Company name

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Assignment

TECHNOLOGY PARK MALAYSIA

CT038-3-2-OODJ

OBJECT ORIENTED DEVELOPMENT WITH JAVA

APU2F2109SE/APD2F2109SE

HAND OUT DATE: 3 NOVEMBER 2021

HAND IN DATE : 6 DECEMBER 2021

WEIGHTAGE : 50%

INSTRUCTIONS TO CANDIDATES:

1 Submit your assignment at the administrative counter.

2 Students are advised to underpin their answers with the use of references (cited using the Harvard Name System of Referencing).

3 Late submission will be awarded zero (0) unless Extenuating Circumstances (EC) are upheld.

4 Cases of plagiarism will be penalized.

5 The assignment should be bound in an appropriate style (comb bound or stapled).

6 Where the assignment should be submitted in both hardcopy and softcopy, the softcopy of the written assignment and source code (where appropriate) should be on a CD in an envelope / CD cover and attached to the hardcopy.

7 You must obtain 50% overall to pass this module.

Name: Cheah Poh Yue Ponny (TP062064)

Sim Yu Shuang (TP061560)

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# **Chapter 1.0: Introduction**

For the purpose to combat the current pandemic outbreak, vaccines are being developed and distributed to all citizens and non-citizens. Our team has commissioned by a Special committee to develop a window system to ensure that the supply of COVID-19 vaccines for Malaysia is timely accessible. Hence, a secure vaccine system is developed and accessible by a fixed name and identification number for personnel members and personal name and identification number for citizens and non-citizens. By using this system, personnel can assist people to register an account and manage their details, vaccine appointment and supply of covid19 vaccines at the centre. Furthermore, people can also register an account on their own to book vaccine appointment, and view all vaccines, centres, appointments and personal details through the system. After implementation, the system is expected to bring convenience and benefit the government and public.

**Assumption**

1. One vaccine ID will only be available in one centre and the location will not be modifiable.
2. The current updated vaccine quantity and type will need to be updated manually by the personnel.
3. All centres will have vaccines available and vaccines could not be registered without a centre.
4. Centre address and name will not be modifiable once registered unless it is removed.
5. Citizens or non-citizens could not be removed and modify their identification number once registered.

# **Chapter 2.0: Design**

## **2.1 Class Diagram**

Table

Description automatically generated

## **2.2 Use Case Diagram**

Diagram

Description automatically generated

## **2.3 Use Case Specification**

|  |  |
| --- | --- |
| Use Case | Register people account |
| Brief Description | This use case allows people or personnel helping people to register an account. |
| Actors | people, personnel |
| Preconditions | People or personnel provide the personal details to be registered. |
| Main Flow | 1. The use case begins when people or personnel activates the option to register account. 2. The system requests people or personnel to select citizenship. 3. System will change the personal details required based on the selected citizenship. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Input details |
| Brief Description | This use case allows people or personnel to input the personal details. |
| Actors | people, personnel |
| Preconditions | People or personnel select the citizenship either citizen or non-citizen. |
| Main Flow | 1. The use case begins when people or personnel activates the option to input personal details. 2. The system requests people or personnel to enter the required details. 3. People or personnel submit the personal details. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Verify register details |
| Brief Description | This use case allows system to verify the submitted details by people or personnel to register an account. |
| Actors | people, personnel |
| Preconditions | People or personnel fill in the personal details and submit. |
| Main Flow | 1. The use case begins when people or personnel activates the option to submit the personal details. 2. The system checks and validates the personal details filled in by people or personnel. 3. If the details did not fulfill the validations, system requires people or personnel to fill in again (ref. Alternative flow). 4. The system search in the text file, if username already registered, system inform people or personnel that they have registered and bring them to login homepage else system informs that they have registered successfully. |
| Alternative Flows | c) i) People fill in the details multiple times but did not fulfil the validations has contacted the personnel for help. |

