Tecnológico de Estudios Superiores de Ecatepec

División de Ingeniería en Sistemas Computacionales

Academia en Ciencias de la Ingeniería

Materia Lenguajes y Autómatas I

Grupo 5501

Alumno

Campero Granados Luis Daniel

Profesor

Hernández Rojas Rosa María

Proyecto – Máquina de Jugos

Índice

1. Introducción

La máquina de la cual veremos su funcionamiento a continuación es una maquina exprimidora de jugo, este es un aparato eléctrico el cual es usado para la extracción por medio de la fricción y presión del zumo de distintas frutas especialmente cítricas, como, por ejemplo: naranjas, limones, etc.

En este trabajo se investigó un poco más sobre la maquina de jugo ya que esta que hicimos se le ingresaban monedas entonces para conocer más su procedimiento y poder programarlo.

El programa que lo que se hizo fue en dos JFrame para que nos muestre de forma gráfica cómo funciona la máquina en la parte de botones donde se selecciona el tipo de jugo a comprar, se ingresa el dinero para poder realizar la compra, se muestran los tipos que son y, al realizar la compra este arrojara el cambio de la compra para que el cliente lo recoja al igual que su jugo tendrá que recoger, estos pasos se realizan en el lenguaje de programación de Java en la IDE de NetBeans.

2. Justificación

En esta parte del proyecto el programa se hizo de forma gráfica para que las demás personas entiendan el como funciona el autómata dentro de esta máquina, esto con el fin de que todos sepan para que se necesitan los autómatas en cada cosa que usamos en su vida diaria.

La realización de está maquina es principalmente para facilitar la elaboración de los jugos, ya que hacerlos manualmente consta mas de varios minutos de su elaboración para poder obtener uno.

3. Objetivos

3.1. Objetivo General

Elaborar un programa que nos muestre como funciona una máquina de jugos para saber el algoritmo que maneja.

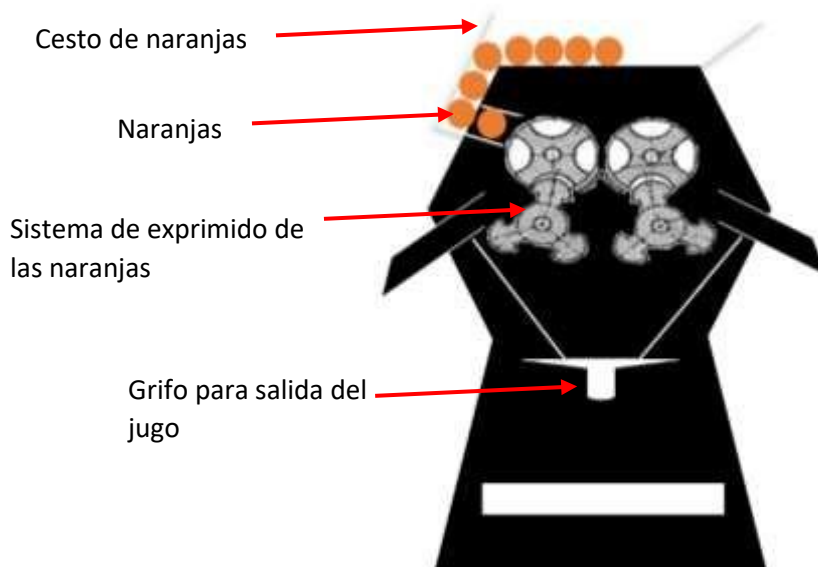## 3.2. Objetivo Especifico

Conocer cómo funciona el la maquina por medio de programa y el recorrido del autómata especificado.

4. Desarrollo

Este proyecto está enfocado a las máquinas de jugo de naranja (automáticas), aquí elaboraremos el programa con el cual mostraremos como funciona este aparato por medio de una simulación y ver cómo actúa con las diferentes combinaciones que le entraran a la máquina.

Este programa grafico nos muestra como se lleva cada proceso en el autómata para llegar en un estado final, ósea, la finalidad de su tarea

