



CS5004NA Emerging Programming Platforms & Technologies

30% Group Coursework

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Assignment Due Date: Week 6

Assignment Submission Date: Week 12

I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked.

I am fully aware that late submissions will be treated as non-submission and a marks of zero will be awarded.

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Proposal

1. Introduction

We would like to present the proposal for the coursework of Emerging Programming Platforms and Technologies. We are aware of developing a client-oriented system that eases the communication between the entities. Our system focuses on making the user-interface simple, flexible, reliable and understandable for any personnel. The system we are creating helps the user to increase the efficiency and work faster. The tool we used for the creation of the GUI is done by using NETBEANS that helps us to use drag and drop. The application makes it look easy and also helps to rapidly change the components of the GUI. The system we are proposing for this coursework is a Sweet Shop Billing System. As per the requirement the system includes radio buttons, check boxes or combo boxes, text fields, buttons and so-on for the input GUI. The system also includes a menu-bar which contains File, Open, Exit and Help.

2. List of Data

The Sweet Store Application will contain menu of the items and a GUI form will be available in the system. The list of data the form will have are as follows:-

- ❖ Item No: Unique ID (Integer)
- ❖ Item Name: Name of the Items (String)
- ❖ Category: The Category of Items will be available in Combo Box. Lakhamari, milk products, Ladoo, Salty, Plain. (String)
- ❖ Size: The size includes regular, large which will be added with radio-buttons
- ❖ Price (Piece): Price of a single Item (Float)
- ❖ Price (Kg) Price of an item per kilos (Float)

The system consists of the following features:-

- Items are displayed

One has to firstly know about the items of a shop to consume it. So, the system displays all the list of items in a table format which will allow the user to easier access of the list of items.

- Data are added and deleted

Since the system is designed for an ongoing shop, there might be situations where the current data might have to be updated, new item might be added, or the existing item has to be removed. For these, the system allows editing of existing data, adding of new data/item.

- Search Bar is included

Items can be located using the name of the item

- Items can be sorted as per the need

Items can be sorted by the user on the basis of price i.e. high to low or low to high. Items can also be sorted using alphabetical orders A to Z.

3. Tools Used for the Development

3.1. Java

Java is an Objected Oriented Programming Language, which uses machine language to convert the instructions into 1's and 0's. The language used to write a computer program is called programming language. A programming language can also be referenced as a set of instructions that a computer follows in order to produce certain output. There are different types of Programming Languages available in this sector, for e.g. C, C++, Python and Java is one of them. Sun Microsystems developed Java in 1995. In order to run java properly, we have to install JDK (Java Development Kit) and JRE (Java Runtime Environment) should be available. (Nayak)

3.2. NetBeans

NetBeans is a free and open source IDE (Integrated Development Environment) for java 8. NetBeans allows us quickly and easily built Java desktop, mobile and web applications. The user-interface provided by NetBeans is easy to use as it has drag and drop which helps in making GUI's and different application rapidly. The important features include easy project management, smart code editing, bug detection and so-on.

3.3. BALSAMIQ

BALSAMIQ is a web-based mock-up tool launched in 2008 by a former Adobe Senior Software Engineer. This application is easy to use for any beginner with its drag and drop feature. Wireframes can be made using this tool for different types of applications and websites.

Individual Tasks

Individuals	Tasks
Sulav Thapa	GUI and design Adding data into table from form Sorting
Summit Shakya	Exception Handlings Sorting User Guide
Unish Rajkarnikar	Sorting GUI Input Form GUI Documentation

1. Introduction

In this coursework, we are required to propose and develop an Information System. The information system will have Menu table for storing items with equivalent data types to the id, categories, name, and price. As this was a group coursework, the coursework required a proposal from the group. For this segment a hardcopy of the proposal was handed and is also included above.

As per the proposal, we are creating an information system, which will hold the data of the items available in the sweet shop. Here, the name of the sweet shop is SUYU Sweets. The menu table will consist of 12 items with 5 different categories and different pricings. The requirements of this coursework in order to complete the coursework are as follow:

- Radio Buttons for range level
- Check Boxes or Combo Boxes for category selection
- Text fields for all others
- File with open and close menubar
- Help menu

The other requirements of this coursework are to use searching algorithms in the system, Binary Search to be precise. While searching if an item is not found then the proper use of message box are necessary. As per the question, the use of NetBeans IDE is very important. The other secondary applications and tools have been included in the proposal of this coursework.