|  |  |
| --- | --- |
| Use Case | Enter login details |
| Brief Description | This use case allows people or personnel to enter their login details. |
| Actors | people, personnel |
| Preconditions | People or personnel provide login details to login. |
| Main Flow | 1. The use case begins when people or personnel activates the option to login. 2. The system requests people or personnel to enter their name and IC or passport. 3. People or personnel submit the login details. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Verify login details |
| Brief Description | This use case allows system to verify the login details submitted by people or personnel to login to the system. |
| Actors | people, personnel |
| Preconditions | People or personnel fill in the login details and submit. |
| Main Flow | 1. The use case begins when people or personnel activates the option to submit the login details. 2. The system search in the text file to verify the password and username (ref. Alternative flow). 3. If the name and identification number are invalid, system shows invalid and requests people or personnel to enter again. |
| Alternative Flows | b) i) The system search through the text file and is not able to find the name and identification number which case people or personnel have entered the wrong login details or account have not been registered and require to register an account before login. |

|  |  |
| --- | --- |
| Use Case | Verify user type |
| Brief Description | This use case allows system to verify the user type. |
| Actors | people, personnel |
| Preconditions | People or personnel entered the correct login details. |
| Main Flow | 1. This use case begins when people or personnel have login successfully. 2. The system search in the text file to confirm the identified user type as people or personnel. |
| Alternative Flows | – |
| Use Case | Personnel |
| Brief Description | This use case allows system to bring personnel to the personnel homepage. |
| Actors | people, personnel |
| Preconditions | System has verified and confirmed user type. |
| Main Flow | 1. This use case begins when system has verified the user as personnel. 2. System displays personnel homepage to the personnel. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | People |
| Brief Description | This use case allows system to bring people to the people homepage. |
| Actors | people, personnel |
| Preconditions | System has verified and confirmed user type. |
| Main Flow | 1. This use case begins when system has verified the user as people. 2. System displays people homepage to the people. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Appointment |
| Brief Description | This use case allows personnel to record and manage the appointment. |
| Actors | personnel |
| Preconditions | The personnel have login to the personnel homepage. |
| Main Flow | 1. This use case begins when personnel activates the option to manage appointment. 2. System allows personnel to activate the option to book appointment or view appointment records. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Search appointment |
| Brief Description | This use case allows personnel to find the appointment details of people. |
| Actors | personnel |
| Preconditions | Personnel provide the IC, passport number or name that is to be searched. |
| Main Flow | 1. The use case begins when personnel activates the option to search the appointment record. 2. The system requests personnel to enter the IC, passport number, name to be searched (ref. Alternative flow). 3. The system search in the text file and display the result to the personnel (ref. Alternative flow). |
| Alternative Flows | b) i) Personnel does not remember the IC or passport number and search the appointment using people’s name.  c) i) The system search through the text file and is not able to find the people appointment which case an appointment may not be made and require to book an appointment. |

|  |  |
| --- | --- |
| Use Case | View appointment |
| Brief Description | This use case allows people or personnel to view the appointment. |
| Actors | people, personnel |
| Preconditions | People or personnel select the appointment record they want to view. |
| Main Flow | 1. The use case begins when people or personnel activates the option to view the appointment details. 2. The system requests people or personnel to select the appointment record (ref. Alternative flow). 3. The system search in the text file and display the appointment details to the people or personnel. |
| Alternative Flows | b) i) People or personnel not able to find the appointment record they want to view which case an appointment may not be made and require to make an appointment. |

|  |  |
| --- | --- |
| Use Case | Cancel appointment |
| Brief Description | This use case allows people or personal to cancel the appointment. |
| Actors | people, personnel |
| Preconditions | People or personnel select the appointment record they want to cancel. |
| Main Flow | 1. The use case begins when people or personnel activates the option to cancel appointment. 2. The system requests people or personnel to select the appointment record to be cancelled (ref. Alternative flow). 3. The system search in the text file and display a confirmation before cancellation is made to people or personnel. |
| Alternative Flows | b) i) People or personnel not able to find the appointment record they want to cancel which case an appointment may not be made and require to make an appointment. |

