

Palindromes

grammar Palindrome_full

nonterminal P(2), S(0);
terminal a(2), b(2);
start S;

S() ::= P(x,y) [init]
P(x,y) ::= a(x,u) a(v,y) P(u,v) [aPa]
 | b(x,u) b(v,y) P(u,v) [bPb]
 | a(x,u) a(u,y) [aa]
 | b(x,u) b(u,y) [bb]
 | a(x,y) [a]
 | b(x,y) [b]

end

State q_0

$S() \rightarrow \cdot \text{start}(n_1, n_2) P(n_1, n_2)$

$\xrightarrow{\text{start}(\circ, \circ)} q_1$

State q_1

$S() \rightarrow \text{start}(\mathbf{0}^0, \mathbf{1}^0) \cdot P(\mathbf{0}^0, \mathbf{1}^0)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot a(\mathbf{0}^0, \mathbf{1}^0)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot a(\mathbf{0}^0, n_1) a(n_1, \mathbf{1}^0)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot a(\mathbf{0}^0, n_2) a(n_3, \mathbf{1}^0) P(n_2, n_3)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot b(\mathbf{0}^0, \mathbf{1}^0)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot b(\mathbf{0}^0, n_4) b(n_4, \mathbf{1}^0)$
 $P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow \cdot b(\mathbf{0}^0, n_5) b(n_6, \mathbf{1}^0) P(n_5, n_6)$

$\xrightarrow{P(\mathbf{0}^0, \mathbf{1}^0)} q_{12}$

$\xrightarrow{a(\mathbf{0}^0, \mathbf{1}^0)} q_4$

$\xrightarrow{a(\mathbf{0}^0, \circ)} q_5(\mathbf{1}^1)$

$\xrightarrow{b(\mathbf{0}^0, \mathbf{1}^0)} q_2$

$\xrightarrow{b(\mathbf{0}^0, \circ)} q_3(\mathbf{1}^1)$

State q_2

$P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow b(\mathbf{0}^0, \mathbf{1}^0) \cdot [b]$

State $q_3(a)$

$P(\mathbf{0}^0, a) \rightarrow b(\mathbf{0}^0, \mathbf{1}^0) \cdot b(n_1, a) P(\mathbf{1}^0, n_1)$
 $P(\mathbf{0}^0, a) \rightarrow b(\mathbf{0}^0, \mathbf{1}^0) \cdot b(\mathbf{1}^0, a)$

$\xrightarrow{b(\mathbf{1}^0, a)} q_6$

$\xrightarrow{b(\circ, a)} q_7$

State q_4

$P(\mathbf{0}^0, \mathbf{1}^0) \rightarrow a(\mathbf{0}^0, \mathbf{1}^0) \cdot [a]$

State $q_5(a)$

$P(\mathbf{0}^0, a) \rightarrow a(\mathbf{0}^0, \mathbf{1}^0) \cdot a(n_1, a) P(\mathbf{1}^0, n_1)$
 $P(\mathbf{0}^0, a) \rightarrow a(\mathbf{0}^0, \mathbf{1}^0) \cdot a(\mathbf{1}^0, a)$

$\xrightarrow{a(\mathbf{1}^0, a)} q_8$

$\xrightarrow{a(\circ, a)} q_9$

State q_6

$P(\mathbf{0}^1, \mathbf{1}^0) \rightarrow b(\mathbf{0}^1, \mathbf{0}^0) b(\mathbf{0}^0, \mathbf{1}^0) \cdot [bb]$

State q_7

$P(\mathbf{0}^1, \mathbf{1}^0) \rightarrow b(\mathbf{0}^1, \mathbf{1}^1) b(\mathbf{0}^0, \mathbf{1}^0) \cdot P(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, n_1) a(n_1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, n_2) a(n_3, \mathbf{0}^0) P(n_2, n_3)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, n_4) b(n_4, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, n_5) b(n_6, \mathbf{0}^0) P(n_5, n_6)$

$\xrightarrow{P(\mathbf{1}^1, \mathbf{0}^0)} q_{10}$

$\xrightarrow{a(\mathbf{1}^1, \mathbf{0}^0)} q_4$

$\xrightarrow{a(\mathbf{1}^1, \circ)} q_5(\mathbf{0}^1)$

$\xrightarrow{b(\mathbf{1}^1, \mathbf{0}^0)} q_2$

$\xrightarrow{b(\mathbf{1}^1, \circ)} q_3(\mathbf{0}^1)$

State q_8

$P(\mathbf{0}^1, \mathbf{1}^0) \rightarrow a(\mathbf{0}^1, \mathbf{0}^0) a(\mathbf{0}^0, \mathbf{1}^0) \cdot [aa]$

State q_9

$P(\mathbf{0}^1, \mathbf{1}^0) \rightarrow a(\mathbf{0}^1, \mathbf{1}^1) a(\mathbf{0}^0, \mathbf{1}^0) \cdot P(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, n_1) a(n_1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot a(\mathbf{1}^1, n_2) a(n_3, \mathbf{0}^0) P(n_2, n_3)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, n_4) b(n_4, \mathbf{0}^0)$

$P(\mathbf{1}^1, \mathbf{0}^0) \rightarrow \cdot b(\mathbf{1}^1, n_5) b(n_6, \mathbf{0}^0) P(n_5, n_6)$

$\xrightarrow{P(\mathbf{1}^1, \mathbf{0}^0)} q_{11}$

$\xrightarrow{a(\mathbf{1}^1, \mathbf{0}^0)} q_4$

$\xrightarrow{a(\mathbf{1}^1, \circ)} q_5(\mathbf{0}^1)$

$\xrightarrow{b(\mathbf{1}^1, \mathbf{0}^0)} q_2$

$\xrightarrow{b(\mathbf{1}^1, \circ)} q_3(\mathbf{0}^1)$

State q_{10}

$P(\mathbf{0}^2, \mathbf{1}^1) \rightarrow b(\mathbf{0}^2, \mathbf{0}^0) b(\mathbf{1}^0, \mathbf{1}^1) P(\mathbf{0}^0, \mathbf{1}^0) \cdot [bPb]$

State q_{11}

$P(\mathbf{0}^2, \mathbf{1}^1) \rightarrow a(\mathbf{0}^2, \mathbf{0}^0) a(\mathbf{1}^0, \mathbf{1}^1) P(\mathbf{0}^0, \mathbf{1}^0) \cdot [aPa]$

State q_{12}

$S() \rightarrow \text{start}(\mathbf{0}^0, \mathbf{1}^0) P(\mathbf{0}^0, \mathbf{1}^0) \cdot [init]$