

# System Document

## Introduction

### Implementation Environment:

Programmer: @Maxence2997, @raythegreat99

IDLE: Eclipse

Version: 2020-09 (4.17.0)

Programming Language: Java, JRE 14

Date: 2021/05/17 – 2021/06/30

### Database Environment:

Creator: @Maxence2997

Database version: MySQL 8.0.25

Engine: InnoDB

Table count (includes view) : 26

## The UML diagram of the Graphical User Interface

Regarding the size of the system document and the diagram of GUI, we propose you a Google drive URL below for our Diagram of GUI.

[Diagram of GUI](#)

## Description of Classes

### Term\_project\_main Class

Constructor	
<b>Term_project_main()</b> Initialize frame, login panel, home panel and initialize classes of panels below.	
Instance Methods	
void	<b>public static main(String[] args)</b> Main function, to initialize whole programme.
void	<b>private login_panel()</b> Initialize JComponents used in login_panel. Add ActionListener to JButton to get data for essential or better user experience, also for handling exceptions.
void	<b>private home_panel()</b> Initialize JComponents used in home_panel. Add ActionListener to JButtons to get data for essential or better user experience.

### Employee\_panel Class

Constructor	
<b>Employee_panel()</b> Initialize JComponents used in Employee_panel. Add ActionListener to JButtons and JComboBox to get data for essential or better user experience, also for handling exceptions.	
Instance Methods	
String [] []	<b>private show_more()</b> Get information from database to show related project of the employee inquired.

<b>String [] []</b>	<b>private show_table()</b> Get information from database to show projects for supervisors.
<b>ArrayList&lt;String&gt;</b>	<b>private check(JTextField empID)</b> the action after click button confirm in Employee_panel – show and adjust set instruction of SQL.
<b>String []</b>	<b>private add()</b> Supervisor add new employee into EMPLOYEE table.
<b>Int</b>	<b>private save_change(JTextField empID)</b> Update EMPLOYEE table with adjusted employee info.
<b>Int</b>	<b>private delete_emp(JTextField empID)</b> Supervisor delete existing employee in EMPLOYEE table.
<b>void</b>	<b>clear_text()</b> Clear up textfields in Employee_panel.
<b>void</b>	<b>set_visible(boolean bl)</b> Set whether JComponents are viewable or not.

## Supplier\_panel Class

Constructor	
<b>Supplier_panel()</b> Initialize JComponents used in Supplier_panel. Add ActionListener to JButtons and JComboBox to get data for essential or better user experience, also for handling exceptions.	
Instance Methods	
<b>void</b>	<b>clear_text()</b> Clear up textfields in Supplier_panel.
<b>String [] []</b>	<b>private add_product()</b> Add data to PRODUCT table.
<b>String [] []</b>	<b>private inquire(JTextField sup_ID, JTextField sup_name)</b> Inquire supplier data in SUPPLIER table.
<b>String [] []</b>	<b>private show_more(JTextField sup_ID, JTextField sup_name)</b> Inquire products that the supplier provide.

<b>ArrayList&lt;String&gt;</b>	<b>private add_()</b> Add data to SUPPLIER table
<b>String</b>	<b>private get_new_supID()</b> get the last ID in SUPPLIER table and produce next one.
<b>int</b>	<b>private delete()</b> Delete existing supplier in SUPPLIER table and the product it provides in PRODUCT table.
<b>ArrayList&lt;String&gt;</b>	<b>private check(JTextField supID)</b> Check supplier is in table SUPPLIER or not. If exist, output it.
<b>JComboBox</b>	<b>get_comboBox_sup()</b> Return comboBox_sup.

## Inventory\_panel Class

<b>Constructor</b>	
<b>Inventory_panel()</b> Initialize JComponents used in Inventory_panel. Add ActionListener to JButtons and JComboBox to get data for essential or better user experience, also for handling exceptions.	
<b>Instance Methods</b>	
<b>void</b>	<b>clear()</b> Clear up textfields in Inventory_panel and set scrollpane's visibility as false.
<b>String [] []</b>	<b>private inquire(JTextField InvID, JTextField item_name, JTextField module_type)</b> Inquire data from INVENTORY table.

## Project\_panels Class

<b>Constructor</b>	
<b>Project_panels()</b> Initialize JComponents and instance variables used in Project_panels. Add ActionListener to JButtons to show the correct panel and do essential preparation for GUI.	