|  |  |
| --- | --- |
| Use Case | Book appointment |
| Brief Description | This use case allows people or personnel to book an appointment. |
| Actors | people, personnel |
| Preconditions | People or personnel provides the appointment details to be booked. |
| Main Flow | 1. The use case begins when people or personnel activates the option to book an appointment. 2. The system requests people or personnel to enter the appointment details. 3. People or personnel submit the appointment details. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Modify appointment |
| Brief Description | This use case allows people or personnel to modify an appointment. |
| Actors | people, personnel |
| Preconditions | People or personnel select the appointment record they want to modify. |
| Main Flow | 1. The use case begins when people or personnel activates the option to modify an appointment. 2. The system requests people or personnel to select the appointment record to be modified (ref. Alternative flow). 3. The system search in the text file and display the original appointment details. 4. People or personnel enter the new appointment details. 5. The system search in the text file and update the latest appointment details. |
| Alternative Flows | b) i)  People or personnel not able to find the appointment record they want to modify which case an appointment may not be made and require to make an appointment. |

|  |  |
| --- | --- |
| Use Case | Verify appointment details |
| Brief Description | This use case allows system to verify the submitted details by people or personnel to book or modify an appointment. |
| Actors | people, personnel |
| Preconditions | People or personnel fill in the booking details and submit. |
| Main Flow | 1. The use case begins when people or personnel activates the option to book or modify appointment details. 2. The system checks whether the appointment details filled in by people or personnel have follow the validation. 3. If the details did not fulfill the validations, system require people or personnel to fill in again (ref. Alternative flow). 4. System informs people or personnel they have book or modify successfully. |
| Alternative Flows | c) i) People fill in the details multiple times but did not fulfil the validations has contacted the personnel for help. |

|  |  |
| --- | --- |
| Use Case | Vaccine |
| Brief Description | This use case allows personnel to record and manage the vaccine. |
| Actors | personnel |
| Preconditions | The personnel have login to the personnel homepage. |
| Main Flow | 1. This use case begins when personnel activates the option to manage vaccine. 2. The system allows personnel activates option to add vaccine or view vaccine records. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Search vaccine |
| Brief Description | This use case allows people or personnel to find a vaccine. |
| Actors | people, personnel |
| Preconditions | People or personnel provides the vaccine ID or name that is to be searched. |
| Main Flow | 1. The use case begins when people or personnel activates the option to search the vaccine record. 2. The system requests people or personnel enter the vaccine ID or name to be searched. 3. The system search in the text file and display the result to the people or personnel (ref. Alternative flow). |
| Alternative Flows | c) i) The system search through the text file and is not able to find the vaccine which case the vaccine may not be registered and require to register the vaccine. |

|  |  |
| --- | --- |
| Use Case | View vaccine |
| Brief Description | This use case allows people or personnel to view the vaccine details. |
| Actors | people, personnel |
| Preconditions | People or personnel select the vaccine record they want to view. |
| Main Flow | 1. The use case begins when people or personnel activates the option to view the vaccine details. 2. The system requests people or personnel to select the vaccine record (ref. Alternative flow). 3. The system search in the text file and display the vaccine details to people or personnel. |
| Alternative Flows | b) i) People or personnel not able to find the vaccine record they want to view which case the vaccine may not be registered and require to register vaccine. |

|  |  |
| --- | --- |
| Use Case | Remove vaccine |
| Brief Description | This use case allows personnel to remove the vaccine. |
| Actors | personnel |
| Preconditions | Personnel select vaccine record they want to remove. |
| Main Flow | 1. The use case begins when personnel activates the option to remove vaccine. 2. The system requests personnel to select vaccine record to be removed (ref. Alternative flow). 3. The system search in the text file and display a confirmation before removing vaccine to personnel. |
| Alternative Flows | b) i) Personnel not able to find the vaccine record they want to remove which case the vaccine may not be registered and require to register vaccine. |

|  |  |
| --- | --- |
| Use Case | Register vaccine |
| Brief Description | This use case allows personnel to register vaccine. |
| Actors | personnel |
| Preconditions | Personnel provides the vaccine details to be registered. |
| Main Flow | 1. The use case begins when personnel activates the option to register a vaccine. 2. The system requests personnel to enter the vaccine details. 3. Personnel submit the vaccine details. |
| Alternative Flows | – |
| Use Case | Modify vaccine |
| Brief Description | This use case allows personnel to modify a vaccine. |
| Actors | personnel |
| Preconditions | Personnel select the vaccine record they want to modify. |
| Main Flow | 1. The use case begins when personnel activates the option to modify vaccine. 2. The system requests personnel to select the vaccine record to be modify (ref. Alternative flow). 3. The system search in the text file and display the original vaccine details. 4. Personnel enter the new vaccine details. 5. The system search in the text file and update the latest vaccine details. |
| Alternative Flows | b) i) Personnel not able to find the vaccine record they want to modify which case the vaccine may not be registered and require to register vaccine. |

