

# **JAVA PROJECT REPORT**

(Project Term January-May 2023)

## **(Efficient Management of Campus Canteens using a Computerized system)**

Submitted by

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# **DECLARATION**

We hereby declare that the project work entitled ("**Efficient Management of Campus Canteens using a Computerized system**") is an authentic record of our own work carried out as requirements of Capstone Project for the award of B.Tech degree in CSE from Lovely Professional University, Phagwara, under the guidance of (Dr. A Ranjith Kumar), during January to May2023. All the information furnished in this capstone project report is based on our own intensive work and is genuine.

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(Signature)

Date:

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# **1.INTRODUCTION**

- A canteen management system is a software application that helps manage the operations of a canteen or cafeteria, such as in schools, colleges, hospitals, or offices. The system enables efficient management of orders, inventory, payments, and customer information, providing an easier and more streamlined process for canteen staff and customers.

## **1.1 USE**

- The use of a canteen management system can help increase the accuracy of order processing, reduce errors in payments and inventory, and improve overall customer satisfaction. Additionally, it can provide valuable insights into customer preferences and sales data, which can be used to make informed decisions on menu items and pricing.

## **1.2 TOOLS**

- In this context, using Java's Swing library and JFrames can be a powerful tool for developing a user-friendly and efficient canteen management system. By designing a visually appealing and intuitive user interface and implementing the necessary functions, a Java-based canteen management system can help enhance the efficiency and profitability of canteen operations.

## **2. SCOPE OF A PROJECT**

The scope of a canteen management system project can vary based on the specific needs of the organization, but typically it would include the following functionalities:

- **Menu Management:** The system should provide a menu management module that allows canteen staff to manage the menu items, including their prices, ingredients, and availability.
- **Ordering:** The system should allow customers to place orders for food items, view the status of their orders, and make payments through the system.
- **Inventory Management:** The system should allow the canteen staff to manage the inventory of ingredients and supplies, as well as track their usage and reorder levels.
- **Billing and Payment:** The system should generate bills for customers based on their orders and provide a payment module that allows customers to make payments through the system.
- **Reporting:** The system should provide various reports for the canteen staff and administrators, such as sales reports, inventory reports, and customer feedback reports.
- **User Management:** The system should provide user management functionality that allows the administrators to manage the access and permissions of different users (e.g., canteen staff, customers, and administrators).

In addition, the scope of the project could also include features such as integration with payment gateways, loyalty programs, and customer feedback systems. The project could also be extended to include mobile app development to allow users to access the system on their smartphones.

### **3.PROPOSED TECHNIQUE**

By following these steps, a canteen management system using JFrames can be developed that provides an efficient and user-friendly experience for both canteen staff and customers. The system can help improve order processing, inventory management, and customer satisfaction, while also providing valuable insights into sales data and customer preferences.

- Use Java's Swing library to design the user interface of the system. This includes creating a login page for canteen staff to enter their credentials and a main page that displays the different functions of the system.
- Create a database using a database management system like MySQL or SQLite to store the canteen data. This includes data related to the menu, orders, customer information, and other relevant details.
- Use JDBC to connect the Java application to the database and create classes and methods for different functions of the system. These functions could include placing an order, viewing the menu, adding or deleting items, generating reports, and handling customer information and order details.

- Use JUnit to create unit tests to ensure that each function of the system works correctly.
- Test the system with sample data to ensure that it works as expected and make any necessary adjustments or changes.
- Once the system has been thoroughly tested and debugged, deploy it to the canteen staff by creating a JAR file for the application.

