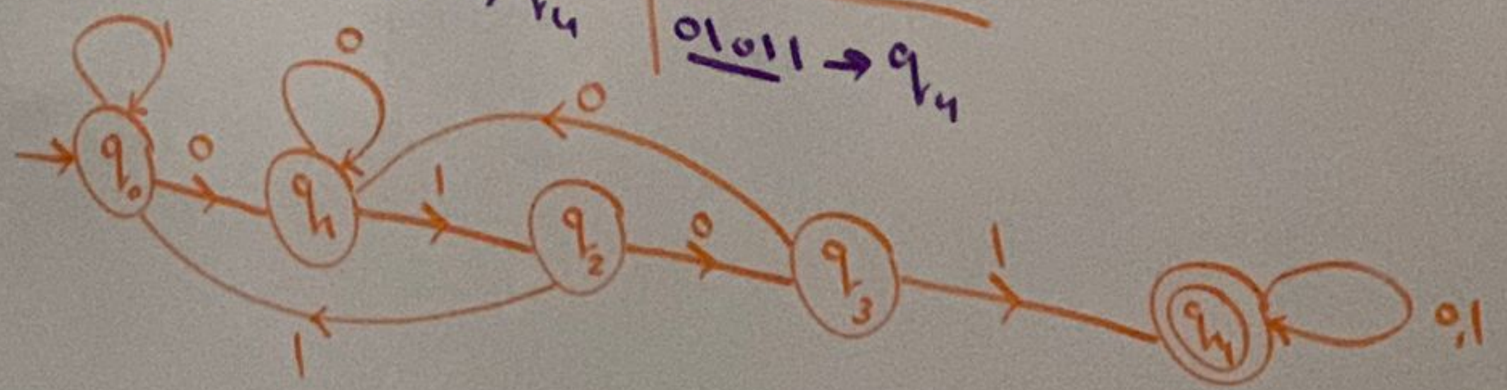
1. a, ab, baa, bba, baba
2. λ, bbbb, aaaa, abab

Ex.4

olol

λ, o, ol, olo, olol

State	0	1
$q_0 \leftarrow \lambda$	$o \rightarrow q_1$	$x\lambda \rightarrow q_0$
$q_1 \leftarrow o$	$\phi o \rightarrow q_1$	$ol \rightarrow q_2$
$q_2 \leftarrow ol$	$olo \rightarrow q_3$	$\phi x x \lambda \rightarrow q_0$
$q_3 \leftarrow olo$	$\phi x \phi o \rightarrow q_1$	$olol \rightarrow q_4$
* $q_4 \leftarrow olol$	$ololo \rightarrow q_4$	$olol1 \rightarrow q_4$



Ex 6

1. aa, ab, ba, bb
strings of even no. of char. and length of at least 2.

