

User Control Parse

One of the possible options in JFLAP when it comes to parsing a given string using a grammar, is to do a user control parse. That just means that the user picks which rules to use and can interactively see the derivation tree being created.

Example Grammar

We will demonstrate user control parsing using the following grammar that produces strings of the form $a^i b^j c^k, i + j = k$.

The grammar production rules are

$$A \rightarrow aAc$$

$$A \rightarrow B$$

$$B \rightarrow bBc$$

$$B \rightarrow \varepsilon$$

Example of user control parse

We will use JFLAP to parse the string $aabccc$.

Try it yourself, input the context free grammar. Then click user control parse in the Input menu. The way this parsing works is that the user has to click on the rule that they would like to see being applied.

So for instance, in this case, since we first have to apply the $A \rightarrow aAc$ rule, we click it in the rules section, then click the step button and the derivation tree will be appropriately modified.

JFLAP : (CFGUserParse.jff)

File Input Test Convert Help

Editor User Control Parser

Table Text Size

Start Previous Step Noninverted Tree

Input aabccc

LHS		RHS
A	→	aAc
A	→	B
B	→	bBc
B	→	ϵ

aAc

Derived current Strings using A→aAc production

Here is the complete derivation.

Table Text Size

Start Previous Step Noninverted Tree

Input aabccc

String Accepted!

LHS		RHS
A	→	aAc
A	→	B
B	→	bBc
B	→	ϵ

aabccc

Derived current Strings using B→ ϵ production

User control parse in error

The example being shown has only few rules, but in larger examples, it is quite possible that an error is made by the user and it becomes impossible to parse using the current derivation tree. In those cases, it is useful to remember that JFLAP provides a previous button that allows to rewind and try again.

For instance, here is a user control parse situation with an error.

Table Text Size

Start Previous Step Noninverted Tree

Input: aabccc

LHS		RHS
A	→	aAc
A	→	B
B	→	bBc
B	→	ϵ

a b B c

Derived current Strings using B→bBc production

To recover, click on previous and try again.