## 4. MODULES

### 4.1 FRONT PANEL



FIGURE 1: FRONT PANEL

#### SAMPLE CODE

```
public UserInterface_GUI(Contrrollor_GUI rController)
{
    this.rcController = rController;
    this.con = getContentPane();

    // Set frame
    setTitle("Valentino Restaurant Management System");
    setBounds(WINDOW_X, WINDOW_Y, WINDOW_WIDTH, WINDOW_HEIGHT);
    setResizable(false);
    setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

    createMasterPanelConporonents();
    currentUserName = "";
    setLoginUserName(currentUser);

    //----- Create main content panels
    //Home panel
    homePanel = new JPanel();
    homeImage = new JLabel();
```



```

//Random generator = new Random();
int i = new Random().nextInt(4)+1;
homeImage.setHorizontalAlignment(SwingConstants.CENTER);
homeImage.setVerticalAlignment(SwingConstants.CENTER);
homeImage.setIcon(new ImageIcon("images/home" + i + ".jpg"));
homePanel.add(homeImage);
homePanel.setBackground(Color.WHITE);
mainPanel.add("Home", homePanel);

cLoginPanel = new LoginPanel();
mainPanel.add("Login", cLoginPanel);
cMenuListPanel = new MenuListPanel();
mainPanel.add("MenuList", cMenuListPanel);
cOrderListPanel = new OrderListPanel();
mainPanel.add("OrderList", cOrderListPanel);
cOrderDetailPanel = new OrderDetailPanel();
mainPanel.add("OrderDetail", cOrderDetailPanel);
cEmployeeListPanel = new EmployeeListPanel();
mainPanel.add("EmployeeList", cEmployeeListPanel);
cEditEmployeePanel = new EditEmployeePanel();
mainPanel.add("EditEmployee", cEditEmployeePanel);
cMenuManagementPanel = new MenuManagementPanel();
mainPanel.add("MenuManagement", cMenuManagementPanel);
cEditMenuItemPanel = new EditMenuItemPanel();
mainPanel.add("EditMenuItem", cEditMenuItemPanel);
cTotalSalesPanel = new TotalSalesPanel();
mainPanel.add("TotalSalesPanel", cTotalSalesPanel);
cPaymentPanel = new PaymentPanel();
mainPanel.add("PaymentPanel", cPaymentPanel);

changeMode(MODE_ANONYMOUS);
}