|  |  |
| --- | --- |
| Use Case | Verify vaccine details |
| Brief Description | This use case allows system to verify the submitted details by personnel to register or modify vaccine. |
| Actors | personnel |
| Preconditions | Personnel fill in the vaccine details and submit. |
| Main Flow | 1. The use case begins when personnel activates the option to register or modify vaccine details. 2. The system checks whether the vaccine details filled in by personnel have follow the validation. 3. If the details did not fulfill the validations, system require personnel fill in again. 4. System informs personnel they have register or modify successfully. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Centre |
| Brief Description | This use case allows personnel to record and manage the centre. |
| Actors | personnel |
| Preconditions | The personnel have login to the personnel homepage. |
| Main Flow | 1. This use case begins when personnel activates the option to manage centre. 2. The system allows personnel activates option to add centre or view centre record. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | View centre |
| Brief Description | This use case allows people or personnel to view the centre details. |
| Actors | people, personnel |
| Preconditions | People or personnel select the vaccine record they want to view. |
| Main Flow | 1. The use case begins when people or personnel activates the option to view the centre details. 2. The system requests people or personnel select the centre record (ref. Alternative flow). 3. The system in the text file and display the centre details to people or personnel. |
| Alternative Flows | b) i) People or personnel not able to find the centre record they want to view which case the centre may not be registered and require to register centre. |

|  |  |
| --- | --- |
| Use Case | Search centre |
| Brief Description | This use case allows people or personnel to find the centre. |
| Actors | people, personnel |
| Preconditions | People or personnel provides the centre name that is to be searched. |
| Main Flow | 1. The use case begins when people or personnel activates the option to search the centre record. 2. The system requests people or personnel to enter the centre name to be searched. 3. The system in the text file and display the result to the people or personnel (ref. Alternative flow). |
| Alternative Flows | c) i) The system searches through the text file and is not able to find the centre which case the centre may not be registered and require to register centre. |

|  |  |
| --- | --- |
| Use Case | Register centre |
| Brief Description | This use case allows personnel to register centre. |
| Actors | personnel |
| Preconditions | Personnel provide the centre details to be registered. |
| Main Flow | 1. The use case begins when personnel activates the option to register centre. 2. The system requests personnel to enter the centre details. 3. Personnel submit the centre details. |
| Alternative Flows | – |
| Use Case | Modify Centre |
| Brief Description | This use case allows personnel to modify centre. |
| Actors | personnel |
| Preconditions | Personnel select the centre record they want to modify. |
| Main Flow | 1. The use case begins when personnel activates the option to modify centre. 2. The system requests personnel to select the centre record to be modify (ref. Alternative flow). 3. The system search through the database and display the original centre details. 4. Personnel enter the new centre details. 5. System search in the text file and update the latest centre details. |
| Alternative Flows | b) i) Personnel not able to find the centre record they want to modify which case the vaccine may not be registered and require to register centre. |

|  |  |
| --- | --- |
| Use Case | Verify centre details |
| Brief Description | This use case allows system to verify the submitted details by personnel to register or modify centre. |
| Actors | personnel |
| Preconditions | Personnel fill in the centre details and submit. |
| Main Flow | 1. The use case begins when personnel activates the option to register or modify centre details. 2. The system checks whether the centre details filled in by personnel have follow the validation. 3. If the details did not fulfill the validations, system require personnel fill in again. 4. System informs personnel they have register or modify successfully. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | Remove centre |
| Brief Description | This use case allows personnel to remove the centre. |
| Actors | personnel |
| Preconditions | Personnel select centre record they want to remove. |
| Main Flow | 1. The use case begins when personnel activates the option to remove centre. 2. The system requests personnel to centre record to be removed (ref. Alternative flow). 3. The system search in the text file and display a confirmation before removed is made. |
| Alternative Flows | b) i) Personnel not able to find the centre record they want to remove which case the centre may not be registered and require to register centre. |

