***Aim: -***Write a program to implements Lamports Shostack Algorithm.

***Program:-***

***(Java Code)***

import java.util.Random;

import javax.swing.\*;

public class SPA extends JFrame {

int total=0;

int faulty=0;

int non\_faulty=0;

String status="no";

String direct\_result=null;

int reqset[][]=new int[16][16];

/\*\* Creates new form SPA \*/

public SPA() {

initComponents();

jRadioButton2.setSelected(true);

}

/\*\* This method is called from within the constructor to

\* initialize the form.

\* WARNING: Do NOT modify this code. The content of this method is

\* always regenerated by the Form Editor.

\*/

@SuppressWarnings("unchecked")

// <editor-fold defaultstate="collapsed" desc="Generated Code">

private void initComponents() {

jLabel1 = new javax.swing.JLabel();

jLabel2 = new javax.swing.JLabel();

jLabel3 = new javax.swing.JLabel();

jComboBox1 = new javax.swing.JComboBox();

jComboBox2 = new javax.swing.JComboBox();

jRadioButton1 = new javax.swing.JRadioButton();

jRadioButton2 = new javax.swing.JRadioButton();

jButton1 = new javax.swing.JButton();

jLabel4 = new javax.swing.JLabel();

jScrollPane1 = new javax.swing.JScrollPane();

jTextArea1 = new javax.swing.JTextArea();

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT\_ON\_CLOSE);

jLabel1.setText("SOURCE PROCESSOR : ");

jLabel2.setText("TOTAL PROCESSORS : ");

jLabel3.setText("FAULTY PROCESSORS :");

jComboBox1.setMaximumRowCount(9);

jComboBox1.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "0", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16" }));

jComboBox1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jComboBox1ActionPerformed(evt);

} });

jComboBox2.setMaximumRowCount(9);

jComboBox2.setModel(new javax.swing.DefaultComboBoxModel(new String[] { "0", "1", "2", "3", "4", "5", "6", "7", "8", "9", "10", "11", "12", "13", "14", "15", "16" }));

jComboBox2.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jComboBox2ActionPerformed(evt);

} });

jRadioButton1.setText("FAULTY");

jRadioButton1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jRadioButton1ActionPerformed(evt);

} });

jRadioButton2.setText("NON-FAULTY");

jRadioButton2.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jRadioButton2ActionPerformed(evt);

} });

jButton1.setText("CHECK FOR AGREEMENT");

jButton1.addActionListener(new java.awt.event.ActionListener() {

public void actionPerformed(java.awt.event.ActionEvent evt) {

jButton1ActionPerformed(evt);

} });

jLabel4.setText("RESULT :");

jTextArea1.setColumns(20);

jTextArea1.setRows(5);

jScrollPane1.setViewportView(jTextArea1);

javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());

getContentPane().setLayout(layout);

layout.setHorizontalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

.addGap(23, 23, 23)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

.addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED\_SIZE, 165, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 156, Short.MAX\_VALUE)

.addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGroup(layout.createSequentialGroup()

.addGap(1, 1, 1)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jButton1, javax.swing.GroupLayout.DEFAULT\_SIZE, 357, Short.MAX\_VALUE)

.addGroup(layout.createSequentialGroup()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)

.addComponent(jLabel1, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE)

.addComponent(jLabel3, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, Short.MAX\_VALUE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 54, Short.MAX\_VALUE)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addComponent(jComboBox2, javax.swing.GroupLayout.Alignment.TRAILING, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addGroup(javax.swing.GroupLayout.Alignment.TRAILING, layout.createSequentialGroup()

.addComponent(jRadioButton1, javax.swing.GroupLayout.PREFERRED\_SIZE, 73, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addComponent(jRadioButton2))))

.addComponent(jLabel4, javax.swing.GroupLayout.PREFERRED\_SIZE, 143, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT\_SIZE, 357, Short.MAX\_VALUE))))

.addGap(31, 31, 31))

);

layout.setVerticalGroup(

layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)

.addGroup(layout.createSequentialGroup()

.addContainerGap()

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel2)

.addComponent(jComboBox1, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jLabel3)

.addComponent(jComboBox2, javax.swing.GroupLayout.PREFERRED\_SIZE, javax.swing.GroupLayout.DEFAULT\_SIZE, javax.swing.GroupLayout.PREFERRED\_SIZE))

.addGap(18, 18, 18)

.addGroup(layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)

.addComponent(jRadioButton2)

.addComponent(jRadioButton1)

.addComponent(jLabel1))

.addGap(18, 18, 18)

.addComponent(jButton1)

.addGap(26, 26, 26)

.addComponent(jLabel4, javax.swing.GroupLayout.PREFERRED\_SIZE, 14, javax.swing.GroupLayout.PREFERRED\_SIZE)

.addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)