```

# LOGIN

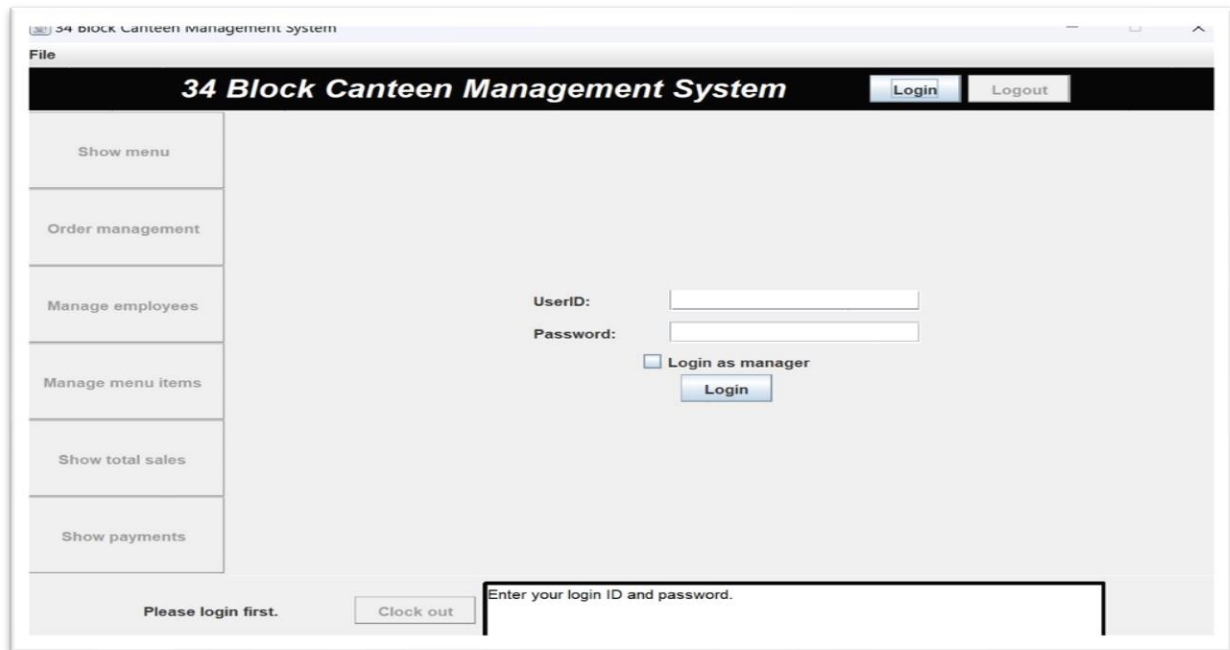


FIGURE 2: LOGIN

## SAMPLE CODE

```
private class LoginPanel extends JPanel implements ActionListener
{
    // components for login panel
    //private JPanel      loginPanel;
    private JLabel       lblUserID;
    private JTextField   tfUserID;
    private JLabel       lblPassword;
    private JPasswordField pwPassword;
    private JCheckBox     chbIsManager;
    private JButton       btnLoginOK;
    public LoginPanel()
    {
        //loginPanel = new JPanel();
        GridBagLayout gbLayout = new GridBagLayout();
        this.setLayout( gbLayout);
        GridBagConstraints gbc = new GridBagConstraints();
        lblUserID = new JLabel("UserID:");
        lblUserID.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 0;
        gbLayout.setConstraints(lblUserID, gbc);
        this.add(lblUserID);

        tfUserID = new JTextField(20);
```

```

        tfUserID.setInputVerifier(new IntegerInputVerifier(0));
        gbc.gridx = 1;
        gbc.gridy = 0;
        gbcLayout.setConstraints(tfUserID, gbc);
        this.add(tfUserID);

        lblPassword = new JLabel("Password:");
        lblPassword.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 1;
        gbcLayout.setConstraints(lblPassword, gbc);
        this.add(lblPassword);

        pwPassword = new JPasswordField(20);
        gbc.gridx = 1;
        gbc.gridy = 1;
        gbcLayout.setConstraints(pwPassword, gbc);
        this.add(pwPassword);

        chbIsManager = new JCheckBox("Login as manager");
        gbc.gridx = 0;
        gbc.gridy = 2;
        gbc.gridwidth = 2;
        gbcLayout.setConstraints(chbIsManager, gbc);
        this.add(chbIsManager);

        btnLoginOK = new JButton("Login");
        btnLoginOK.addActionListener(this);
        gbc.gridx = 0;
        gbc.gridy = 3;
        gbc.gridwidth = 2;
        gbcLayout.setConstraints(btnLoginOK, gbc);
        this.add(btnLoginOK);
    }

    private void setUserID(String id)
    {
        tfUserID.setText(id);
    }

    private void setPassword(String password)
    {
        pwPassword.setText(password);
    }

    public void init()
    {
        setUserID("");
    }

```

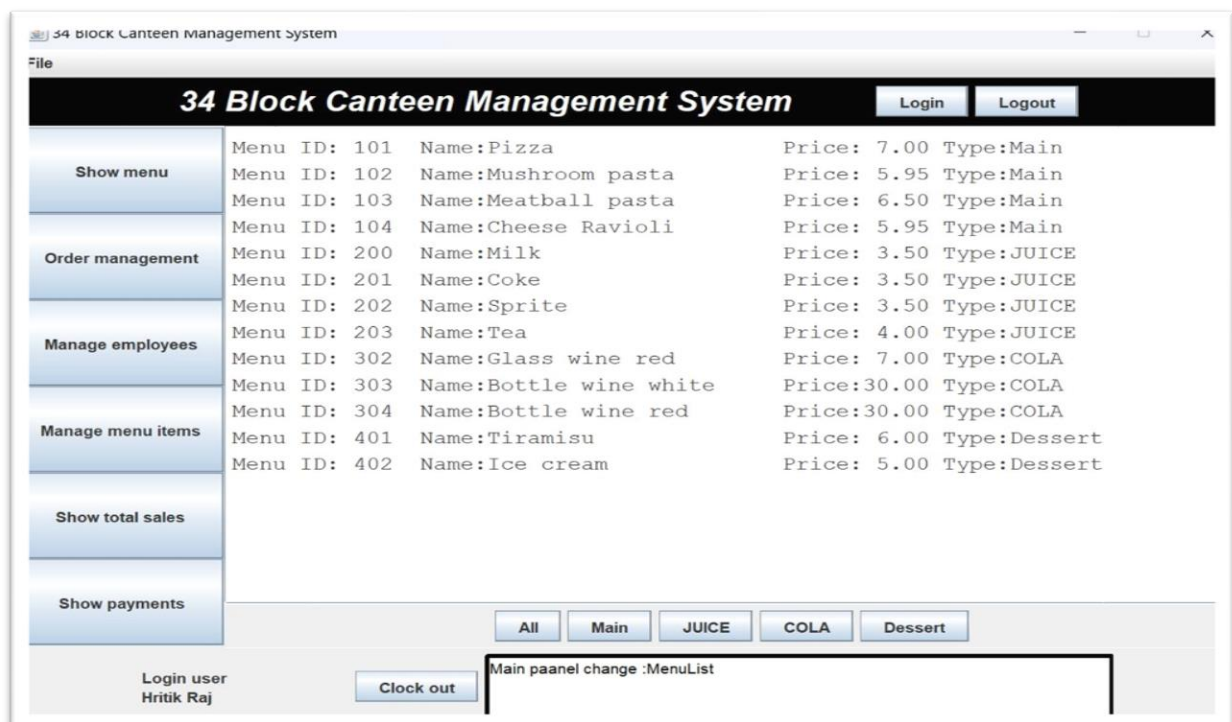
```

        setPassword("");
        tfUserID.setBackground( UIManager.getColor( "TextField.background" ) );
    }

    public void actionPerformed(ActionEvent ae) {
        if (ae.getSource() == btnLoginOK)
        {
            //Check whether current focused compornent have to verify their value
            if (btnLoginOK.getVerifyInputWhenFocusTarget()) {
                //Try to get focus
                btnLoginOK.requestFocusInWindow();
                if (!btnLoginOK.hasFocus()) { //Can not get focus ? the compornent
have not been verified
                    return;
                }
            }
        } //if(!inputVerified)
    } // return;
}

