

RegEx Wizard



Welcome adventurer!

I'm the RegEx Wizard and I'm here to help you navigate the mystical world of string validation! Whether you're wielding PDAs, summoning DFAs, conjuring Regex magic, or decoding CFGs' cryptic spells, I've got you covered. We'll work together to explore the enchanting woodland of syntax and the hazardous dungeons of grammar, ensuring that every string is matched! So, grab your wand, dress your cloak, and join us on our epic quest for validation glory!

The First Phase

In this adventure, you must first prepare yourself by mastering the powerful tools and machines. Each has its function that you must be familiar with before stepping into the training grounds.

Now let me do the honors!

Tools:

- **Regular Expression** - the formal syntax used in text search and manipulation is concise and efficient, describing patterns in strings.
- **Alphabet** - refers to the set of characters or symbols from which patterns are built to match strings.

Machines:

- **Deterministic Finite Automata (DFA)** - is used to uniquely determine the next state of a sequence of input symbols, ensuring specific patterns and processing in formal languages.
- **Pushdown Automata (PDA)** - similar to DFA but with extra memory provided by stack storage. They are more adept at managing nested structures and recursion than finite automata because of this stack, which enables them to comprehend context-free languages.

- **Context-Free-Grammar (CFG)** - a set of rules defining how symbols can be combined to form valid strings in a language.

In your adventure, each DFA machine has its own assigned tools:

DFA 1:

Regular Expression: $(a+b)(a+b)^*(aa+bb)(ab+ba)(a+b)^*(aba+baa)$

Alphabet: {a, b}

DFA 2:

Regular Expression: $(11+00)(1+0)^*(101+111+01)(00^*+11^*)(1+0+11)$

Alphabet: {0, 1}

The Training Grounds

Now that you're ready, it's essential that you first undergo our training to hone your skills before embarking on our grand quest. Just like any great wizard!

Input:

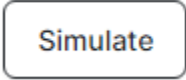
In the input box, type any combination of the characters '**a**' and '**b**' or '**0**' and '**1**' you want for validation or simulation. Every combination input will be called a **string**.

Validate:

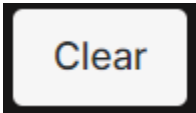
Click '**Validate**' and the current machine will show you if the input string is VALID or NOT VALID.

Simulate:

Click '**Simulate**' and the current machine will show you how the characters will go to their designated state. This verifies how the input string became VALID or NOT VALID. Moreover, this also shows if the input string is VALID or NOT VALID.

A rectangular button with rounded corners and a thin black border, containing the text "Simulate" in a dark blue font.**Clear:**

Click '**Clear**' to automatically reset the input box.

A rectangular button with rounded corners, a thick black border, and a light gray background, containing the text "Clear" in a dark blue font.**CFG:**

Click '**CFG**' to generate the Context-Free-Grammar of the input string.

A rectangular button with rounded corners, a thick black border, and a white background, containing the text "CFG" in a dark blue font.**PDA:**

Click '**PDA**' to generate the structure of the Pushdown Automata of the assigned DFA.

A rectangular button with rounded corners, a thick black border, and a white background, containing the text "PDA" in a dark blue font.**Switch DFA:**

Click '**Switch DFA**' to toggle between the two different machines.

A rectangular button with rounded corners and a thin black border, containing the text "Switch DFA" in a dark blue font.



Only once you've completed your training will you be prepared to go on the grand quest of string validation. Sharpen your talents, study hard, and you'll soon be performing validation spells with the confidence and accuracy of a true RegEx Wizard!

Onward, courageous adventurer! Your adventure begins today.
May your training be successful and your spells ever accurate!