**JULIE JEAN ABIGAIL C. EGMILAN BSCPE-4**

**914843**

B. L = {W ϵ(a,b)\*|W has both ba & ab as substring }

L = ϵ\*ba ϵ\* ϵ\*ab ϵ\* + ϵ\*ab ϵ\* ϵ\*ba ϵ\*

State Diagram:

**a**

**b**

**a**

**a**

**q6**

**q3**

**q1**

**b**

**b**

**b a**

**q8**

**a,b**

**q0**

**q5**

**b**

**a**

**q4**

**q7**

**q2**

**a**

**a**

**b**

**b**

**b**

**a**

|  |  |  |
| --- | --- | --- |
|  | a | b |
| q0 | q2 | q1 |
| q1 | q3 | q1 |
| q2 | q2 | q4 |
| q3 | q6 | q5 |
| q4 | q5 | q7 |
| q5 | q6 | q7 |
| q6 | q6 | q8 |
| q7 | q8 | q7 |
| q8 | q8 | q8 |

Q = q0,q1,q2,q3,q4,q5,q6,q7,q8

ϵ = (a,b)

Initial State = {q0}

Final State ={ q8}

#include<iostream>

using namespace std;

int main() {

int j=0, state=0;

int table[9][2]={{2,1},{3,1},{2,4},{6,5},{5,7},{6,7},{6,8},{8,7},{8,8}};

int input;

int flag=0;

char st[10];

cin>>st;

while(st[j]){

switch (st[j]){

case 'a': input=0;break; //collumn

case 'b': input=1;break; //collumn

}

state=table[state][input];

if (state ==8){flag =1; break;}

j++;

}

if (flag==1){cout<<"accepted";}

else {cout<<"not accepted";}

return 0;

}