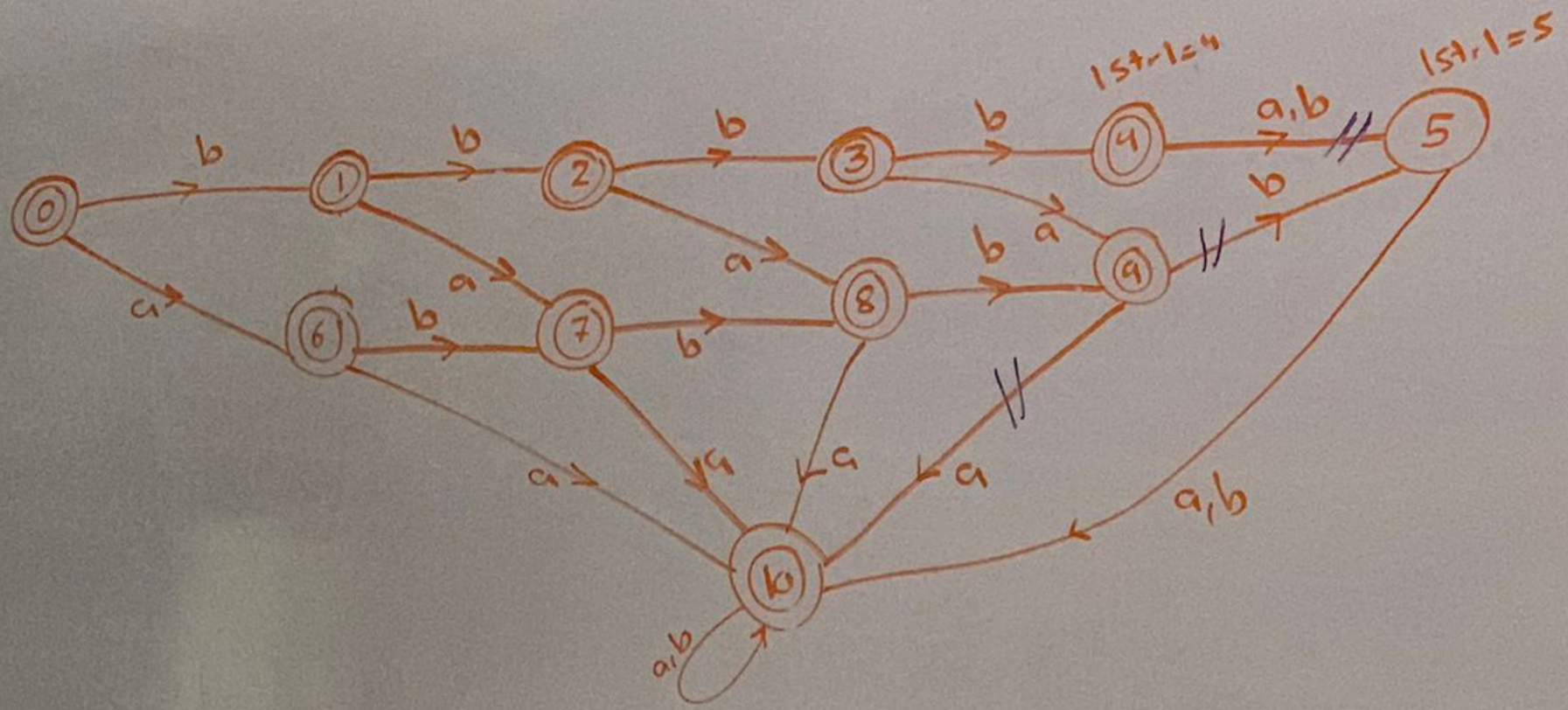
2. aa, ab, ba(a)
bb, bbb, ba, ba(aa)
ba(b) ba(a)(bb) ba(ab)
strings which contains at least 1 a followed by an odd no. of char

3. 101, 11101, 01101, 10110, 00110
strings which end with 101

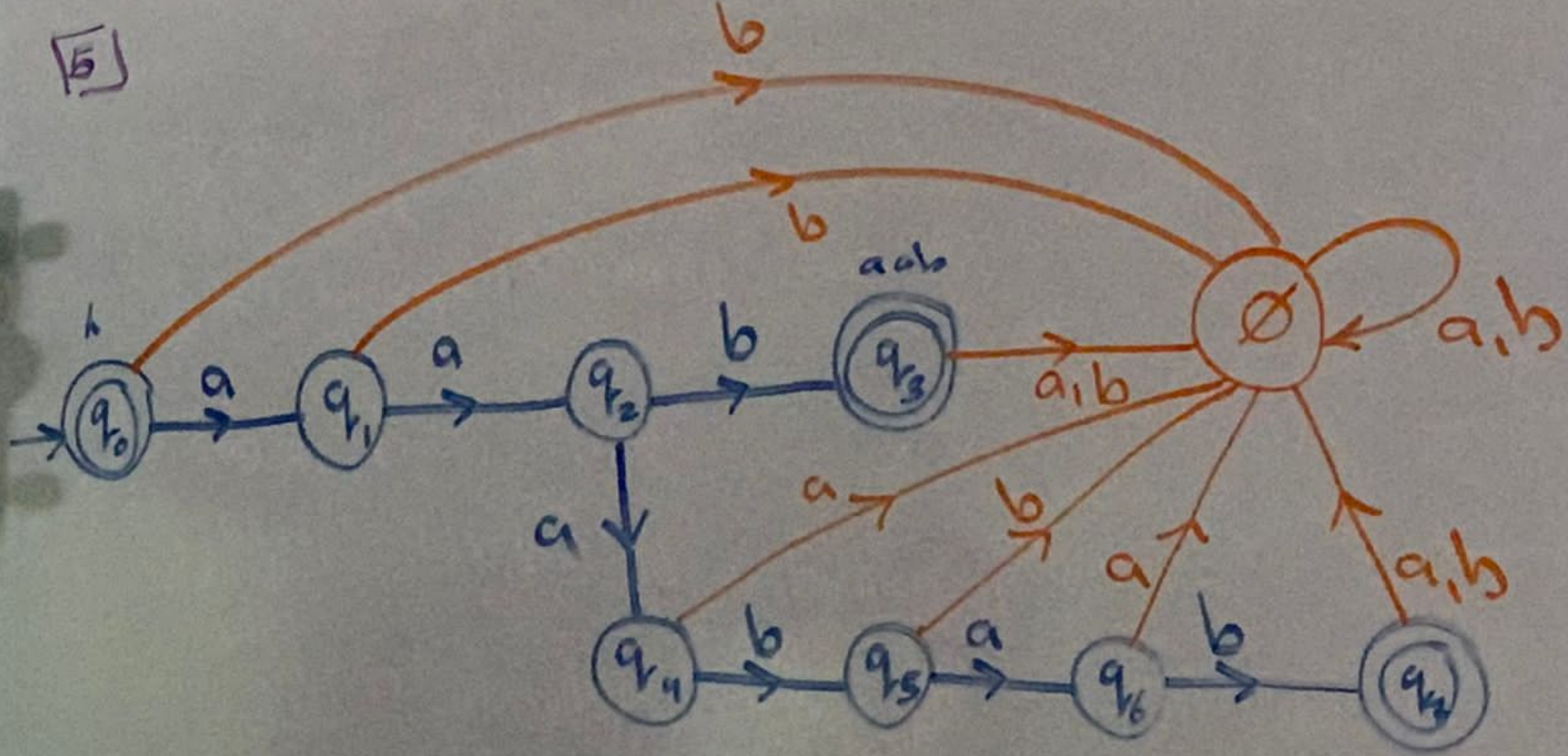
4. λ, 0, 000, 0^n, 1, 111, 1^m, 0^n1^n
strings of the form 0^n1^m where $n \geq 0$ and $m \geq 0$

