4 Homework

Due: Wednesday, October 17, 2007.

Instructions

• Please, review the homework grading policy outlined in the course information page.

• On the first page of your solution write-up you must make explicit which problems are to be graded for regular credit, which problems are to be graded for extra credit, and which problems you did not attempt. Use a table that looks like this:

<table>
<thead>
<tr>
<th>Problem</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>...</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit</td>
<td>RC</td>
<td>RC</td>
<td>EC</td>
<td>RC</td>
<td>EC</td>
<td>NA</td>
<td>NA</td>
<td>EC</td>
<td>NA</td>
<td></td>
</tr>
</tbody>
</table>

where “RC” denotes “regular credit”, “EC” denotes “extra credit”, and “NA” denotes “not attempted”. Failure to include such a table will result in an arbitrary set of problems being graded for regular credit, no problems being graded for extra credit, and a 5% penalty assessment.

• You must also write down with whom you worked on the assignment. If this varies from problem to problem, write down this information separately with each problem.

Problems

Required: 5 of the following 7 problems
Points: 20 points per problem

1. Do Problem 2.1 for the following strings:

   • $a + a$
   • $(a \times a)$
   • $a + a \times a$
   • $(a + a) \times a$
2. Give the context-free grammars that generate the following languages:

- 2.4 (e)
- 2.6 (b)
- 2.6 (d)

3. Do the following:

   (a) Do Problem 2.9
   (b) Do Problem 2.13

4. Do Problem 2.26

5. Convert each of the CFGs below to an equivalent PDA, using the procedure given in Theorem 2.20:

   (a) The grammar from the Problem 2.4 (e)
   (b) The grammar from the Problem 2.6 (b)

6. Do the following:

   (a) Do Problem 2.27 (a)
   (b) Do Problem 2.27 (b)

7. Do the following:

   (a) Do Problem 2.15
   (b) Do Problem 2.16