2. Body

2.1. Binary Search Algorithm

The process in which a key x is located from an sorted array by first comparing x with the middle key of the array. If the keys match then the algorithm is completed, if not then the array is divided into two sub arrays with equal amount of values. This following continues until it finds the necessary key. (Neapolitan & Naimipour, 2011)

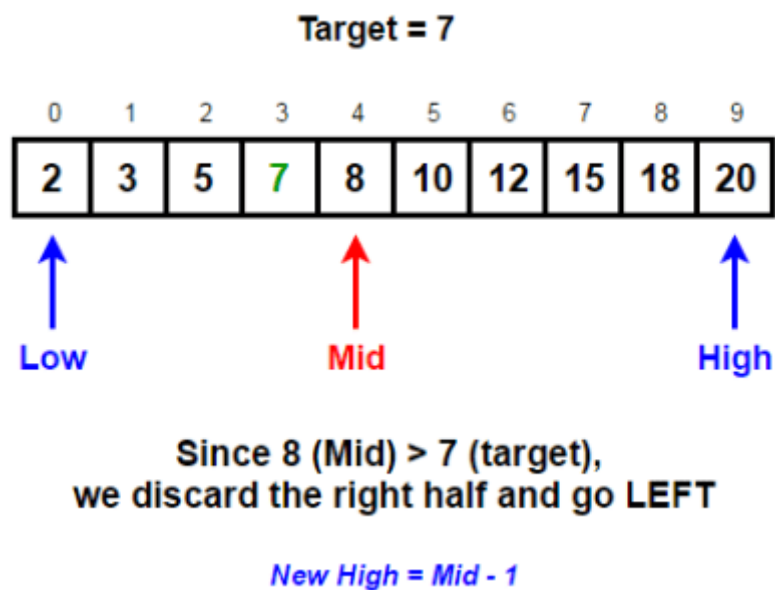


Figure 1 Binary Search

2.2. Method Description

Class MainFrame

2.2.1. `openActionPerformed(java.awt.event.ActionEvent evt)`

This method is necessary for opening the pdf report when the open menu is clicked from the GUI.

2.2.2. `deleteActionPerformed(java.awt.event.ActionEvent evt)`

The method is created in order to delete rows from the jTable named menuTable. In this method, we use if condition with the help of predefined function `getSelectedRows`. Here, the else condition contains an if condition which is called nested condition. This also includes appropriate message pane and show dialog boxes.

2.2.3. `searchButtonActionPerformed(java.awt.event.ActionEvent evt)`

2.2.4. `userGuideActionPerformed(java.awt.event.ActionEvent evt)`

This method is used to open the user guide of the system in the other window.

2.2.5. `addDetailsActionPerformed(java.awt.event.ActionEvent evt)`

This method is a very important method for this class as this method extends to inputform class which opens a new window with GUI to add new items to the menu.

2.2.6. `exitActionPerformed(java.awt.event.ActionEvent evt)`

This method is used to exit out of the system. This action event is performed from the file menu bar. The exit menu includes confirmation for exiting the system.

2.2.7. lowToHighActionPerformed(java.awt.event.ActionEvent evt)

2.2.8. homeActionPerformed(java.awt.event.ActionEvent evt)

This method is created in order to display the menu items of the sweet shop. The function used in this method is setVisible(True).

2.2.9. postData()

This method is used to retrieve the data from the inputform class to add into the jTable. A new array is created named row in order to store the new data which is retrieved from the inputform class. The data stored in to the new array is then added into the jTable with the use of function .addRow().

2.2.10. tableAdd()

This method is created in order to add items in the jTable named menuTable. This method is responsible for adding each and every item from an array using **for** loop into the jTable. This method includes different predefined functions like getRowCount, getColumnCount, setValueAt and so-on. The data here is stored in an array using appropriate data types.

Class InputForm**2.2.11. inputAddActionPerformed(java.awt.event.ActionEvent evt)**

This method is used to retrieve the data from the different components of an GUI which are jtextfield, combobox, radiobutton. After the data is retrieved from the data is sent to the mainframe class which will add it to the jtable. This method includes if condition to check the condition of the components and to work according to the functions.

2.2.12. exitActionPerformed(java.awt.event.ActionEvent evt)

This method is created to exit from the input GUI of the system. When this menuitem performs the action from the menubar, this item closes the following window.