```

## MENU PANEL



**FIGURE 3: MENU PANEL**

## SAMPLE CODE

```
private class MenuListPanel extends JPanel implements ActionListener
{
    private JScrollPane    scrollPanel;
    private JTextArea      displayArea;
    private JPanel         btnPanel;
    private JButton        btnAll;
    private JButton        btnMain;
    private JButton        btnDrink;
    private JButton        btnAlcohol;
    private JButton        btnDessert;

    public MenuListPanel()
    {
        this.setLayout( new BorderLayout());
        displayArea = new JTextArea();
        displayArea.setFont(new Font(Font.MONOSPACED,Font.PLAIN,16));
        displayArea.setEditable(false);
        displayArea.setMargin(new Insets(5, 5, 5, 5));
        scrollPanel = new JScrollPane(displayArea);
        scrollPanel.setPreferredSize(new Dimension(200, 400));
        add(scrollPanel, BorderLayout.CENTER);

        btnPanel = new JPanel();
        btnPanel.setLayout( new FlowLayout());
        btnAll = new JButton("All");
        btnAll.addActionListener(this);
        btnMain = new JButton("Main");
        btnMain.addActionListener(this);
        btnDrink = new JButton("Drink");
        btnDrink.addActionListener(this);
        btnAlcohol = new JButton("Alcohol");
        btnAlcohol.addActionListener(this);
        btnDessert = new JButton("Dessert");
        btnDessert.addActionListener(this);

        btnPanel.add(btnAll);
        btnPanel.add(btnMain);
        btnPanel.add(btnDrink);
        btnPanel.add(btnAlcohol);
        btnPanel.add(btnDessert);

        add(btnPanel, BorderLayout.SOUTH);
    }

    public void init()
    {
        showMenuList(0);
    }
}
```

```

        //displayArea.setText(str);
        //showAllMenuList(displayArea);
    }

    private void showMenuList(int menuType)
    {
        displayArea.setText("");
        ArrayList<String> menuList = rcController.createMenuList(menuType);
        for(int i = 0; i < menuList.size(); i++)
            displayArea.append(menuList.get(i) + "\n");
    }

    public void actionPerformed(ActionEvent ae) {
        if (ae.getSource() == btnAll)
        {
            showMenuList(0);
            //showAllMenuList(displayArea);
        }
        else if (ae.getSource() == btnMain)
        {
            showMenuList(MenuItem.MAIN);
            //showParticularMenuList(MenuItem.MAIN, displayArea);
        }
        else if (ae.getSource() == btnDrink)
        {
            showMenuList(MenuItem.DRINK);
            //showParticularMenuList(MenuItem.DRINK, displayArea);
        }
        else if (ae.getSource() == btnAlcohol)
        {
            showMenuList(MenuItem.ALCOHOL);
            //showParticularMenuList(MenuItem.ALCOHOL, displayArea);
        }
        else if (ae.getSource() == btnDessert)
        {
            showMenuList(MenuItem.DESSERT);
            //showParticularMenuList(MenuItem.DESSERT, displayArea);
        }
    }
}

