A Hands-on Approach to FLA with JFLAP

History of JFLAP

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How did JFLAP get Started?

- Aug. 1989 – Rodger started teaching automata theory course at Rensselaer
- Pencil and paper exercises
- Students requested feedback!
Why Develop Tools for Automata?

<table>
<thead>
<tr>
<th>Type</th>
<th>States/Transitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textual</td>
<td>( {q_0, q_1, q_2}, {a, b}, \delta, q_0, {q_2} )</td>
</tr>
<tr>
<td></td>
<td>( \delta = {(q_0, b, q_0), (q_0, a, q_1), (q_1, a, q_0), (q_1, b, q_2), (q_2, a, q_1)} )</td>
</tr>
<tr>
<td>Tabular</td>
<td>![Tabular Diagram]</td>
</tr>
<tr>
<td>Visual</td>
<td>![Visual Diagram]</td>
</tr>
<tr>
<td>Interactive</td>
<td>![Interactive Diagram]</td>
</tr>
</tbody>
</table>
JFLAP Evolved 1990-present

• Many tools were developed …
• Many students …
• Many years…
• Java came along… made our life easier…
NPDA

- Dan Caugherty – Rensselaer, 1990
- In C++ and X Windows
- DIMACS (1992)
Running NPDA
LR Parser

- Rensselaer
- Mike James 1992
- Steve Blythe 1993
- In C++ and X Windows
- SIGCSE 1994
LR Parser had lots of windows!
- LR parse table

- LR Parser

there are errors in your parse table
please correct them before continuing

String to parse: aacbba

Rest of input: aacbba$

Symbol Stack: A$

State Stack: 20

reducing using the production
A → Aa
JFLAP was born!

- Modified NPDA to add menu, DFA and TM
- Mark LoSacco – 1991
- EdMedia 1993
TuBB- TM Building Blocks

- Rensselaer
- Eric Luce
- VL 1993
JFLAP moves to Java!

- 1996 – Madga and Octavian Procopiuc
- FIE 1996
JFLAP Evolves

• L-systems - Wolfman (1993), Ramm (1998)
• Pumping Lemma – Leider (1996)
• Pate – Salemme and Bilska (1996)
• JeLLRap – Geer and Karweit (1997)
• Proving Theorems to JFLAP – Grammond (1998)
• Regular Expressions to JFLAP – Hung (1999)
JFLAP Moves to Swing!

• 2001 and on – Finley, Cavalcante
  – Complete rewrite
  – Changed some of the algorithms
  – Incorporating many of the previous tools
  – Including L-Systems
  – SIGCSE 2004
JFLAP adds Building Blocks

• 2005 – Stephen Reading and Bart Bressler
• SIGCSE 2006
JFLAP – Where we are now!