2.3. Testing

2.3.1. Testing 1

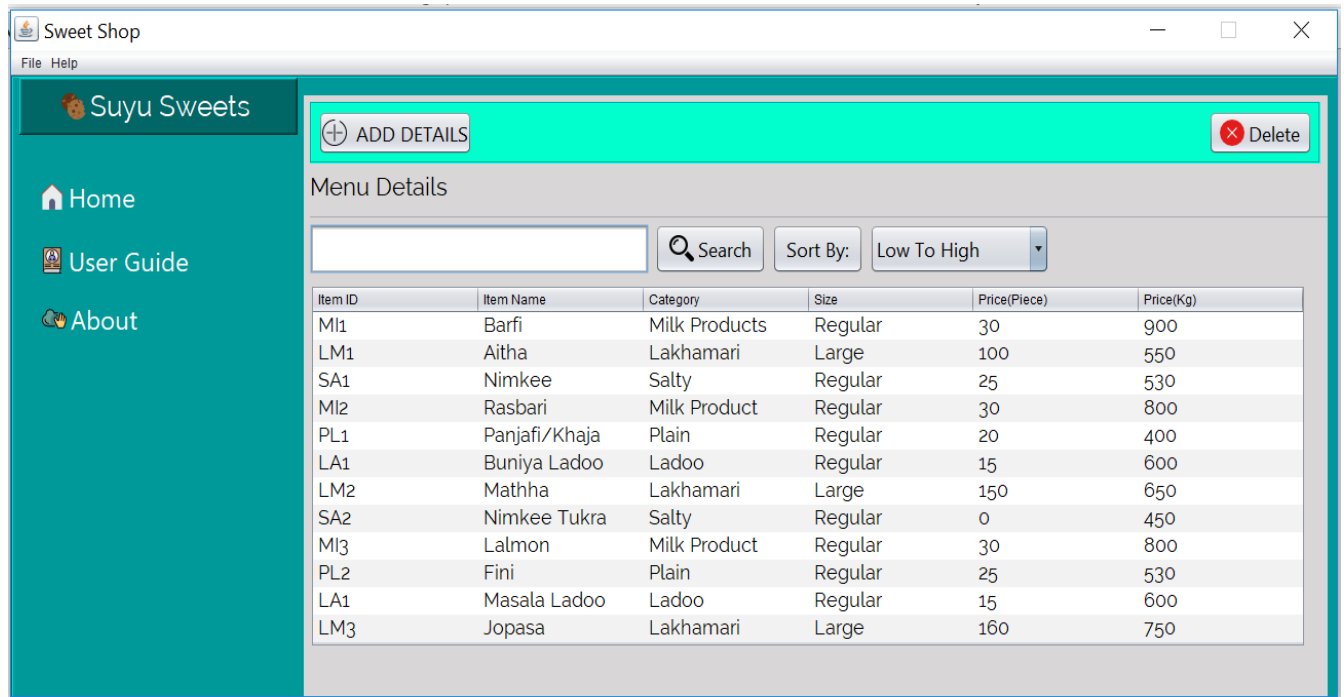


Figure 2 Testing 1

Objective	Successfully running the project
Action	Right click the main class Click run
Expected Result	To run the information system properly without any errors
Actual Result	The Information System runs properly without any errors.

Table 1 Testing 1

2.3.2. Testing 2

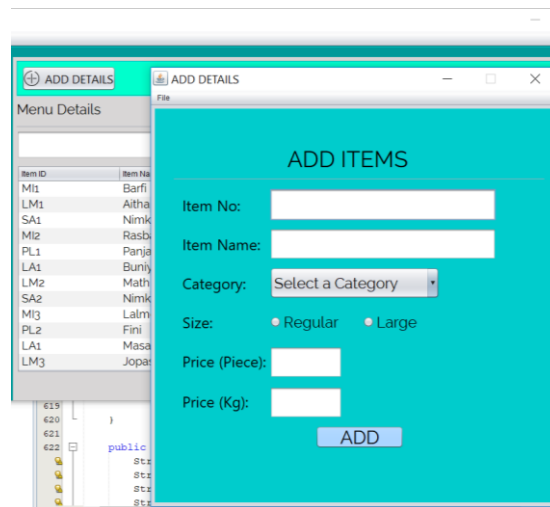


Figure 3 Testing 2

Objective	Opening new window when add details button is clicked
Action	Running the main system Click add details button
Expected result	When clicking the add details button, a new window should open named Add Details.
Actual Result	When clicking the add details button, a new window opens up named Add Details.

Table 2 Testing 2

2.3.3. Testing 3

Figure 4 Testing 3

LA1	Masala Ladoo	Ladoo	Regular	15	600
LM3	Jopasa	Lakhamari	Large	160	750
MI4	Khuwa	Milk Products	Regular	100	550

Figure 5 Testing 3

Objective	To add an item successfully
Action	An item is added with the values shown in figure 4
Expected Result	Item should be added into the table successfully.
Actual Result	Item has been added successfully as shown in the figure 5.

