Final Project Report

1) Name of the Project and Team Members

- **Project Name:** Café Management System.

- **Team Members:** Omkar Yeole and Abhishek Limaye.

2) Final State of the Project

In the final state of the system, we successfully implemented almost all the features as proposed in the Project 5 and 6.

- **The implemented features include:**

a) Creating GUIs for customer signup using personal details and subsequently creating a login page.
b) Developing separate homepages for manager and customer.
c) Providing options for the Manager by developing GUIs to view the order logs, modify categories, add sub-categories, modify subcategories, changing the password to provide robust security and an option to sign-out of the application.
d) Providing avenues for the customer to place an order as required, change password to add an extra layer of security, and sign-out of the application.
e) MySQL to handle the data storage and manipulation by creating 4 tables, customer, category, subcategory and billdetailstable.

- **Features that were not implemented:**

a) Order history page for the customer to view all the orders placed was not implemented as the customer can view all his orders when bill is generated.
b) Accept orders page for the manager to accept or decline orders was not implemented as the fact that customers can only order from the available menu eliminated the purpose of accepting orders only if that item is available in the Café system.
c) Additional pages like Add Sub-Categories and Modify Sub-Categories were implemented to make the GUI more user-friendly and intuitive.

- **Changes from Project 5 and 6:**

Project 7 was implemented with significant changes in the Project 5 and 6 by adding place order, change password, view order logs, add and modify categories and subcategories pages. Also, changes were made in the data storage by adding and manipulating tables in the database.

3) Final Class Diagram and Comparison Statement

- **UML Class Diagram attached at the end of the report.**

- **Patterns highlighted in the UML class diagram.**

- **Project 5 class diagram attached at the end of the report.**

- **Key Changes since Project 5 and 6:**

a) Project 5 and 6 included just the initial stages of the GUI for our Café Management System with implementations for the Signup page, Login Page, Forgot Password page and the basic design for Manager and Customer homepages.
b) Project 7 involved the detailed implementation for the homepages with classes HomepageManager and HomepageCustomer added.
c) Manager was provided with additional functionality to modify and add categories and sub-categories with classes like AddSubCategory, ModifyCategories and ModifySubCategories.
d) The Manger was also given an option to change his password for security reasons with its implementation in the Change_Password class in Java.
e) An additional button was added to the manager homepage for signing-out.
f) The Manager can also view the logs of the orders placed, the implementation for which is provided in the OrderLog class.
g) For the Customer, a place order option was provided to place orders with its implementation in the PlaceOrder class.
h) This PlaceOrder class also allows the customer to generate a bill in .pdf format to view all the order details, the implementation for which is partly completed in the pdfOpen class as well as in the place order class.
i) Customer can also Change his password once logged in to add an additional layer of security using the Change Password button on the homepage. This is handled by the Change_Password class as well.
j) An additional button was added to the manager homepage to sign-out.
k) We did not implement the Order History page as its purpose was satisfied in the PlaceOrder class itself by revealing the order details in the bill.
l) Also, we have not implemented the Accept Order Page as its intention of not accepting orders if an item is not available was accomplished as the customer only has the option to order form the available items in the system.
m) An Observer pattern has also been implemented with Publisher, Observer interfaces and Tracker and Subject classes.

4) Third-Party code vs Original code Statement

- **Reference:**

We have used several references for the project. Initially we faced an issue with the IntelliJ IDEA IDE with respect to creating JFrame forms as the plugins were not available, after a lot of incidents raised for solving the problem on the JetBrains help center, the problem still persisted. Due to the time constraints we had to switch to NetBeans IDE by Apache. As we had never used the IDE and with the JFrame forms new to us, we decided to refer the below citations to get an overview.

