Key

Homework #1

1) public
   static
   void
   main
  缺点
   String
   args
   []
   System
   .
   out
   .
   println
   ('
   "Hello, World!"
   ');
   return
   j3
key

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>B</th>
<th>Label</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.</td>
<td>1,2,5,6</td>
<td>1,2,3,5,6</td>
<td>5,6,7</td>
<td>S</td>
</tr>
<tr>
<td></td>
<td>1,2,3,5,6</td>
<td>1,2,3,5,6</td>
<td>5,6,7</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>5,6,7</td>
<td>6</td>
<td>5,6,7</td>
<td>B</td>
</tr>
<tr>
<td></td>
<td>4,5,6,7</td>
<td>6</td>
<td>5,6,7</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>-</td>
<td>2,5,6,7</td>
<td>D</td>
</tr>
<tr>
<td>2,5,6,7</td>
<td>3,6</td>
<td>5,6,7</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>3,6</td>
<td>-</td>
<td>4,7</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>4,7</td>
<td>6,3</td>
<td>-</td>
<td>G</td>
<td></td>
</tr>
<tr>
<td>2,3</td>
<td>-</td>
<td>4</td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>2</td>
<td>I</td>
<td></td>
</tr>
</tbody>
</table>

Diagram:

- Nodes labeled with numbers indicate connections labeled 'a' and 'b'.
- Connections between nodes are marked with 'a' and 'b' labels, indicating transitions in the sequence.

The diagram visually represents the sequence and transitions based on the labels provided.
Key

3. Using the labels from problem 2:

- \( S \rightarrow aA \)
  \( \lambda \)
- \( A \rightarrow aA \)
  \( b \)
  \( C \)
  \( \lambda \)
- \( B \rightarrow aD \)
  \( b \)
  \( B \)
  \( \lambda \)
- \( C \rightarrow aD \)
  \( bE \)
  \( \lambda \)
- \( D \rightarrow bF \)
  \( \lambda \)
- \( E \rightarrow aG \)
  \( b \)
  \( B \)
  \( \lambda \)
- \( F \rightarrow aD \)
  \( \lambda \)
- \( G \rightarrow bH \)
  \( \lambda \)
- \( H \rightarrow aD \)
  \( bI \)
  \( \lambda \)
- \( I \rightarrow aJ \)
  \( \lambda \)
- \( J \rightarrow bk \)
  \( \lambda \)
- \( K \rightarrow bI \)
Key

(AC 3.) \((a b^*a | b a^*b)\)

This DFA accepts strings that have the same start and end character, where this character only appears at the start and end.

\(a(b c d a | c d a)^*\)

This DFA accepts strings that start with a, followed by zero or more repetitions of "bcda" or "cda."

(AC 4.)

One or more a's, or zero or more "bcda's" followed by d.
Not a full expansion, but enough to get the job done.
Key

Let $X$ represent $[1-9]$.
Let $Y$ represent $[0-9]$.

$(01XY^*)$. (01XY^*)