Exercise 23 (scfg training)
Consider the following two aligned sentences.

<table>
<thead>
<tr>
<th>Kinder</th>
<th>spielen</th>
<th>lasst</th>
<th>uns</th>
<th>spielen</th>
</tr>
</thead>
<tbody>
<tr>
<td>children</td>
<td>×</td>
<td>let’s</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>play</td>
<td>×</td>
<td>play</td>
<td></td>
<td>×</td>
</tr>
</tbody>
</table>

Extract SCFG rules from these sentences. Additionally, train a probability assignment to obtain a PSCFG. Use the corpus which maps the first sentence pair to 1 and the second to 2.

Exercise 24
Compute the output product of the word *ababa* and the following SCFG.

\[
G = (\{q\}, \{a, b\}, q, R) \\
R = \{q \rightarrow \langle x_2ax_1, x_1bx_2, [x_1/q, x_2/q]\rangle, q \rightarrow \langle b, a, []\rangle\}
\]

Highlight those rules of the constructed grammar which occur in a complete derivation of the grammar.