- **Reference Links:**

1) https://netbeans.apache.org/kb/docs/java/quickstart-gui.html
2) https://www.youtube.com/watch?v=YykJGqvpFnU
3) https://www.youtube.com/watch?v=nuC-279qAN4&list=PLdRq0mbeEBmxvnNAwr9va2aO09VBssx9c
4) https://www.youtube.com/watch?v=USoyUJZpKFk
5) https://www.javatpoint.com/example-to-connect-to-the-mysql-database

5) Statement on the OOAD process for the overall Semester Project

- **Design Patterns:**

Our project required us to integrate Object-Oriented concepts with the GUI components of Java's JFrame. We discovered that selecting and executing the relevant design patterns for our project was a difficult undertaking. We had to think about things like the complexity of our project, the scalability of our design, and the effectiveness of our implementation. We needed to make sure that the design patterns we chose were appropriate for our project's needs and that they would operate effectively with the JFrame GUI framework.

- **Collaboration:**

Our collaboration's success was largely attributable to our good communication and work allocation. We began by dividing the project needs into smaller tasks and assigned them to each team member based on their skills and interests. We made certain that everyone understood their roles and timetables, and we checked in with each other on a frequent basis to ensure that we were on track.

- **Scope Issues:**

Defining the project scope was a huge difficulty for our team during the design process. We identified additional features and functionality that we considered would improve the entire project as we moved through the requirements analysis and study of alternative solutions. Unfortunately, this resulted in some scope creep, making the project more complex and difficult. to manage. As a result, we faced some delays and had to reconsider our objectives in order to provide a final product within the specified schedule.

- **The initial attached UML Class Diagram represents the one submitted for Project 5 and the next one is the complete UML Class Diagram for Project 7.**

UML Class diagram Project 5

Omkar Yeole | April 5, 2023

Observer Pattern
<<interface>>
Publisher
+registerSubscriber(),
+removeSubscriber(),
+notifySubscriberActions()
<<interface>>
Subscriber
+update(),
+updateActions()
SystemData
+subscribers
+FNCDdata(),
+trackerActions(),
+loggerActions()
Logger
+logger
+getInstance(),
+update()
Tracker
+tracker,
+update(),
+updateActions()
Customer
-cust_id, -cust_name, -cust_email,
-mobile_number, -address, password,
-security_question, -address, -status
+getCustId(), +setCustId(),
+getCustName(), +setCustName(),
+getCustEmail(), +setCustEmail(),
+getMobileNumber(),
+setMobileNumber(), +getAddress(),
+setAddress(), +getPassword(),
+setPassoword(), +getSecurityQuestion(),
+setSecurityQuestion(), +getAddress(),
+setAddress(), +getStatus(), +setStatus()
CommandInvoker
-command
+setCommand(), +executeCommand()
<<interface>>
Command
+execute()
Command Pattern
CommandReceiver
-cust_id, -cust_name, -cust_email,
-mobile_number, -address, password,
-security_question, -address, -status
+receiverTasks()
ConcreteCommand
+receiver
+execute()
LoginPage
+email_pattern, +password_pattern
+clearFields(), +btnExit(), +btnLogin(),
+calidateField()
SignupPage
+pattern_email, +pattern_address,
+pattern_password,
+pattern_mobileNumber
+init(), +clearFields(), +buttonFunctions(),
+keyReleases(), +validateFields()
SecurityQuestion
-cust_id, -cust_name,
-cust_mobile_number, -cust_email, -date,
-total, -created_by
+validateField(), +validateAnswer()
ForgotPassword
+sq_answer, -cust_email, -pat_email
+clearFields(), +validateEmail(),
+validateField(), -keyReleases(),
+buttonActions()
AddRemoveSubCategory
-sub_cat_id, -sub_cat_name,
-sub_cat_price
+validate(), -keyReleases(),
-buttonActions()
ModifyCategory
+category_types, +category_id,
+category_selected, +category_deleted
-keyReleases(), -updateAction(),
-deleteAction(), +validateField(),
-buttonActions()
PasswordChange
+cust_email, +cust_security_question
+validateField(), -buttonActions(),
-updateActions
HomePage
+cust_email, +cust_name
+buttonActions()
ViewOrderLogs
-sub_cat_id, -sub_cat_name,
-sub_cat_price
-buttonActions(), -formComponents(),
Decorator Pattern
PlaceOrder
+bill_id, +total, +category_price,
+email_pattern, +mobile_num_pattern,
+cust_email, -cust_id, -cust_name,
-cust_mobile_number, -total, -created_by
+filterCategorybyName(),
+clearCategoryByName(),
+validateField(), -keyReleases(),
+buttonFunctions(), +orderStatus(),
+orderSummary(), +generate_bill()
MenuPage
+bill_id, +total, +category_price,
+email_pattern, +mobile_num_pattern,
+cust_email
+filterCategorybyName,
+clearCategoryByName(),
+validateField(), -keyReleases(),
+buttonFunctions(),
GenerateBill
-cust_id, -cust_name,
-cust_mobile_number, -cust_email, -date,
-total, -created_by
+orderStatus(), +orderSummary(),
+generate_bill()
DatabaseAndSystemOperations
+db_ref, +sys
+init_system(), +db_access()
AcceptOrder
+order_ref
+acceptDeclineOrder()
Connection
+connect_db
+provideConnection()
Singleton Pattern
DatabaseOperations
+db_ref
+setDeleteData(), +login(),
+getSecurityQuestion(), +update()
<<interface>>
DataAccessInterface
+save(), +login(), +delete()
+getSecurityQuestion(), +update(),
+getAllRecords(),
+getAllRecordsByCategory(),
+filterCategoryByName(),
+getCategoryByName()
+statusChange(),
+passwordChange(),
+securityQuestionChanged(),
+getId(), +getRecordsDiffTypes()
Strategy Pattern
<<implements>>
<<implements>>
<<implements>>
DataAccessClassCustomer
+cust_email, +cust_security_question
+save(), +login(), +getSecurityQuestion(),
+update(), +getAllRecords(),
+statusChange(), +passwordChange(),
+securityQuestionChanged()
DataAccessClassCategory
+data_ref
+save(), +getAllRecords(), +delete(),
+update(), +getAllRecordsByCategory(),
+filterCategoryByName(),
+getCategoryByName()
BillDataAccessClass
+data_ref
+getId(), +save(), +getRecordsDiffTypes()