```

## ORDER PANEL

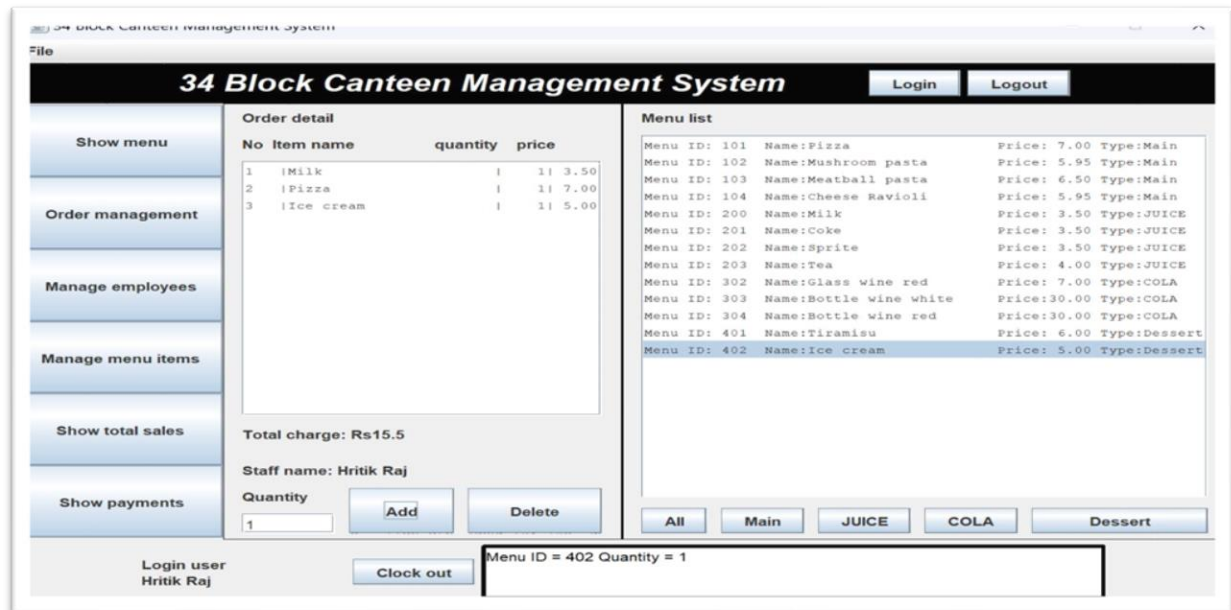


FIGURE 4: ORDER PANEL

### SAMPLE CODE

```
private class OrderListPanel extends JPanel implements ActionListener
{
    private JScrollPane    scrollPanel;
    //private JTextArea    displayArea;
    private JPanel        btnPanel;
    private JButton        btnNewOrder;
    private JButton        btnEditOrder;
    private JButton        btnCloseOrder;
    private JButton        btnCancelOrder;
    private JLabel        lblTotalSales;
    private JLabel        lblTotalCount;
    private JLabel        lblCancelTotal;
    private JLabel        lblCancelCount;
    private JList        displayList;

    public OrderListPanel()
    {
        GridBagLayout gbLayout = new GridBagLayout();
        this.setLayout( gbLayout);
        GridBagConstraints gbc = new GridBagConstraints();
        /*displayArea = new JTextArea();
        displayArea.setFont(new Font(Font.MONOSPACED,Font.PLAIN,16));
        displayArea.setEditable(false);
        displayArea.setMargin(new Insets(5, 5, 5, 5));*/
        scrollPanel = new JScrollPane();
    }
}
```

```

        btnNewOrder      = new JButton("New");
        btnNewOrder.addActionListener(this);
        gbc.gridx = 0;
        gbc.gridy = 3;
        gbc.gridwidth = 1;
        gbc.weightx = 0.25;
        gbc.fill = GridBagConstraints.HORIZONTAL;
        gblayout.setConstraints(btnNewOrder, gbc);
        this.add(btnNewOrder);

        btnEditOrder     = new JButton("Edit");
        btnEditOrder.addActionListener(this);
        gbc.gridx = 1;
        gbc.gridy = 3;
        gblayout.setConstraints(btnEditOrder, gbc);
        this.add(btnEditOrder);

        btnCloseOrder    = new JButton("Close");
        btnCloseOrder.addActionListener(this);
        gbc.gridx = 2;
        gbc.gridy = 3;
        gblayout.setConstraints(btnCloseOrder, gbc);
        this.add(btnCloseOrder);

        btnCancelOrder   = new JButton("Cancel");
        btnCancelOrder.addActionListener(this);
        gbc.gridx = 3;
        gbc.gridy = 3;
        gblayout.setConstraints(btnCancelOrder, gbc);
        this.add(btnCancelOrder);

        displayList = new JList();
    }

    private void setTotalCount( int count)
    {
        lblTotalCount.setText("Today's order: " + count);
    }

    private void setTotalSales( double sales)
    {
        lblTotalSales.setText("Total:$ " + sales);
    }

    private void setCancelCount( int count)
    {
        lblCancelCount.setText("Canceled orders: " + count);
    }

