



Visual Automata Simulator

version 1.1

A tool for simulating, visualizing and transforming finite state automata and Turing Machines

cs.usfca.edu/~jbovet/vas.html

jbovet@cs.usfca.edu

© 10/01/05 Jean Bovet

This document is intended to be a really Quick Start Guide. It only describes some features that are not easily accessible without any written documentation.

A SHORT INTRODUCTION

Visual Automata Simulator (VAS) has been designed to be really simple to use and to bring some useful feature to better learn how finite state automata (DFA and NFA) and Turing Machines (TM) work.

There are two kinds of files: *.fa are files containing finite state automata while *.tm are files containing Turing Machines. Each file may contain one or more machines.

TIPS TO CREATE TURING MACHINES

Turing Machines can be created using the icons above the graphical area: double-clicking on any icon will lock the icon - useful to create several identical operations without having to click on the same icon each time.

It also possible to double-click anywhere on the graphic area to invoke a pattern panel: this panel allows to enter a pattern describing one or more operation to create - useful to create several operations very quickly.

COMMANDS

Here is a list of the command that can be used in a pattern when creating Turing Machine operation(s):

Description	Command
Move to the left	L
Move to the left until	L=<s>
Move to the left until not	L!<s>
Move to the right	R
Move to the right until	R=<s>
Move to the right until not	R!<s>
Call another machine	C<machine>
Yes operation (accept)	Y
No operation (reject)	N
Output the content of the tape to the console	O
Write a symbol on the tape	<s>

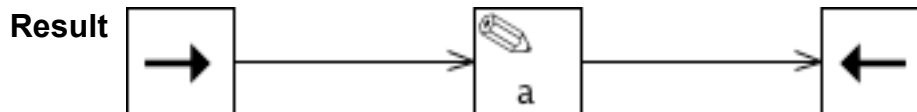
<s> stand for any symbol

<machine> stand for any valid machine name

Examples:

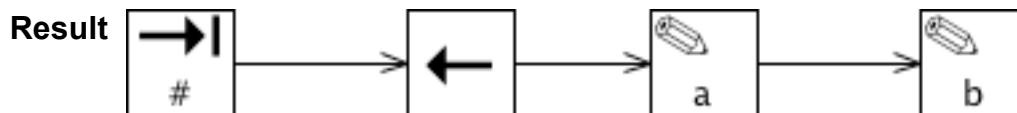
Description Move to the right, write 'a', move the left

Pattern RaL



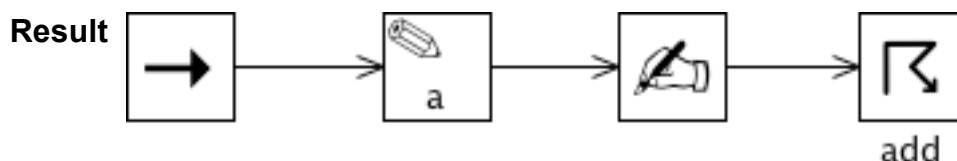
Description Move to the right until a # is found, move to the left, write 'a', write 'b'

Pattern R=#Lab



Description Move to the right, write 'a', output the tape content to the console, call the machine 'add'

Pattern RaOC[add]



MODIFY THE TAPE CONTENT

To modify the tape content, simply click on any position and start typing with the keyboard: backspace and arrows keys are fully supported.

WHAT IS THE BATCH TEST FEATURE?

The batch test is a useful feature to quickly test several Turing Machine files. Let's take an example: imagine you gave a TM machine as homework to your students. They give you back their *.tm files and you have now to open each file, runs the machine, look at the tape content, compare it to your solution and so on. The batch test automatically performs these steps for you so you only have to focus on the TM that doesn't work.

In the batch test window, you have to specify the following information:

- The machine name to runs (or its index in the file)
- The initial tape content and tape head position
- The expected tape content and tape head position (optional)
- A list of file to be tested

Once these parameters are sets, simply run the test! Wrong results will be displayed in red.

WHAT ABOUT THE SOURCE CODE?

The source code is available under the BSD license here:

`cs.usfca.edu/~jbovet/vas.html`

Any comments, suggestions or bugs report are welcome here:

`jbovet@cs.usfca.edu`

ACKNOWLEDGMENTS

I would like to thank Prof. Galles for having transmitted his passion of the automata theory and to Prof. Parr for his support and enthusiasm.

Thanks to Matthew McClintock <matthew@mc.clintock.com> for the application icon.

Jean Bovet