5. λ, a, baba, bb... (a)
λ and strings that end with a

4



[b]

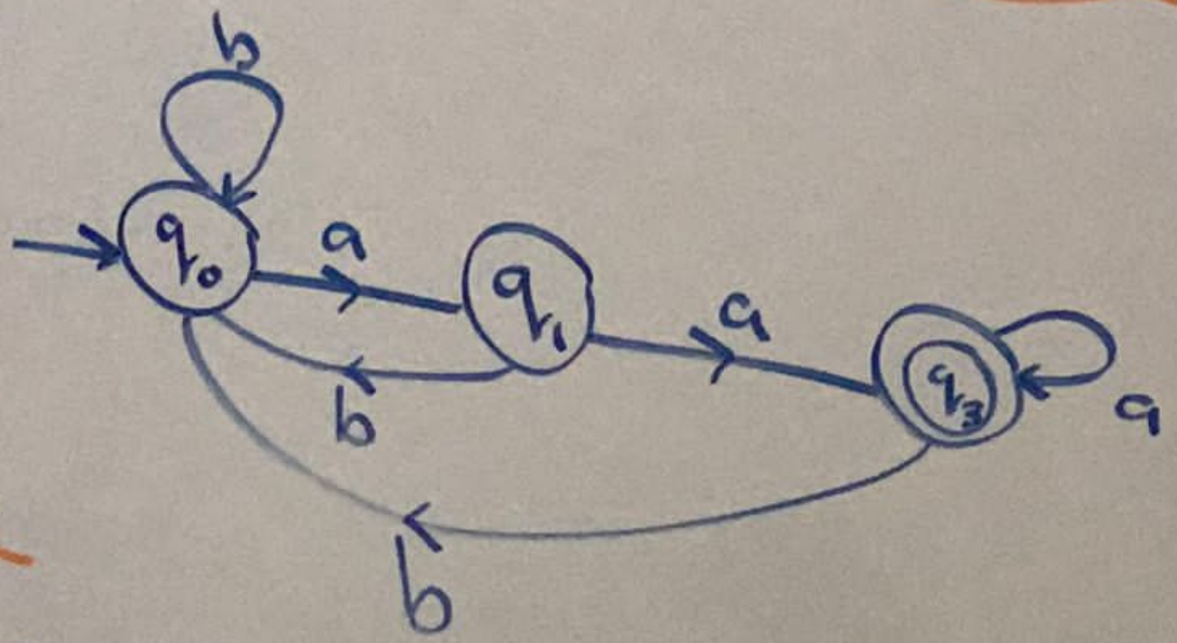


strings of the form

5 λ, a, bab a, bb ... [a]

λ and Strings that end with a

Ex. 6 [aa]

λ, a, aa

δ	a	b
$q_0 \leftarrow \lambda$	$a \rightarrow q_1$	$b/\lambda \rightarrow q_0$
$q_1 \leftarrow a$	$aa \rightarrow q_2$	$ab/\lambda \rightarrow q_0$
$q_2 \leftarrow ca^*$	$aaa \rightarrow q_2$	$aab/\lambda \rightarrow q_0$