Project 7 Final UML Class Diagram

Login_Page

-btn_clear, -btn_exit, -btn_login,
-btn_forgot_password, -jLabel1,
-jLabel2, -jLabel3, -tf_email,
-tf_password

+clearFields(), +validateFields(),
-btn_exitActionPerformed(),
-btn_loginActionPerformed(),
-tf_emailKeyReleased(),
-tf_passwordKeyReleased(),
-btn_clearActionPerformed(),
-btn_forgot_passwordActionPerformed()

connectionToDatabase

+getConnection()

Singleton
Pattern

DataStorageTable

+getInstance(),
+createCustomerTable(),
+addManagerDetails(),
+addCategoryTable(),
+addSubCategoryTable(),
+addbillDetails()

DatabaseOperations

+setDataOrDeleteData(),
+getData()

CustomerDataAccessObject

+saveValue(), +login(),
+getSecurityQuestion(),
+reset_password(),
+change_password()

Signup_Page

+pattern_email,
+pattern_mobile_number, -btn_clear,
-btn_create_account, -btn_exit,
-btn_login, -jLabel1, -jLabel2,
-jLabel3, -jLabel4, -jLabel5, -jLabel6,
-jLabel7, -jLabel8, -tf_answer,
-tf_confirm_password, -tf_email,
-tf_mobile_number, -tf_name,
-tf_password, -tf_security_question,
+name

+ClearFields(), +validateFields(),
-btn_exitActionPerformed(),
-btn_create_accountActionPerformed(),
-btn_clearActionPerformed(),
-tf_nameKeyReleased(),
-tf_emailKeyReleased(),
-tf_passwordKeyReleased(),
-tf_confirm_passwordKeyReleased(),
-tf_mobile_numberKeyReleased(),
-tf_security_questionKeyReleased(),
-tf_answerKeyReleased(),
-btn_loginActionPerformed()