4.1. Maquina de jugos de naranja

Cesto de naranjas

Naranjas

Sistema de exprimido de las naranjas

Grifo para salida del jugo

4.2. Código

```java
import com.sun.prism.paint.Color;

import java.awt.Image;

import java.util.Set;

import javax.swing.Icon;

import javax.swing.ImageIcon;

import javax.swing.JOptionPane;


public class Maquina extends javax.swing.JFrame {

    public String operador;

    public float din, cam;

    public int d1, d2, d3, d4, d5;

    Visualizacion trab = new Visualizacion();


    public Maquina() {

        initComponents();

        d1=0;

        d2=0;

        d3=0;

        d4=0;

        d5=0;

        din = 0;

        cam = 0;

        this.setLocationRelativeTo(null);

    }

    public void exe(int d1, int d2, int d3, int d4){

        ImageIcon cinco = new ImageIcon(getClass().getResource("/imagenes/5.png"));

        ImageIcon icinco = new ImageIcon(cinco.getImage().getScaledInstance(din1.getWidth(), din1.getHeight(),
Image.SCALE_DEFAULT));

        if(d1==1){

            din1.setIcon(icinco);

            cam1.setText("x1");

        }

        ImageIcon diez = new ImageIcon(getClass().getResource("/imagenes/10.png"));

        ImageIcon idiez = new ImageIcon(diez.getImage().getScaledInstance(din2.getWidth(), din2.getHeight(),
Image.SCALE_DEFAULT));

        if(d2==1){

            din2.setIcon(idiez);

            cam2.setText("x1");

        }

        if(d2==2){

            din2.setIcon(idiez);

            cam2.setText("x2");
```

```java
        }
    ImageIcon veinte = new ImageIcon(getClass().getResource("/imagenes/20.png"));
    ImageIcon iveinte = new ImageIcon(veinte.getImage().getScaledInstance(din3.getWidth(), din3.getHeight(),
Image.SCALE_DEFAULT));
    if(d3==1){
        din3.setIcon(iveinte);
        cam3.setText("x1");
    }
    ImageIcon cincuenta = new ImageIcon(getClass().getResource("/imagenes/50.png"));
    ImageIcon icincuenta = new ImageIcon(cincuenta.getImage().getScaledInstance(din4.getWidth(), din4.getHeight(),
Image.SCALE_DEFAULT));
    if(d4==1){
        din4.setIcon(icincuenta);
        cam4.setText("x1");
    }
    ImageIcon cien = new ImageIcon(getClass().getResource("/imagenes/100.png"));
    ImageIcon icien = new ImageIcon(cien.getImage().getScaledInstance(din5.getWidth(), din5.getHeight(),
Image.SCALE_DEFAULT));
    if(d5==1){
        din5.setIcon(icien);
        cam5.setText("x1");
    }
    }
    public void cambio(float camb){
        if(cam == 0){
            d1=0;
            d2=0;
            d3=0;
            d4=0;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 5){
            d1=1;
            d2=0;
            d3=0;
            d4=0;
            exe(d1, d2, d3, d4);
            din = 0;
        }
            if(cam == 10){
                d1=0;
                d2=1;
                d3=0;
```

```
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 15){
        d1=1;
        d2=1;
        d3=0;
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 20){
        d1=0;
        d2=0;
        d3=1;
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 25){
        d1=1;
        d2=0;
        d3=1;
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 30){
        d1=0;
        d2=1;
        d3=1;
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 35){
        d1=1;
        d2=1;
        d3=1;
        d4=0;
        exe(d1, d2, d3, d4);
        din = 0;
```

```
        }
        if(cam == 40){
            d1=0;
            d2=0;
            d3=2;
            d4=0;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 45){
            d1=1;
            d2=2;
            d3=1;
            d4=0;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 50){
            d1=0;
            d2=0;
            d3=0;
            d4=1;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 55){
            d1=1;
            d2=0;
            d3=0;
            d4=1;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 60){
            d1=0;
            d2=1;
            d3=0;
            d4=1;
            exe(d1, d2, d3, d4);
            din = 0;
        }
        if(cam == 65){
            d1=1;
```

```
        d2=1;
        d3=0;
        d4=1;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 70){
        d1=0;
        d2=0;
        d3=1;
        d4=1;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 75){
        d1=1;
        d2=0;
        d3=1;
        d4=1;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 80){
        d1=0;
        d2=1;
        d3=1;
        d4=1;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 85){
        d1=1;
        d2=1;
        d3=1;
        d4=1;
        exe(d1, d2, d3, d4);
        din = 0;
    }
    if(cam == 90){
        d1=0;
        d2=0;
        d3=2;
        d4=1;
```

```java
                exe(d1, d2, d3, d4);
                din = 0;
            }
    }
    public void limpiar(){
        din1.setIcon(null);
        cam1.setText("");
        din2.setIcon(null);
        cam2.setText("");
        din3.setIcon(null);
        cam3.setText("");
        din4.setIcon(null);
        cam4.setText("");
        din5.setIcon(null);
        cam5.setText("");
    }

    //Metodos para ingresar el dínero
    public void Cinco(){
        limpiar();
        din = din + 5;
        operador = "" + din;
        LDinero.setText(operador);
    }
    public void Diez(){
        limpiar();
        din = din + 10;
        operador = "" + din;
        LDinero.setText(operador);
        LCambio.setText("");
    }
    public void Veinte(){
        limpiar();
        din = din + 20;
        operador = "" + din;
        LDinero.setText(operador);
        LCambio.setText("");
    }
    public void Cincuenta(){
        limpiar();
        din = din + 50;
        operador = "" + din;
        LDinero.setText(operador);
```

```java
            LCambio.setText("");
        }
        public void Cien(){
            limpiar();
            din = din + 100;
            operador = "" + din;
            LDinero.setText(operador);
            LCambio.setText("");
        }


        @SuppressWarnings("unchecked")
        // <editor-fold defaultstate="collapsed" desc="Generated Code">
        private void initComponents() {

            jInternalFrame1 = new javax.swing.JInternalFrame();
            jPanel3 = new javax.swing.JPanel();
            jLabel1 = new javax.swing.JLabel();
            cincobtn = new javax.swing.JButton();
            jLabel4 = new javax.swing.JLabel();
            LDinero = new javax.swing.JLabel();
            jLabel3 = new javax.swing.JLabel();
            diezbtn = new javax.swing.JButton();
