

Construct a **PDA** that accepts the language by **empty stacks**:

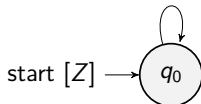
$$L_E(P) = \{w \in \{a, b\}^* \mid N_a(w) = N_b(w)\}$$

Word $w =$ a a b b b b a a a b

Stack $\alpha =$

						Z
--	--	--	--	--	--	---

$$P = \begin{array}{l} a [Z \rightarrow PZ] \\ a [P \rightarrow PP] \\ a [N \rightarrow \epsilon] \\ b [Z \rightarrow NZ] \\ b [P \rightarrow \epsilon] \\ b [N \rightarrow NN] \\ \epsilon [Z \rightarrow \epsilon] \end{array}$$



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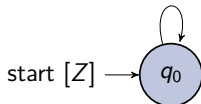
Word $w =$

a	a	b	b	b	b	a	a	a	b
---	---	---	---	---	---	---	---	---	---

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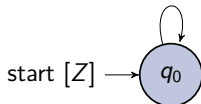
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				<i>P</i>	<i>P</i>	<i>Z</i>
--	--	--	--	----------	----------	----------

$P =$

$a [Z \rightarrow PZ]$

$a [P \rightarrow PP]$

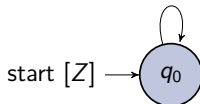
$a [N \rightarrow \epsilon]$

$b [Z \rightarrow NZ]$

$b [P \rightarrow \epsilon]$

$b [N \rightarrow NN]$

$\epsilon [Z \rightarrow \epsilon]$



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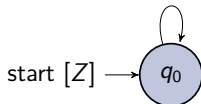
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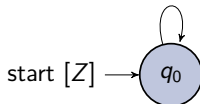
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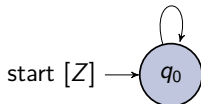
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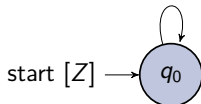
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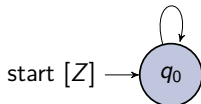
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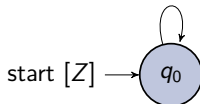
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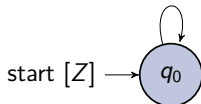
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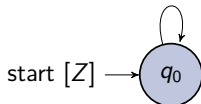
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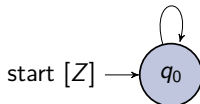
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aabbbbbaaab $\in L_E(P)$!