```



```

    }

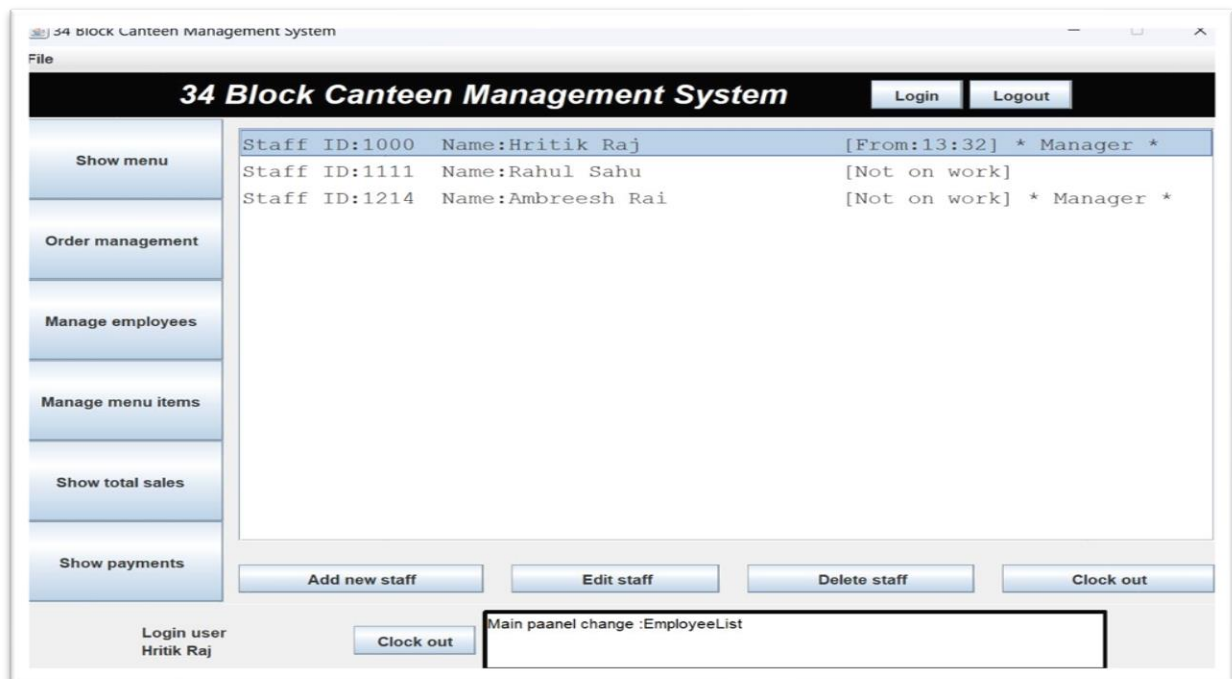
    private void setCancelTotal( double sales)
    {
        lblCancelTotal.setText("Cancel total:$ " + sales);
    }

    private void showOrderList()
    {
        displayList.setListData(rcController.createOrderList().toArray());
        scrollPanel.getViewport().setView(displayList);

        setTotalCount(rcController.getTodaysOrderCnt());
        setTotalSales(rcController.getTotalSales());
        setCancelCount(rcController.getTodaysCancelCnt());
        setCancelTotal(rcController.getCancelTotal());
    }
}