.addComponent(jScrollPane1, javax.swing.GroupLayout.DEFAULT\_SIZE, 148, Short.MAX\_VALUE)

.addContainerGap())

);

pack();

}// </editor-fold>

private void jRadioButton1ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

jRadioButton2.setSelected(false);

jRadioButton1.setSelected(true);

status="yes";

}

private void jRadioButton2ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

jRadioButton1.setSelected(false);

jRadioButton2.setSelected(true);

status="no";

}

private void jButton1ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

int f=0,n=1;

int kk=0;

if(((status.equalsIgnoreCase("yes"))&&(faulty==0))||(total==0))

jTextArea1.setText("WRONG INPUTS !");

else

{

if(faulty<=total)

{

non\_faulty=total-faulty;

if(status.equalsIgnoreCase("yes"))

{

f=1;n=0;

Random r=new Random();

int val=r.nextInt(2);

reqset[0][0]=val;

for(int i=1;i<total;i++)

{

val=r.nextInt(2);

reqset[i][0]=val;

} }

else

{

for(int i=0;i<total;i++)

{

reqset[i][0]=1;

} }

direct\_result="RESULT : AGREEMNT IS NOT POSSIBLE ALWAYS , BUT THIS TIME MEET AT VALUE =" +reqset[0][0];

if(faulty<((total-1)/3))

direct\_result="RESULT : AGREEMENT REACHED AT VALUE ="+reqset[0][0];

/\* int adder=0;

if(faulty==0)

adder=1;

else

adder=0; \*/

for(int k=1;k<=faulty-f;k++)

{

OM(k,"yes");

}

for(int k=(faulty+n);k<total;k++)

{

OM(k,"no");

}

String str = " ";

for(int i=1;i<total;i++)

{

int n1=0,n0=0;

String req = " " ;

for(int j=0;j<total-1;j++)

{

req=req+reqset[i][j];

if(reqset[i][j]==1)

n1++;

else

n0++;

kk=1;

if((n1>n0)&&(reqset[0][0]!=1))

{

direct\_result="RESULT : AGREEMNT IS NOT POSSIBLE ";

kk=1;

}

else if((n1 < n0) && (reqset[0][0] != 0))

{

direct\_result="RESULT : AGREEMNT IS NOT POSSIBLE ";

kk=0;

}

else if(n1==n0)

direct\_result="RESULT : AGREEMNT IS NOT POSSIBLE ";

else

direct\_result="RESULT : AGREEMENT REACHED AT VALUE ="+reqset[0][0];

}

str=str+"MEJORITY FOR PROCESSOR"+i+" is =("+req+") ======> MEJORITY = "+kk+"\n ";

}

jTextArea1.setText("SOURCE BROADCASTED VALUE ="+reqset[0][0]+"\n \n"+str+"\n \n"+direct\_result);

}

else

jTextArea1.setText(" WRONG INPUTS !");

} }

private void jComboBox2ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

faulty = Integer.parseInt((String)jComboBox2.getSelectedItem());

}

private void jComboBox1ActionPerformed(java.awt.event.ActionEvent evt) {

// TODO add your handling code here:

total = Integer.parseInt((String)jComboBox1.getSelectedItem()); }

public void OM(int m ,String st)

{

Random r=new Random();

int val=reqset[0][0],n11=0,n00=0;

if(st.equalsIgnoreCase("no"))

{

for(int i=0;i<m;i++)

{

if(reqset[m][i]==1)

n11++;

else

n00++;

if(n11>n00)

val=1;

else if(n00>n11)

val=0;

}

for(int i=1; i<total;i++)

{

if(i==m)

continue;

else

{

if(i<m)

reqset[i][m-1]=val;

else

reqset[i][m]=val;

} } }

else

{

for(int i=1; i<total;i++)

{

if(i==m)

continue;

else

{

val=r.nextInt(2);

if(i<m)

reqset[i][m-1]=val;

else

reqset[i][m]=val;

} } } }

/\*\*

\* @param args the command line arguments

\*/

public static void main(String args[]) {

java.awt.EventQueue.invokeLater(new Runnable() {

public void run() {

SPA spa=new SPA();

spa.setSize(1000,600);

spa.setTitle("Saustak-Peace Algorithm");

spa.setVisible(true);

} });

}

// Variables declaration - do not modify

private javax.swing.JButton jButton1;

private javax.swing.JComboBox jComboBox1;

private javax.swing.JComboBox jComboBox2;

private javax.swing.JLabel jLabel1;

private javax.swing.JLabel jLabel2;

private javax.swing.JLabel jLabel3;

private javax.swing.JLabel jLabel4;

private javax.swing.JRadioButton jRadioButton1;

private javax.swing.JRadioButton jRadioButton2;

private javax.swing.JScrollPane jScrollPane1;

private javax.swing.JTextArea jTextArea1;

// End of variables declaration

}

***Output :-***