## Maintenance\_panel Class

Constructor	
<b>Maintenance_panel()</b> Initialize Project Maintenance panels(includes inquire panel and other panels of maintenance functions).	
Instance Methods	
void	<b>private add_inquire_panel()</b> Set inquire panel, initialize all JComponents needed. Add ActionListener to JButtons and to get data for essential or better user experience, also for handling exceptions. Finally, add panel to maint_container_panel.
String [] []	<b>private inquire(JTextField projectID, JTextField empID, JTextField est_date)</b> Pass in 1 to 3 JTextField(s) and use switch case to handle all situations which they are filled in or not.
String [] []	<b>private last_20()</b> Inquire data from VIEW_PROJECT. Get the most recent 20 projects.
void	<b>clear_inq_panel()</b> Clear textField input in inquire panel.
JComboBox	<b>get_comboBox_project()</b> Return comboBox_pj.

## Maint\_maint\_panel Class

Constructor	
<b>Maint_maint_panel()</b> Initialize subpanels of Project Maintenance panels (includes modify, append and remove functions).	
Instance Methods	

<b>void</b>	<b>set_default_visible(String st)</b> Set default appearance, and it would be called by button in upper button
<b>void</b>	<b>clear_maint_panel()</b> Clear textField in maintenance subpanels except for inquire panel.
<b>void</b>	<b>private set_visible(boolean bl)</b> Adjust whether specified JComponents are visible.
<b>int</b>	<b>private modify()</b> Modify data in PROJECT table.
<b>ArrayList&lt;String&gt;</b>	<b>private append()</b> Add data in PROJECT table.
<b>int</b>	<b>private delete()</b> Delete existing project from PROJECT table.
<b>ArrayList&lt;String&gt;</b>	<b>private check_ID(JTextField ID)</b> Check whether the ID exist in database.

## Progress\_panel Class

Constructor	
<b>Progress_panel()</b> Initialize JComponents used in Progress_panel. Add ActionListener to JButtons to get data for essential or better user experience. Finally add panel to container_panel.	
Instance Methods	
<b>void</b>	<b>clear()</b> Clear up textfields in Progress_panel and set scrollpane's visibility as false.
<b>String [] []</b>	<b>private show_project_status(String st)</b> Inquire data from VIEW_PROJECT_PROGRESS in different scenario. Also do exception handling.

## Sheets\_panel Class

Constructor	
<b>Sheets_panel()</b> Call add_sign_panel(). Initialize JComponents used in Sheets_panel. Add ActionListener to JButtons and JComboBox to get data for essential or better user experience. Finally add panel to container_panel.	
Instance Methods	
<b>void</b>	<b>private add_sign_panel()</b> Initialize JComponents needed in sign_panel (for supervisor). Add ActionListener to get data, set JLabel text and set JComponents' visibility.
<b>int</b>	<b>private sign_all()</b> Sign all unsigned documents.
<b>JComboBox</b>	<b>get_comboBox_sheets()</b> Return comboBox_sheets.

## Sheet\_inq\_panel Class

Constructor	
<b>Sheet_inq_panel()</b> Initialize JComponents used in Sheet_inq_panel. Add ActionListener to JButtons and JRadioButton to get data for essential or better user experience. Finally add panel to sheet_container_panel.	
Instance Methods	
<b>void</b>	<b>clear_inq_panel()</b> Clear input in Sheet_inq_panel.
<b>void</b>	<b>set_default_visible()</b> Set JComponents to default.
<b>String [] []</b>	<b>private inquire_all(JTextField first, JTextField second, JTextField third)</b> Inquire sheet(s) once in VIEW_6_SHEETS

Constructor	
String [] []	<b>private inquire(String sheet_type, JTextField first, JTextField second, JTextField third)</b> Inquire sheet once in respective tables of sheet

## Sheet\_mod\_panel Class

Constructor	
<b>Sheet_mod_panel()</b> Initialize JComponents used in Sheet_mod_panel. Add ActionListener to JButtons to get data for essential or better user experience. Finally add panel to sheet_container_panel.	
Instance Methods	
	<b>clear_mod_panel()</b> Clear input in Sheet_mod_panel.
	<b>set_default_visible()</b> Set JComponents to default.
	<b>private modify()</b> Update information of sheets to database.