```

## EMPLOY PANEL



**FIGURE 5: EMPLOY PANEL**

## SAMPLE CODE

```
private class EditEmployeePanel extends JPanel implements ActionListener
{
    private JLabel        lblStaffID;
    private JTextField    tbStaffID;
    private JLabel        lblFirstName;
    private JTextField    tbFirstName;
    private JLabel        lblLastName;
    private JTextField    tbLastName;
    private JLabel        lblPassword;
    private JPasswordField tbPassword;
    private JButton       btnOK;

    private boolean       isUpdate;

    public EditEmployeePanel()
    {
        GridBagLayout gbLayout = new GridBagLayout();
        this.setLayout( gbLayout);
        GridBagConstraints gbc = new GridBagConstraints();

        lblStaffID = new JLabel("StaffID:");
        lblStaffID.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 0;
        gbc.anchor = GridBagConstraints.WEST;
        gbLayout.setConstraints(lblStaffID, gbc);
        this.add(lblStaffID);

        tbStaffID = new JTextField(4);
        tbStaffID.setInputVerifier(new IntegerInputVerifier(1,10000));
        gbc.gridx = 1;
        gbc.gridy = 0;
        gbLayout.setConstraints(tbStaffID, gbc);
        this.add(tbStaffID);

        lblFirstName = new JLabel("FirstName:");
        lblFirstName.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 1;
        gbLayout.setConstraints(lblFirstName, gbc);
        this.add(lblFirstName);

        tbFirstName = new JTextField(20);
        gbc.gridx = 1;
        gbc.gridy = 1;
        gbLayout.setConstraints(tbFirstName, gbc);
        this.add(tbFirstName);
    }
}
```

```

        lblLastName = new JLabel("LastName:");
        lblLastName.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 2;
        gbcLayout.setConstraints(lblLastName, gbc);
        this.add(lblLastName);

        tbLastName = new JTextField(20);
        gbc.gridx = 1;
        gbc.gridy = 2;
        gbcLayout.setConstraints(tbLastName, gbc);
        this.add(tbLastName);

        lblPassword = new JLabel("Password:");
        lblPassword.setPreferredSize(new Dimension(100, 30));
        gbc.gridx = 0;
        gbc.gridy = 3;
        gbcLayout.setConstraints(lblPassword, gbc);
        this.add(lblPassword);

        tbPassword = new JPasswordField(20);
        gbc.gridx = 1;
        gbc.gridy = 3;
        gbcLayout.setConstraints(tbPassword, gbc);
        this.add(tbPassword);

        btnOK = new JButton("OK");
        btnOK.addActionListener(this);
        gbc.gridx = 0;
        gbc.gridy = 4;
        gbc.gridwidth = 2;
        gbcLayout.setConstraints(btnOK, gbc);
        this.add(btnOK);
    }

    private void setUserID(int id)
    {
        tbStaffID.setText(Integer.toString(id));
    }

    private void setPassword(String password)
    {
        tbPassword.setText(password);
    }

    private void setLastName(String lastName)
    {

```

```

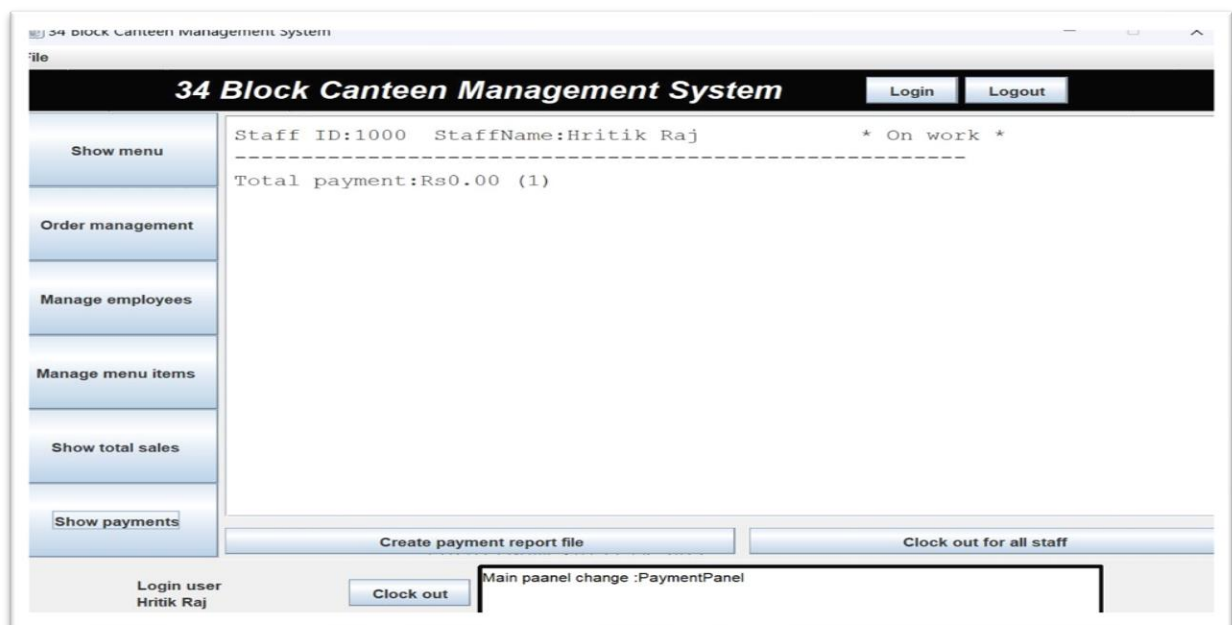
        tbLastName.setText(lastName);
    }

    private void setFirstName(String firstName)
    {
        tbFirstName.setText(firstName);
    }

    public void init(int employeeID)
    {
        //----- Add new staff -----
        if( employeeID == 0)
        {
            setUserID(0);
            tbStaffID.setEditable(true);
            setPassword("");
            setLastName("");
            setFirstName("");
            isUpdate = false;
            return;
        }
    }
    //----- Update staff -----
}