            cienbtn = new javax.swing.JButton();
            veintebtn = new javax.swing.JButton();
            cincuentabtn = new javax.swing.JButton();
            jPanel1 = new javax.swing.JPanel();
            seisRB = new javax.swing.JRadioButton();
            liRB = new javax.swing.JRadioButton();
            litrosRB = new javax.swing.JRadioButton();
            jLabel5 = new javax.swing.JLabel();
            jugo1 = new javax.swing.JLabel();
            jugo2 = new javax.swing.JLabel();
            jugo3 = new javax.swing.JLabel();
            ComprarBtn = new javax.swing.JButton();
            CancelarBtn = new javax.swing.JButton();
            LCambio = new javax.swing.JLabel();
            CambioBtn1 = new javax.swing.JButton();
            jPanel2 = new javax.swing.JPanel();
            jLabel2 = new javax.swing.JLabel();
            din1 = new javax.swing.JLabel();
            din2 = new javax.swing.JLabel();
            din3 = new javax.swing.JLabel();
            din4 = new javax.swing.JLabel();
```

```java
din5 = new javax.swing.JLabel();
cam1 = new javax.swing.JLabel();
cam2 = new javax.swing.JLabel();
cam3 = new javax.swing.JLabel();
cam5 = new javax.swing.JLabel();
cam4 = new javax.swing.JLabel();

jInternalFrame1.setVisible(true);

javax.swing.GroupLayout jInternalFrame1Layout = new javax.swing.GroupLayout(jInternalFrame1.getContentPane());
jInternalFrame1.getContentPane().setLayout(jInternalFrame1Layout);
jInternalFrame1Layout.setHorizontalGroup(
    jInternalFrame1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addGap(0, 0, Short.MAX_VALUE)
);
jInternalFrame1Layout.setVerticalGroup(
    jInternalFrame1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addGap(0, 0, Short.MAX_VALUE)
);

setDefaultCloseOperation(javax.swing.WindowConstants.EXIT_ON_CLOSE);
setTitle("Vending Machine");

jPanel3.setBackground(new java.awt.Color(204, 255, 255));
jPanel3.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));

jLabel1.setFont(new java.awt.Font("Arial Black", 3, 36)); // NOI18N
jLabel1.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);
jLabel1.setText("MAQUINA DE JUGOS ");

cincobtn.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/5.png"))); // NOI18N
cincobtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
cincobtn.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        cincobtnActionPerformed(evt);
    }
});

jLabel4.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
jLabel4.setText("Dinero:");

LDinero.setFont(new java.awt.Font("Tahoma", 0, 18)); // NOI18N
```

```java
jLabel3.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
jLabel3.setText("Su cambio es de:");

diezbtn.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/10.png"))); // NOI18N
diezbtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
diezbtn.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        diezbtnActionPerformed(evt);
    }
});

cienbtn.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/100.png"))); // NOI18N
cienbtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
cienbtn.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        cienbtnActionPerformed(evt);
    }
});

veintebtn.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/20.png"))); // NOI18N
veintebtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
veintebtn.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        veintebtnActionPerformed(evt);
    }
});

cincuentabtn.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/50.png"))); // NOI18N
cincuentabtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
cincuentabtn.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        cincuentabtnActionPerformed(evt);
    }
});

jPanel1.setBackground(new java.awt.Color(204, 255, 255));
jPanel1.setBorder(new javax.swing.border.SoftBevelBorder(javax.swing.border.BevelBorder.RAISED));
jPanel1.setForeground(new java.awt.Color(204, 255, 255));

seisRB.setBackground(new java.awt.Color(204, 255, 255));
seisRB.setFont(new java.awt.Font("Arial", 1, 18)); // NOI18N
seisRB.setText("600 ml  $15 ");
seisRB.addActionListener(new java.awt.event.ActionListener() {
```

```java
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        seisRBActionPerformed(evt);
    }
});

liRB.setBackground(new java.awt.Color(204, 255, 255));
liRB.setFont(new java.awt.Font("Arial", 1, 18)); // NOI18N
liRB.setText("1 litro $25 ");
liRB.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        liRBActionPerformed(evt);
    }
});

litrosRB.setBackground(new java.awt.Color(204, 255, 255));
litrosRB.setFont(new java.awt.Font("Arial", 1, 18)); // NOI18N
litrosRB.setText("2 litros $45");
litrosRB.addActionListener(new java.awt.event.ActionListener() {
    public void actionPerformed(java.awt.event.ActionEvent evt) {
        litrosRBActionPerformed(evt);
    }
});

jLabel5.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
jLabel5.setText("Eliga el tamaño de jugo");

jugo1.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/600.jpg"))); // NOI18N

jugo2.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/litro.jpg"))); // NOI18N

jugo3.setIcon(new javax.swing.ImageIcon(getClass().getResource("/imagenes/doslitro.jpg"))); // NOI18N

javax.swing.GroupLayout jPanel1Layout = new javax.swing.GroupLayout(jPanel1);
jPanel1.setLayout(jPanel1Layout);
jPanel1Layout.setHorizontalGroup(
    jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
    .addGroup(jPanel1Layout.createSequentialGroup()
        .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel1Layout.createSequentialGroup()
                .addComponent(jLabel5)
                .addGap(0, 0, Short.MAX_VALUE))
            .addGroup(jPanel1Layout.createSequentialGroup()
                .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```java
                        .addComponent(seisRB)
                        .addGroup(jPanel1Layout.createSequentialGroup()
                          .addContainerGap()
                          .addComponent(jugo1, javax.swing.GroupLayout.PREFERRED_SIZE, 108,
javax.swing.GroupLayout.PREFERRED_SIZE)))
                      .addGap(32, 32, 32)
                      .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                        .addGroup(jPanel1Layout.createSequentialGroup()
                          .addComponent(jugo2, javax.swing.GroupLayout.PREFERRED_SIZE, 108,
javax.swing.GroupLayout.PREFERRED_SIZE)
                          .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                          .addComponent(jugo3, javax.swing.GroupLayout.PREFERRED_SIZE, 108,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addGroup(jPanel1Layout.createSequentialGroup()