## Sheet\_remove\_panel Class

Constructor	
<b>Sheet_remove_panel()</b> Initialize JComponents used in Sheet_remove_panel. Add ActionListener to JButtons to get data for essential or better user experience. Finally add panel to sheet_container_panel.	
Instance Methods	
void	<b>clear_remove_panel()</b> Clear input in Sheet_remove_panel.
void	<b>set_default_visible()</b> Set JComponents to default.
int	<b>private delete()</b> Delete sheet in respective tables of sheet



## Sheet\_append\_panel Class

Constructor	
<b>Sheet_append_panel()</b> Initialize JComponents used in Sheet_append_panel. Add ActionListener to JButtons to get data for essential or better user experience. Finally add panel to sheet_container_panel.	
Instance Methods	
void	<b>clear_append_panel()</b> Clear input in Sheet_append_panel.
void	<b>set_default_visible()</b> Set JComponents to default.
Boolean	<b>private append_check(String st)</b> Inspect user's request and make sure that observes our business logical
String [] []	<b>private append(String st)</b> After confirming user's request, add a new sheet into the particular table of sheet

## connection Class

Constructor	
<b>connection(int test)</b> Initialize the class and call connection_mysql(int i) for remote connection (*test).	
<b>connection()</b> Initialize the class and call connection_mysql() for local connection.	
Instance Methods	
void	<b>Static connection_mysql()</b> Locally connect to database named test by given jdbc_driver, db_url, username and password.

Constructor	
void	<b>Static connection_mysql(int i)</b> Remotely connect to database named test by given jdbc_driver, db_url, username and password.

## Library Class

Constructor	
Instance Methods	
String [] []	<b>show_unsign_req()</b> Request database for unsigned requisition sheet(s) and convert to String 2d array for Jtable
Void	<b>adjust_PROJECT()</b> For every project, inspect project status and adjust test.PROJECT.Project_status.
String [] []	<b>show_project_status()</b> Request database for project progress which is severely violated or delayed and convert to String 2d array for Jtable *this method is only for employee's reminder
Boolean	<b>num_not_null_check(JTextField num)</b> Used for inspect whether the input from user is number or not
Boolean	<b>supplier_check(JTextField supID)</b> Used for inspect whether supplier ID inputted from user is in database or not
Boolean	<b>projectID_check(JTextField pjID)</b> Used for inspect whether project ID inputted from user is in database or not
Boolean	<b>module_check(JTextField module)</b> Used for inspect whether module type inputted from user is in database or not
Boolean	<b>tf_check(JTextField tf)</b> Used for inspect whether the input from user is "true", "false" (case insensitive).

Constructor	
Boolean	<b>emp_check(JTextField empID)</b> Used for inspect whether employee ID inputted from user is in database or not
Boolean	<b>supervisor_check(JTextField empID)</b> Used for inspect whether supervisor ID inputted from user is in database or not
Boolean	<b>date(String strDate)</b> Used for inspect whether date inputted from user observes our format or not.  Reference: <a href="https://beginnersbook.com/2013/05/java-date-format-validation/">https://beginnersbook.com/2013/05/java-date-format-validation/</a>
String []	<b>insert(String [] input, String string, int index)</b> Used for insert a new value to existing array by System.arraycopy.  Reference: <a href="https://www.techiedelight.com/insert-element-array-specific-index-java/">https://www.techiedelight.com/insert-element-array-specific-index-java/</a>
String	<b>check_text_fields(JTextField ID, JTextField else1, JTextField else2)</b> Used for inspect which JtextField(s) is/are filled up for 3 JTF
String	<b>check_text_fields(JTextField ID, JTextField else1)</b> Used for inspect which JtextField(s) is/are filled up for 2 JTF
ArrayList<String>	<b>rmv_mod_check(JTextField text1, JTextField text2, JTextField text3, JTextField text4)</b> Invoked by JButton. Used for inspect whether sheet data is in the database or not before modification and removing a sheet
void	<b>sort(String [] [] array)</b> Used for calling quickSort(int leftbound, int rightbound) by passing a String 2d array.
void	<b>private quickSort(int leftbound, int rightbound)</b> Sort data in place by quick_sort algorithm

Constructor	
void	<b>private swap(int aIndex, int bIndex)</b> Used for swapping 2 elements in an array and called by quickSort(int leftbound, int rightbound).

## Document Information:

Author: @Maxence2997, @raythegreat99

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All documents and Diagram of the term project:

[Google drive](#)

[Source code](#) (Github)