|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q5,a) =(q5,b,R) | D1011010111011 |
| (q5,b)=(q5,b,L) | D1011101011101 |
| (q5,[] ) = (q2,[],R) | D10101101011 |

W= ab = 110111

F=11

110111D1011010111011D1011101011101D10101101011F11

TRUE

TM over = {a,b} for accepting L= {a^nb^nc^n : n>=1 }

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,a) = (q1,x,R) | D1011011011111011 |
| (q0,y) = (q4,y,R) | D101111110111110111111011 |
| (q1,a ) = (q1,a,R) | D11011011011011 |
| (q1,y) = (q1,y,R) | D1101111110110111111011 |
| (q1,b) = (q2,y,R) | D11011101110111111011 |
| (q2,b) = (q2,b,R) | D111011101110111011 |
| (q2,z) = (q2,z,R) | D110111111101101111111011 |
| (q2,c) = (q3 ,z, L) | D11101111011110111111101 |
| (q3, a) = (q3,a, L) | D11110110111101101 |
| (q3, b) = (q3,b, L) | D1111011101111011101 |
| (q3, y) = (q3,y, L) | D1111011111101111011111101 |
| (q3, z) = (q3,z, L) | D111101111111011110111111101 |
| (q3, x) = (q0,x, R) | D111101111101011111011 |
| (q4, y) = (q4,y, R) | D1111101111110111110111111011 |
| (q4, z) = (q4,z, R) | D111110111111101111101111111011 |
| (q4, [ ] ) = (q5 , [ ] , R) | D1111101011111101011 |

a = 11 , b = 111 , c = 1111 , x =11111, y = 111111 , z =1111111

q0 = 1 , q1=11, q2 =111,q3=1111, q4=11111, q5=111111

F=q5=111111

W=abc = 11011101111

11011101111D1011011011111011D101111110111110111111011D11011101110111111011D11101111011110111111101D111011101110111011D1101111110110111111011D1111011101111011101D110111111101101111111011D1111011111101111011111101D11110110111101101D111101111111011110111111101D1111101111110111110111111011D111101111101011111011D111110111111101111101111111011D1111101011111101011F111111

Accept

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

L = { a^n : n>= 1 } over = {a,b}

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,a) =(q1,a,R) | D1011011011011 |
| (q1,a)=(q1,a,R) | D11011011011011 |
| (q1,[] ) = (q2,[],L) | D110101110101 |

W=aaa=11011011

11011011D1011011011011D11011011011011D110101110101F111

TRUE

L ={ ab } over = {a,b}

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,a) =(q1,a,R) | D1011011011011 |
| (q1,b)=(q0,b,L) | D11011101011101 |

W=ab = 110111

110111D1011011011011D11011101011101F11

Loop

L ={some kind } over = {a,b}

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,a) =(q0,b,R) | D1011010111011 |
| (q0,b)=(q0,b,L) | D1011101011101 |
| (q0,[ ] ) = ( q1, [ ] ,R ) | D10101101011 |

q1= accepting state

W=aaba = 110110111011 (expected false )

110110111011D1011010111011D1011101011101D10101101011F11

Should True

W=bb= 1110111 (expected false )

1110111D1011010111011D1011101011101D10101101011F11

Should True

TM accepts palindrome of the string over = {a,b}

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,b) =(q1,[],R) | D1011101101011 |
| (q0,[])=(q6,[],R) | D1010111111101011 |
| (q0,a) = (q4, [] ,R) | D101101111101011 |
| (q1,a)=(q1,a,R) | D11011011011011 |
| (q1,b ) = ( q1, b ,R ) | D1101110110111011 |
| (q1,[]) = (q2,[], L) | D110101110101 |
| (q2,b) =(q3,[],L) | D110111011110101 |
| (q2,[]) = (q6,[],R) (q6=accept) | D111010111111101011 |
| (q3,a) = (q3,a,L) | D11110110111101101 |
| (q3,b) = (q3,b,L) | D1111011101111011101 |
| (q3,[])=(q3,[],R) | D1111010111101011 |
| (q4,a)=(q4,a,R) | D11111011011111011011 |
| (q4,b) = (q4,b,R) | D1111101110111110111011 |
| (q4,[])=(q5,[],L) | D111110101111110101 |
| (q5,[])=(q6,[],R) | D111111010111111101011 |
| (q5,a)=(q3,[],L) | D111111011011110101 |

W= ababa = 1101110110111011

1101110110111011D1011101101011D1010111111101011D101101111101011D11011011011011D1101110110111011D110101110101D110111011110101D111010111111101011D11110110111101101D1111011101111011101D1111010111101011D11111011011111011011D1111101110111110111011D111110101111110101D111111010111111101011D111111011011110101F1111111

TM contains ‘ab’ as substring over = {a,b}

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,b) =(q0,b,R) | D10111010111011 |
| (q0,a)=(q1,a,R) | D1011011011011 |
| (q1,a ) = ( q1, a ,R ) | D11011011011011 |
| (q1,b) =(q2,b,R) | D11011101110111011 |

q2= accepting state

W=bbba = 11101110111011 (expected false )

11101110111011D10111010111011D1011011011011D11011011011011D11011101110111011F111

Reject

W=baba= 1110110111011 (expected true )

1110110111011D10111010111011D1011011011011D11011011011011D11011101110111011F111

TRUE

|  |  |
| --- | --- |
| Sub-Rule | Encode String |
| (q0,a) =(q1,a,R) | D1011011011011 |
| (q1,a)=(q2,a,R) | D110110111011011 |

W= ab (FALSE)

110111D1011011011011D110110111011011F111

111s11C110111D1011010111011D1011101011101D10101101011F11j10P110111

K111sXXC11011Nx011010111011Nx011101011101Nx0101101011F11j10P110111

KAsXXC11101110111011D10111010111011F110111j

KAsXXCF111011j

111s111C11011101111D1011011011111011D101111110111110111111011D11011101110111111011D1101111011110111111101D1111011111101111011111101D111101111111011110111111101D111101111101011111011D111110111111101111101111111011D1111101011111101011F111111j1111101111110P111