Table 3 Testing 3

2.3.4. Testing 4

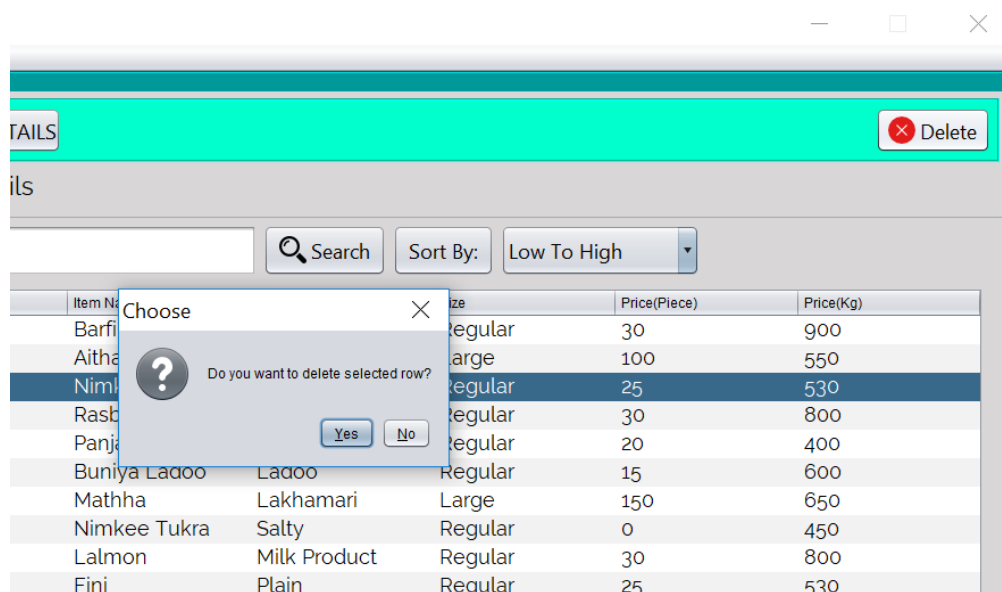


Figure 6 Testing 4

<input type="text"/> <input type="button" value="Search"/> <input type="button" value="Sort By: Low To High"/>					
Item ID	Item Name	Category	Size	Price(Piece)	Price(Kg)
MI1	Barfi	Milk Products	Regular	30	900
LM1	Aitha	Lakhamari	Large	100	550
MI2	Rasbari	Milk Product	Regular	30	800
PL1	Panjafi/Khaja	Plain	Regular	20	400
LA1	Buniya Ladoo	Ladoo	Regular	15	600
LM2	Mathha	Lakhamari	Large	150	650
SA2	Nimkee Tukra	Salty	Regular	0	450
MI3	Lalmon	Milk Product	Regular	30	800
PL2	Fini	Plain	Regular	25	530
LA1	Masala Ladoo	Ladoo	Regular	15	600
LM3	Jopaca	Lakhamari	Large	160	750

Figure 7 Testing 4

Objective	When a row is selected for deleting, a confirmation should popup in a dialog box for deleting the item.
Action	An item is selected from the table, Delete button is clicked, Confirmation is done.
Expected Result	The selected row should be successfully deleted after the confirmation

Actual Result	The selected the row was successfully deleted after the confirmation.
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Table 4 Testing 4

2.3.5. Testing 5

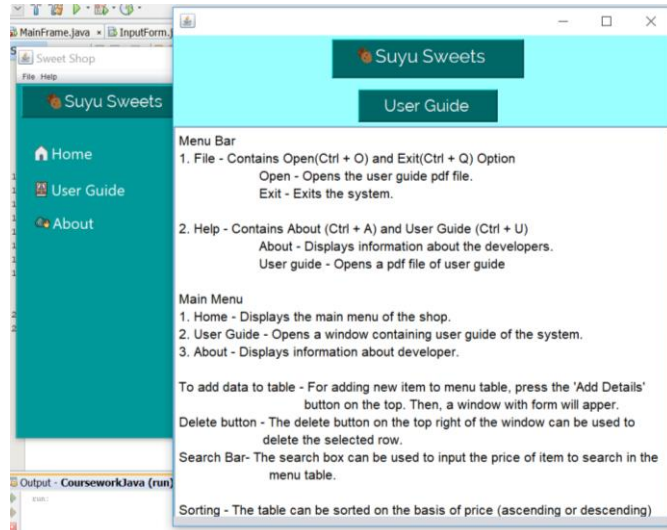


Figure 8 Testing 5

Objective	To open a new window named User Guide a when clicking the user guide button.
Action	To click on the User Guide button on the left side below Home.
Expected Result	A new window should open after the clicking the User Guide button.
Actual Result	A new window was opened after clicking the User Guide button.

Table 5 Testing 5