```

## PAYMENT PANEL



**FIGURE 6: PAYMENT PANEL**

## SAMPLE CODE

```
private class PaymentPanel extends JPanel implements ActionListener
{
    private JScrollPane    scrollPanel;
    private JTextArea      displayArea;
    private JButton        btnPrint;
    private JButton        btnAllClockOut;

    public PaymentPanel()
    {
        GridBagLayout gblayout = new GridBagLayout();
        this.setLayout( gblayout);
        GridBagConstraints gbc = new GridBagConstraints();

        displayArea = new JTextArea();
        displayArea.setFont(new Font(Font.MONOSPACED,Font.PLAIN,16));
        displayArea.setEditable(false);
        displayArea.setMargin(new Insets(5, 5, 5, 5));
        scrollPanel = new JScrollPane(displayArea);
        gbc.gridx = 0;
        gbc.gridy = 0;
        gbc.gridwidth = 2;
        gbc.weightx = 1.0;
        gbc.weighty = 1.0;
        gbc.insets = new Insets(5, 5, 5, 5);
        gbc.fill = GridBagConstraints.BOTH;
        gblayout.setConstraints(scrollPanel, gbc);
        this.add(scrollPanel);

        btnPrint = new JButton("Create payment report file");
        btnPrint.addActionListener(this);
        gbc.gridx = 0;
        gbc.gridy = 1;
        gbc.gridwidth = 1;
        gbc.weighty = 0;
        gblayout.setConstraints(btnPrint, gbc);
        this.add(btnPrint);

        btnAllClockOut = new JButton("Clock out for all staff");
        btnAllClockOut.addActionListener(this);
        gbc.gridx = 1;
        gbc.gridy = 1;
        gbc.gridwidth = 1;
        gbc.weighty = 0;
        gblayout.setConstraints(btnAllClockOut, gbc);
        this.add(btnAllClockOut);
    }
}
```

```

public void init()
{
    displayArea.setText(rcController.createPaymentList());
}

public void actionPerformed(ActionEvent ae) {
    if (ae.getSource() == btnPrint)
    {
        String createFineName = rcController.generatePaymentReport();
        if( createFineName == null)
            displayErrorMessage(rcController.getErrorMessage());
        else
            displayMessage(createFineName + " have been generated.");
    }
    else if (ae.getSource() == btnAllClockOut)
    {
        if (showYesNoDialog("", "Are you sure to meke all staff clocked out?") == DIALOG_YES)
        {
            rcController.clockOutAll();
            init();
        }
    }
}
}

```

## **5.CONCLUSION**

canteen management system is an essential tool for streamlining operations, improving efficiency, and enhancing the customer experience. By automating processes such as menu management, ordering, inventory management, and payment processing, the system can reduce errors, save time, and provide useful insights and reports for decision-making. Additionally, the system's user-friendly interface, customization options, and scalability make it a valuable investment for organizations of all sizes. Overall, a well-designed canteen management system can help organizations improve their bottom line, better serve their customers, and stay ahead of the competition.