                          .addComponent(liRB)
                          .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 32, Short.MAX_VALUE)
                          .addComponent(litrosRB)))))
                .addContainerGap())
    );
    jPanel1Layout.setVerticalGroup(
        jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel1Layout.createSequentialGroup()
          .addComponent(jLabel5)
          .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
          .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jugo1, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
            .addComponent(jugo2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
            .addComponent(jugo3, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
          .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
          .addGroup(jPanel1Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
            .addComponent(seisRB)
            .addComponent(liRB)
            .addComponent(litrosRB)))
    );

    ComprarBtn.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
    ComprarBtn.setText("Comprar");
    ComprarBtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
    ComprarBtn.addActionListener(new java.awt.event.ActionListener() {
      public void actionPerformed(java.awt.event.ActionEvent evt) {
        ComprarBtnActionPerformed(evt);
      }
```

```
            });

        CancelarBtn.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
        CancelarBtn.setText("Cancelar");
        CancelarBtn.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
        CancelarBtn.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                CancelarBtnActionPerformed(evt);
            }
        });

        LCambio.setFont(new java.awt.Font("Tahoma", 0, 18)); // NOI18N

        CambioBtn1.setFont(new java.awt.Font("Arial", 1, 24)); // NOI18N
        CambioBtn1.setText("Cambio");
        CambioBtn1.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));
        CambioBtn1.addActionListener(new java.awt.event.ActionListener() {
            public void actionPerformed(java.awt.event.ActionEvent evt) {
                CambioBtn1ActionPerformed(evt);
            }
        });

        javax.swing.GroupLayout jPanel3Layout = new javax.swing.GroupLayout(jPanel3);
        jPanel3.setLayout(jPanel3Layout);
        jPanel3Layout.setHorizontalGroup(
            jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel3Layout.createSequentialGroup()
                .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addGroup(jPanel3Layout.createSequentialGroup()
                        .addContainerGap()
                        .addComponent(jLabel1, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                    .addGroup(jPanel3Layout.createSequentialGroup()
                        .addGap(54, 54, 54)
                        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addGroup(jPanel3Layout.createSequentialGroup()
                                .addComponent(ComprarBtn)
                                .addGap(59, 59, 59)
                                .addComponent(CambioBtn1)
                                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                .addComponent(CancelarBtn))
                            .addGroup(jPanel3Layout.createSequentialGroup()
                                .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
```

```java
                    .addComponent(jLabel4, javax.swing.GroupLayout.PREFERRED_SIZE, 132,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(jLabel3))
                    .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                        .addGroup(jPanel3Layout.createSequentialGroup()
                            .addGap(16, 16, 16)
                            .addComponent(LDinero, javax.swing.GroupLayout.PREFERRED_SIZE, 140,
javax.swing.GroupLayout.PREFERRED_SIZE))
                        .addGroup(jPanel3Layout.createSequentialGroup()
                            .addGap(18, 18, 18)
                            .addComponent(LCambio, javax.swing.GroupLayout.PREFERRED_SIZE, 140,
javax.swing.GroupLayout.PREFERRED_SIZE))))
                    .addComponent(jPanel1, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.PREFERRED_SIZE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED, 65, Short.MAX_VALUE)
                .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(veintebtn, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, 199, javax.swing.GroupLayout.PREFERRED_SIZE)
                    .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel3Layout.createSequentialGroup()
                        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addComponent(cincobtn, javax.swing.GroupLayout.PREFERRED_SIZE, 105,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(diezbtn, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                        .addGap(30, 30, 30)
                        .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                            .addComponent(cienbtn, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, 202, javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addComponent(cincuentabtn, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.PREFERRED_SIZE, 198, javax.swing.GroupLayout.PREFERRED_SIZE))))))
                .addContainerGap())
        );
        jPanel3Layout.setVerticalGroup(
            jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel3Layout.createSequentialGroup()
                .addComponent(jLabel1, javax.swing.GroupLayout.PREFERRED_SIZE, 88,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                    .addGroup(jPanel3Layout.createSequentialGroup()
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                        .addComponent(veintebtn)
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                        .addComponent(cincuentabtn)
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                        .addComponent(cienbtn))
                    .addGroup(jPanel3Layout.createSequentialGroup()
                        .addGap(33, 33, 33)
```

```
                    .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                        .addComponent(LDinero, javax.swing.GroupLayout.PREFERRED_SIZE, 25,
javax.swing.GroupLayout.PREFERRED_SIZE)
                        .addComponent(jLabel4))