|  |  |
| --- | --- |
| Use Case | People |
| Brief Description | This use case allows personnel to record and manage the people. |
| Actors | personnel |
| Preconditions | The personnel have login to the personnel homepage. |
| Main Flow | 1. This use case begins when personnel activates the option to manage people. 2. The system allows personnel activates option to register people or view people record. |
| Alternative Flows | – |

|  |  |
| --- | --- |
| Use Case | View people |
| Brief Description | This use case allows people or personnel to view the people personal details. |
| Actors | people, personnel |
| Preconditions | Personnel select the people record they want to view; people can only view their own details. |
| Main Flow | 1. The use case begins when people or personnel activates the option to view the people details. 2. The system requests personnel to select the people record, people can view their own personal details directly (ref. Alternative flow). 3. The system search in the text file and display the personal details to people or personnel. |
| Alternative Flows | b) i) Personnel not able to find people record they want to view which case the people may not be registered and require to register. |

|  |  |
| --- | --- |
| Use Case | Modify people |
| Brief Description | This use case allows people or personnel to modify people personal details. |
| Actors | people, personnel |
| Preconditions | Personal select the people record they want to modify; people can directly modify their own details. |
| Main Flow | 1. The use case begins when people or personnel activates the option to modify people personal details. 2. The system requests personnel to select people record to be modify, people can only modify their own personal details. 3. System search in the text file and display the original people personal details (ref. Alternative flow). 4. People or personnel enter the new people personal details. 5. The system search in the text file and update the latest people personal details. |
| Alternative Flows | c) i) The system search through the database and is not able to find the people record which case the people may not be registered and require to register. |

|  |  |
| --- | --- |
| Use Case | Verify people details |
| Brief Description | This use case allows system to verify the submitted details by people or personnel to register or modify people personal details. |
| Actors | people, personnel |
| Preconditions | People or personal fill in the people personnel details and submit. |
| Main Flow | 1. The use case begins when people or personnel activates the option to register or modify people personal details. 2. The system checks whether the people personal details filled in by people or personnel have follow the validation. 3. If the details did not fulfill the validations, system require people or personnel fill in again (ref. Alternative flow). 4. System informs people or personnel they have registered or modified successfully. |
| Alternative Flows | c) i) People fill in the details multiple times but did not fulfil the validations has contacted the personnel for help. |

|  |  |
| --- | --- |
| Use Case | Search people |
| Brief Description | This use case allows personnel to find a people. |
| Actors | personnel |
| Preconditions | Personnel provide the IC, passport number or name that is to be searched. |
| Main Flow | 1. The use case begins when personnel activates the option to search the people record. 2. The system requests personnel enter the IC or passport number to be searched. 3. The system search in the text file and display the result to the personnel (ref. Alternative flow). |
| Alternative Flows | c) i) The system search through the text file and is not able to find the people record which case the people may not be registered and require to register. |

|  |  |
| --- | --- |
| Use Case | Log out |
| Brief Description | This use case allows people or personnel log out. |
| Actors | people, personnel |
| Preconditions | People or personnel activates log out option. |
| Main Flow | 1. The use case begins when people or personnel activates the option to log out. 2. System log out. |
| Alternative Flows | – |

# **Chapter 3.0: Sample Java Code**

## **3.1: Variables**

### **3.1.1: String**

a. String



An empty string variable created using double quotation mark.

b. String length



String length return number of characters in a string.

c. String concatenation



A “+” operator used to add tempdata, data and “\n” into tempdata.

### **3.1.2: Integer**



An integer variable declared by assigning the integer value “0” without using quotation mark.

### **3.1.3: Boolean**



Boolean expression of true or false will be return based on the given equation.

### **3.1.4: List**



A string list eachdata declared by assigning the tempdata split based on “\n” to store multiple data.

## **3.2: Casting**

### **3.2.1: To String**



A toString() method used to represent the value obtain from PModAgeSpin as string.

### **3.2.2: Parse Integer**



A parseInt() method used to represent the value obtain from myReader.nextLine() as integer.