ForgotPassword

-btn_check, -btn_clear, -btn_exit,
-btn_login, -btn_reset_password,
-lbl_answer, -lbl_confirm_password,
-lbl_email_id, -lbl_new_password,
-lbl_reset_password,
-lbl_security_question, -tf_answer,
-tf_confirm_password, -tf_email,
-tf_new_password,
-tf_security_question,
+customer_answer, +email,
-email_pattern

+ClearFields(), +validateFields(),
-tf_security_questionKeyReleased(),
-tf_emailKeyReleased(),
-tf_answerKeyReleased(),
-tf_new_passwordKeyReleased(),
-tf_confirm_passwordKeyReleased(),
-btn_reset_passwordActionPerformed(),
-btn_clearActionPerformed(),
-btn_loginActionPerformed(),
-btn_exitActionPerformed(),
-btn_checkActionPerformed(),

PlaceOrder

-btn_add_to_cart, -btn_back, -btn_clear,
btn_generate_bill, -jComboBox1, -jLabel1, -jLabel2,
-jLabel3, -jLabel4, -jLabel5, -jLabel6, -jLabel7, -jLabel9,
-jLabel10, -jLabel11, -jLabel12, -jLabel13, -jLabel14,
-jScrollPane1, -jScrollPane2, -jSpinner1, -jTable1,
-jTable2, lbl_final_total, -txt_cust_email,
-txt_cust_mobile_number, -txt_cust_name,
-txt_subcategory_name, -txt_subcategory_price,
-txt_subcategory_total, +billId, +finalTotal,
+subcategoryPrice, +subcategoryTotal, +email_pattern,
+mobile_pattern, +customer_email

+subcategoryNameByCategory(),
+clearSubCategoryFields(), +validateFields(),
-btn_backActionPerformed(),
-btn_generate_billActionPerformed(),
-formComponentShown(), -jTable1MouseClicked(),
-jSpinner1StateChanged(),
-jComboBox1ActionPerformed(),
-btn_add_to_cartActionPerformed(),
-btn_clearActionPerformed(),
-txt_cust_nameKeyReleased(),
-txt_cust_mobile_numberKeyReleased(),
-txt_cust_emailKeyReleased(), -jTable2MouseClicked()

HomepageCustomer

-btn_change_password, -btn_place_order,
-btn_signout. -lbl_homepage_customer

-btn_signoutActionPerformed(),
-btn_change_passwordActionPerformed(),
-btn_place_orderActionPerformed()

HomepageManager

-btn_change_password,
-btn_modify_categories,
-btn_modify_subcategories,
-btn_add_subcategories, -btn_order_log,
-btn_signout, -lbl_homepage_customer,
+email_id

-btn_signoutActionPerformed(),
-btn_modify_categoriesActionPerformed(),
-btn_modify_subcategoriesActionPerformed(),
-btn_change_passwordActionPerformed(),
-btn_add_subcategoriesActionPerformed(),
-btn_order_logActionPerformed()

OrderLog

-btn_back, -jComboBox, -jLabel1, -jLabel2,
-jLabel3, jScrollPanel, -jTable1, jTextField1

+tableDetails(),
-btn_backActionPerformed(),
-jTextField1KeyReleased(),
-jComboBox1ActionPerformed(),
-jTable1MouseClicked(),
-formComponentShown()

Customer

-id, -name, -email, -mobilenumber,
-password, -confirm_password,
-securityQuestion, -answer,

+getId(), +setId(), +getName(),
+setName(), +getEmail(), +setEmail(),
+getMobilenumber(),
+setMobilenumber(), +getPassword(),
+setPassword(),
+getConfirmPassword(),
+setConfirmPassword(),
+getSecurityQuestion(),
+setSecurityQuestion(),
+getAnswer(), +setAnswer()

Observer Pattern

<<interface>>
Publisher

+registerObserver(),
+removeObserver(),
+notifySignup(), +notifyLogin(),
+notifySignout(),
+notifyPasswordReset(),
+notifyPasswordChange(),
+notifyOrderPlaced()