                    .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                    .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                        .addGroup(javax.swing.GroupLayout.Alignment.TRAILING, jPanel3Layout.createSequentialGroup()
                            .addComponent(cincobtn)
                            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                            .addComponent(diezbtn, javax.swing.GroupLayout.PREFERRED_SIZE, 98,
javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addGap(73, 73, 73))
                        .addGroup(jPanel3Layout.createSequentialGroup()
                            .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING)
                                .addComponent(jLabel3)
                                .addComponent(LCambio, javax.swing.GroupLayout.PREFERRED_SIZE, 25,
javax.swing.GroupLayout.PREFERRED_SIZE))
                            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                            .addComponent(jPanel1, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                            .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                            .addGroup(jPanel3Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.BASELINE)
                                .addComponent(ComprarBtn)
                                .addComponent(CancelarBtn)
                                .addComponent(CambioBtn1))))))
                .addGap(19, 19, 19))
        );


        jPanel2.setBackground(new java.awt.Color(224, 228, 227));
        jPanel2.setBorder(javax.swing.BorderFactory.createBevelBorder(javax.swing.border.BevelBorder.RAISED));


        jLabel2.setFont(new java.awt.Font("Arial Black", 3, 36)); // NOI18N
        jLabel2.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);
        jLabel2.setText("CAMBIO");


        cam1.setFont(new java.awt.Font("Arial", 0, 24)); // NOI18N
        cam1.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);


        cam2.setFont(new java.awt.Font("Arial", 0, 24)); // NOI18N
        cam2.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);


        cam3.setFont(new java.awt.Font("Arial", 0, 24)); // NOI18N
        cam3.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);
```

```java
        cam5.setFont(new java.awt.Font("Arial", 0, 24)); // NOI18N
        cam5.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);


        cam4.setFont(new java.awt.Font("Arial", 0, 24)); // NOI18N
        cam4.setHorizontalAlignment(javax.swing.SwingConstants.CENTER);


        javax.swing.GroupLayout jPanel2Layout = new javax.swing.GroupLayout(jPanel2);
        jPanel2.setLayout(jPanel2Layout);
        jPanel2Layout.setHorizontalGroup(
            jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addContainerGap()
                .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(jLabel2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addGroup(jPanel2Layout.createSequentialGroup()
                        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
                            .addComponent(cam1, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE, 100, Short.MAX_VALUE)
                            .addComponent(din1, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                        .addGap(18, 18, 18)
                        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addComponent(din2, javax.swing.GroupLayout.DEFAULT_SIZE, 100, Short.MAX_VALUE)
                            .addComponent(cam2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                        .addGap(18, 18, 18)
                        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING, false)
                            .addComponent(din3, javax.swing.GroupLayout.DEFAULT_SIZE, 205, Short.MAX_VALUE)
                            .addComponent(cam3, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE))
                        .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.UNRELATED)
                        .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                            .addGroup(jPanel2Layout.createSequentialGroup()
                                .addComponent(din4, javax.swing.GroupLayout.PREFERRED_SIZE, 205, javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addGap(26, 26, 26)
                                .addComponent(din5, javax.swing.GroupLayout.PREFERRED_SIZE, 205, javax.swing.GroupLayout.PREFERRED_SIZE)
                                .addGap(0, 0, Short.MAX_VALUE))
                            .addGroup(jPanel2Layout.createSequentialGroup()
                                .addComponent(cam4, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                                .addGap(26, 26, 26)
                                .addComponent(cam5, javax.swing.GroupLayout.PREFERRED_SIZE, 205, javax.swing.GroupLayout.PREFERRED_SIZE)))))
                .addContainerGap())
```

```java
        );
        jPanel2Layout.setVerticalGroup(
            jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(jPanel2Layout.createSequentialGroup()
                .addComponent(jLabel2, javax.swing.GroupLayout.PREFERRED_SIZE, 88,
javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.TRAILING, false)
                    .addComponent(din4, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE,
100, Short.MAX_VALUE)
                    .addComponent(din3, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(din2, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(din1, javax.swing.GroupLayout.Alignment.LEADING, javax.swing.GroupLayout.DEFAULT_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, Short.MAX_VALUE)
                    .addComponent(din5, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE))
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addGroup(jPanel2Layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
                    .addComponent(cam1, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
                    .addComponent(cam2, javax.swing.GroupLayout.DEFAULT_SIZE, 38, Short.MAX_VALUE)
                    .addComponent(cam3, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.DEFAULT_SIZE, 38, Short.MAX_VALUE)
                    .addComponent(cam5, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.DEFAULT_SIZE, 38, Short.MAX_VALUE)
                    .addComponent(cam4, javax.swing.GroupLayout.Alignment.TRAILING,
javax.swing.GroupLayout.DEFAULT_SIZE, 38, Short.MAX_VALUE))
                .addContainerGap())
        );


        javax.swing.GroupLayout layout = new javax.swing.GroupLayout(getContentPane());