<<interface>>
Observer

+updateSignup(), +updateLogin(),
+updateSignout(),
+updatePasswordReset(),
+updatePasswordChange(),
+updateOrderPlaced()

pdf

+openById()

AddSubCategory

-btn_back, -btn_clear, -btn_save,
-jLabel1, -jLabel2, -jLabel3, -jLabel4,
-txt_category, -txt_name, -txt_price

+validateFields(),
-formComponentShown(),
-txt_nameKeyReleased(),
-txt_priceKeyReleased(),
-btn_saveActionPerformed(),
-btn_clearActionPerformed(),
-btn_backActionPerformed()

Change_Password

-btn_back, -btn_change_password,
-btn_clear, -btn_signout,
-lbl_chage_password,
-lbl_confirm_password, lbl_new_password,
-lbl_old_password, -tf_confirm_password,
-tf_new_password, -tf_old_password,
+email_id

+ClearFields(), +validateFields(),
-btn_backActionPerformed(),
-btn_clearActionPerformed(),
-btn_signoutActionPerformed(),
-tf_new_passwordKeyReleased(),
-tf_confirm_passwordKeyReleased(),
-btn_change_passwordActionPerformed(),
-tf_old_passwordKeyReleased()

ModifySubCategories

-btn_back, -btn_clear, -btn_delete,
-btn_update,-jComboBox1, -jLabel1,
-jLabel2, -jLabel3, -jLabel4, -jLabel5,
-jScrollPanel, -jTable1, -lbl_id, -txt_name,
-txt_price

+validateFields(), -txt_nameKeyReleased(),
-txt_priceKeyReleased(),
-btn_updateActionPerformed(),
-formComponentShown(),
-jTableMouseClicked(),
-btn_deleteActionPerformed(),
-btn_clearActionPerformed(),
-btn_backActionPerformed()

Modify_Categories

-btn_clear, -btn_manager_homepage,
-btn_save, -jScrollPanel, -jTable,
-lbl_add_category, -lbl_modify_categories,
-lbl_text, -lbl_view_categories, -tf_name

+validateField(), +clearField(),
-btn_saveActionPerformed(),
-tf_nameKeyReleased(),
-btn_clearActionPerformed(),
-formComponentShown(),
-jTable1MouseClicked(),
-btn_manager_homepageActionPerformed()

BillDataAccessObject

+getId(), +saveValue(),
+getAllRecordsByIncrement(),
+getAllRecordsByDecrement()

Bill

-id, -name, -mobile_number, -email,
-date, -total, -createdBy

+setId(), +setName(),
+setMobile_number(), +setEmail(),
+setDate(), +setTotal(),
+setCreatedBy(), +getId(),
+getName(), +getMobile_number(),
+getEmail(), +getDate(), +getTotal(),
+getCreatedBy()

CategoriesDataAccessObject

+save(), +getAllRecords(), +delete()

Categories

+id, +name

+getId(), +setId(), +getName(),
+setName()

SubCategoriesDataAccessObject

+saveValue(), +getAllRecords(),
+update(), +delete(),
+getAllRecordsByCategory(),
+filterSubCategoryByName(),
+getSubCategoryByName()

SubCategories

+id, +name, +category, +price

+getId(), +setId(), +getName(),
+setName(), +getCategory(),
+setCategory(), +getPrice(),
+setPrice()

Subject

static Observer, static observers

+registerObserver(),
+removeObserver(),
+signupOutcome(), +notifySignup(),
+loginOutcome(), +notifyLogin(),
+signoutOutcome(), +notifySignout(),
+forgotPasswordOutcome(),
+notifyPasswordReset(),
+changePasswordOutcome(),
+notifyPasswordChange(),
+orderPlacedOutcome(),
+notifyOrderPlaced()

Tracker

subject

+updateSignup(), +updateLogin(),
+updateSignout(),
+updatePasswordReset(),
+updatePasswordChange(),
+updateOrderPlaced()

CafeManagementSystem

static writier1;

+trackerOutput()