        getContentPane().setLayout(layout);
        layout.setHorizontalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addComponent(jPanel3, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
            .addComponent(jPanel2, javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.DEFAULT_SIZE,
Short.MAX_VALUE)
        );
        layout.setVerticalGroup(
            layout.createParallelGroup(javax.swing.GroupLayout.Alignment.LEADING)
            .addGroup(layout.createSequentialGroup()
                .addComponent(jPanel3, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addPreferredGap(javax.swing.LayoutStyle.ComponentPlacement.RELATED)
                .addComponent(jPanel2, javax.swing.GroupLayout.PREFERRED_SIZE,
javax.swing.GroupLayout.DEFAULT_SIZE, javax.swing.GroupLayout.PREFERRED_SIZE)
                .addContainerGap(23, Short.MAX_VALUE))
```

```java
    );

    pack();
}// </editor-fold>

private void seisRBActionPerformed(java.awt.event.ActionEvent evt) {
    if (seisRB.isSelected()){
        liRB.setSelected(false);
        litrosRB.setSelected(false);
    }
}

private void CancelarBtnActionPerformed(java.awt.event.ActionEvent evt) {
    System.exit(0);
}

private void liRBActionPerformed(java.awt.event.ActionEvent evt) {
    if (liRB.isSelected()){
        seisRB.setSelected(false);
        litrosRB.setSelected(false);
    }
}

private void litrosRBActionPerformed(java.awt.event.ActionEvent evt) {
    if (litrosRB.isSelected()){
        liRB.setSelected(false);
        seisRB.setSelected(false);
    }
}

private void ComprarBtnActionPerformed(java.awt.event.ActionEvent evt) {
    Icon jugo1 = new ImageIcon(getClass().getResource("/imagenes/600.jpg"));
    Icon jugo2 = new ImageIcon(getClass().getResource("/imagenes/litro.jpg"));
    Icon jugo3 = new ImageIcon(getClass().getResource("/imagenes/doslitro.jpg"));
    if(seisRB.isSelected()){
        cam = din - 15;
        if (cam < 0 ){
            JOptionPane.showMessageDialog(rootPane, "Lo siento no tienes suficiente dinero");
        }else{
            trab.setVisible(true);
            JOptionPane.showMessageDialog(rootPane, "Recoja su cambio");
            trab.setVisible(false);
            cambio(cam);
```

```java
            JOptionPane.showMessageDialog(null,"Recoja su jugo de 600 Mililitros", "Gracias por su compra",
JOptionPane.PLAIN_MESSAGE, jugo1);

            LCambio.setText(Double.toString(cam));

            LDinero.setText("");

            din = 0;

        }
    }else if(liRB.isSelected()){

        cam = din - 25;

        if (cam < 0 ){

            JOptionPane.showMessageDialog(rootPane, "Lo siento no tienes suficiente dinero");

        }else{

            trab.setVisible(true);

            JOptionPane.showMessageDialog(rootPane, "Recoja su cambio");

            trab.setVisible(false);

            cambio(cam);

            JOptionPane.showMessageDialog(null,"Recoja su jugo de 1 Litro", "Gracias por su compra",
JOptionPane.PLAIN_MESSAGE, jugo2);

            LCambio.setText(Double.toString(cam));

            LDinero.setText("");

            din = 0;

        }
    }else if(litrosRB.isSelected()){

        cam = din - 45;

        if (cam < 0 ){

            JOptionPane.showMessageDialog(rootPane, "Lo siento no tienes suficiente dinero");

        }else{

            trab.setVisible(true);

            JOptionPane.showMessageDialog(rootPane, "Recoja su cambio");

            trab.setVisible(false);

            cambio(cam);

            JOptionPane.showMessageDialog(null,"Recoja su jugo de 2 Litros", "Gracias por su compra",
JOptionPane.PLAIN_MESSAGE, jugo3);

            LCambio.setText(Double.toString(cam));

            LDinero.setText("");

            din = 0;

        }
    }
}


//Botones de Dinero
private void diezbtnActionPerformed(java.awt.event.ActionEvent evt) {

    Diez();

}
```

```java
    private void cincobtnActionPerformed(java.awt.event.ActionEvent evt) {
        Cinco();
    }


    private void veintebtnActionPerformed(java.awt.event.ActionEvent evt) {
        Veinte();
    }


    private void cincuentabtnActionPerformed(java.awt.event.ActionEvent evt) {
        Cincuenta();
    }


    private void cienbtnActionPerformed(java.awt.event.ActionEvent evt) {
        Cien();
    }


    private void CambioBtn1ActionPerformed(java.awt.event.ActionEvent evt) {
        cam = din - 0;
        if (cam < 0 ){
            JOptionPane.showMessageDialog(rootPane, "Lo siento no tienes suficiente dinero");
          }else{
            JOptionPane.showMessageDialog(rootPane, "Recoja su cambio");
            LCambio.setText(Double.toString(cam));
            LDinero.setText("");
            cambio(cam);
            din = 0;
        }
    }


    public static void main(String args[]) {
        java.awt.EventQueue.invokeLater(new Runnable() {
            public void run() {
                new Maquina().setVisible(true);
            }
        });
    }


    // Variables declaration - do not modify
    private javax.swing.JButton CambioBtn1;
    private javax.swing.JButton CancelarBtn;
    private javax.swing.JButton ComprarBtn;
    private javax.swing.JLabel LCambio;
    private javax.swing.JLabel LDinero;
```

```java
        private javax.swing.JLabel cam1;
        private javax.swing.JLabel cam2;
        private javax.swing.JLabel cam3;
        private javax.swing.JLabel cam4;
        private javax.swing.JLabel cam5;
        private javax.swing.JButton cienbtn;
        private javax.swing.JButton cincobtn;
        private javax.swing.JButton cincuentabtn;
        private javax.swing.JButton diezbtn;
        private javax.swing.JLabel din1;
        private javax.swing.JLabel din2;
        private javax.swing.JLabel din3;
        private javax.swing.JLabel din4;
        private javax.swing.JLabel din5;
        private javax.swing.JInternalFrame jInternalFrame1;
        private javax.swing.JLabel jLabel1;
        private javax.swing.JLabel jLabel2;
        private javax.swing.JLabel jLabel3;
        private javax.swing.JLabel jLabel4;
        private javax.swing.JLabel jLabel5;
        private javax.swing.JPanel jPanel1;
        private javax.swing.JPanel jPanel2;
        private javax.swing.JPanel jPanel3;
        private javax.swing.JLabel jugo1;
        private javax.swing.JLabel jugo2;
        private javax.swing.JLabel jugo3;
        private javax.swing.JRadioButton liRB;
        private javax.swing.JRadioButton litrosRB;
        private javax.swing.JRadioButton seisRB;
        private javax.swing.JButton veintebtn;
        // End of variables declaration
}
```

4.3. Diseño

4.4. Pruebas

Comprando un jugo de 600ml pagando con 20$

Maquina Trabajando
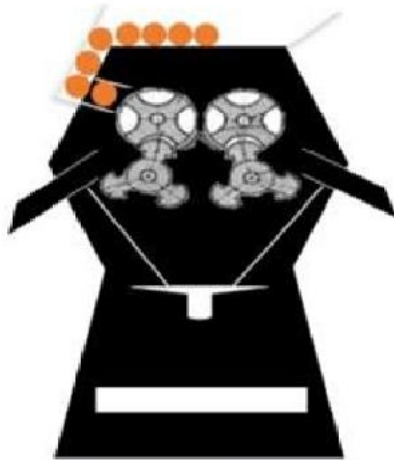
Mensaje

Recoja su cambio

Aceptar
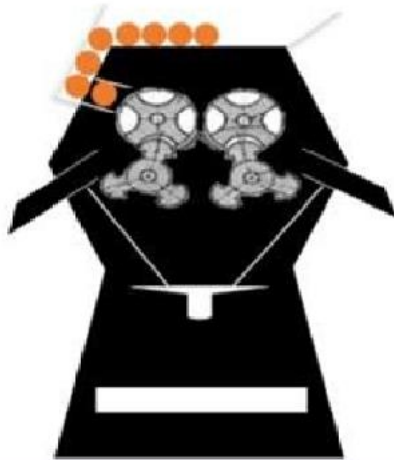
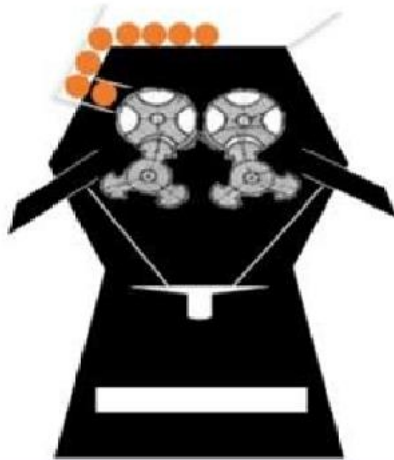Gracias por su compra

Recoja su jugo de 600 Mililitros

Aceptar

Comprando un jugo de 600ml pagando con 50$

Maquina Trabajando
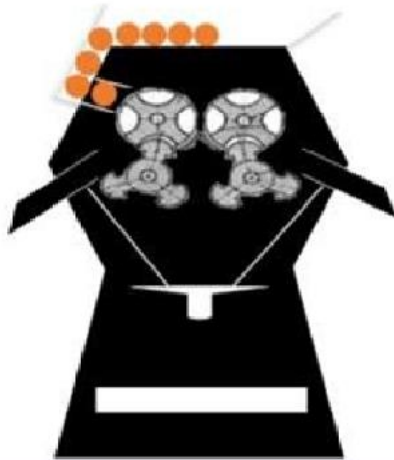
Mensaje ✕

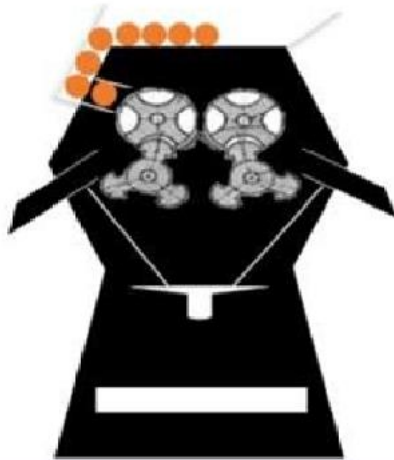ⓘ   Recoja su cambio

       [Aceptar]

Gracias por su compra ✕

    Recoja su jugo de 600 Mililitros

       [Aceptar]

MAQUINA DE JUGOS

Dinero:

Su cambio es de: 35.0

Eliga el tamaño de jugo

◉ 600 ml $15   ○ 1 litro $25   ○ 2 litros $45

Comprar   **Cambio**   **Cancelar**

CAMBIO

x1   x1   x1

Comprando un jugo de 600ml pagando con 100$

Maquina Trabajando

Mensaje

ⓘ Recoja su cambio

[Aceptar]

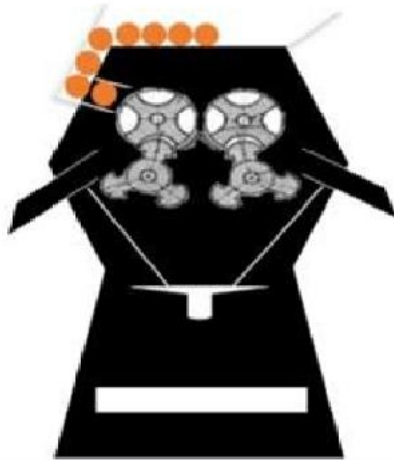**Gracias por su compra**

Recoja su jugo de 600 Mililitros

[Aceptar]

MAQUINA DE JUGOS

Dinero:

Su cambio es de: 85.0

Eliga el tamaño de jugo

◉ 600 ml $15   ○ 1 litro $25   ○ 2 litros $45

Comprar   **Cambio**   **Cancelar**

CAMBIO

x1   x1   x1   x1

Comprando un jugo de 1lt pagando con 30$

Maquina Trabajando

Mensaje

ⓘ Recoja su cambio

Aceptar

Gracias por su compra

Recoja su jugo de 1 Litro

Aceptar

Comprando un jugo de 1lt pagando con 50$

Maquina Trabajando

Mensaje ✕

ℹ Recoja su cambio

Aceptar

Gracias por su compra ✕

Recoja su jugo de 1 Litro

Aceptar

MAQUINA DE JUGOS

Dinero:

Su cambio es de: 25.0

Eliga el tamaño de jugo

○ 600 ml $15   ◉ 1 litro $25   ○ 2 litros $45

Comprar   **Cambio**   **Cancelar**

CAMBIO

x1   x1

Comprando un jugo de 1lt pagando con 100$

Maquina Trabajando

Mensaje

ℹ Recoja su cambio

Aceptar

Gracias por su compra

 Recoja su jugo de 1 Litro

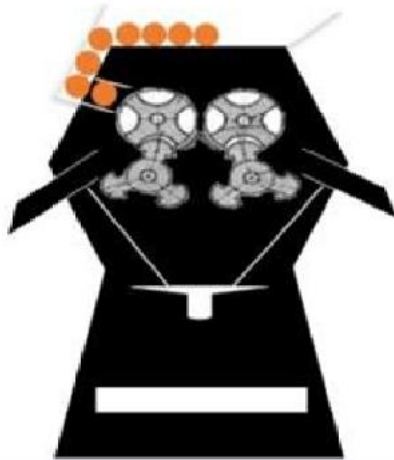Aceptar

Comprando un jugo de 2lt pagando con 50$

Maquina Trabajando

Mensaje

Recoja su cambio

Aceptar

Gracias por su compra

Recoja su jugo de 2 Litros

Aceptar

Comprando un jugo de 2lt pagando con 100$

Maquina Trabajando

Mensaje ✕

ⓘ Recoja su cambio

Aceptar

Gracias por su compra ✕

 Recoja su jugo de 2 Litros

Aceptar

5. Conclusión

Para poder realizar el proyecto de la máquina de jugos se tuvo que investigar como es el proceso de este, y cómo funcionan las máquinas expendedoras para poder entregar y revolver un producto y su cambio de la compra. La máquina de jugos se tiene que ingresar el dinero a través de botones que estos tendrán la función de ingresar la cantidad que se muestra en cada botón; es decir hay botones de 5, 10, 20, 50 y 100 pesos que estos hacen referencia al dinero que se ingresara en la máquina, así también se escogerá el tipo de jugo a comprar y al realizar la compra la maquina arrojara el cambio de la compra.

Mi proyecto lo hice con varias pruebas para comprobar que el programa que funcione de manera correcta y no tenga errores.

6. Referencias

https://franvarvil.blogspot.com/2011/11/colocar-iconos-personalizados-en.html

https://living-sun.com/es/java/461183-swing-joptionpane-background-color-is-different-java-swing-joptionpane-uimanager.html

https://es.stackoverflow.com/questions/62843/es-posible-conectar-un-frame-creado-en-un-jframe-y-como-lograrlo

https://stackoverrun.com/es/q/461731