## **3.3: Operators**

### **3.3.1: Assignment**



A “=” used to assign value to a variable.

### **3.3.2: Arithmetic**

a. Division



Division “/” used to divide value obtained from countLine by 5.

b. Increment

Text, letter

Description automatically generated

Increment operator used to add 1 to the variable col for each for loop.

c. Decrement

Graphical user interface, text, application, Word

Description automatically generated

Decrement operator used to decrease 1 to variable i for each for loop.

### **3.3.3: Comparison**

a. Equal

a. i. Non-Character Equal



Equal operator used to compare whether error is equal to 2.

a. ii. Character Equal



Equal operator used to compare whether lf.GetID() is equal to personnel.

b. Not Equal

b. i. Non-Character Not Equal



Not equal operator used to compare whether row is not equal to -1.

b. ii. Character Not Equal



Not equal operator used to compare whether lf.GetID() is not equal to null.

c. Greater Than



Greater than operator used to compare whether length of CenContTxt is greater than 11.

d. Less Than



Less than operator used to compare whether length of CenContTxt is less than 8.

## **3.4: Logical**

### **3.4.1: And**



And operator used to combine 2 Boolean expression and return true only if both expressions are true.

### **3.4.2: Or**



Or operator used to combine 2 Boolean expression and return true if either one expressions are true.

## **3.5: Jframe and Element Formatting**

### **3.5.1: Frame**

a. Set Visible



The setVisible(true) method used to set the visibility of frame.

b. Set Layout



The setLayout() method used to set the layout of container.

c. Set background



The setBackground() method used to set the background colour of frame.

### **3.5.2: Button**

a. Set Text



The setText() method used to set the text in button.

b. Hide



The hide() method used to hide the button.

c. Set Location



The setLocation() method used to set the location of button in frame.

### **3.5.3: Combo Box**

a. Add Item



The addItem() method used to add item into combobox.

b. Set Selected Item



The setSelectedItem() method used to set the item selected in combo box.

### **3.5.4: Label**

a. Set Text



The setText() method used to set the text show in label.

b. Set Background



The setBackground() method used to set the background colour of label.

### **3.5.5: Text Field**

a. Get Text



The getText() method used to get the text write by user in Text Field.

b. Set Text



The setText() method used to set the text in Text Field.

c. Set Editable



The setEditable(false) method let user unable to edit the Text Field.

d. Set Border



The setBorder(null) method used to set the border in Text Field become null.

### **3.5.6: Spinner**

a. Set Visible



The setVisible(false) method used to set the disappearance of JSpinner.

b. Get Value



The getValue() method used to get the value selected by user in JSpinner.

**3.6: Control Structure**

**3.6.1: If Statement**



If the condition written in the bracket is achieved the following statement will occur. In this case, if “error” equal to 1, an error message “Appointment not able to modify” will be shown.

**3.6.2: If-else Statement**

Text, letter

Description automatically generated

If the condition written in the bracket is achieved the following statement will occur else another statement will occur. In this case, if “pmf.GetFunction()” equal to “add\_vaccine”, “pmf” frame will appear, else “rvf” frame will appear.

**3.6.3: Nested If-else Statement**

Graphical user interface, text, application

Description automatically generated

Nested if else means that if statement inside another if statement. In this case, if “GetID()” is not equal to null and equal to “Personnal” then the if else statement of if “GetFunction()” not equals to null and equals to “add\_vaccine” or “add\_centre” or “add\_appointment” will be executed else if the first condition is not achieved the frame second choice will be set visible.

**3.7: Looping Structure**

**3.7.1: While Loop**

Text

Description automatically generated

The system will execute continuously until the “myReader” does not have next line.

**3.7.2: For Loop**

Text

Description automatically generated

The system will execute continuously if col do not equal to 4. In this case, setValueAt() method will set the value in column as col and increase by 1 until col is equal to 4.

**3.7.3: Nested For Loop**

Text, letter

Description automatically generated

Inner for loop will executed one time for each iteration of outer for loop. In this case, setValueAt() method will set the value in column as col and increase by 1 until col is equal to 5. After the inner for loop has done executing the outer for loop which is the row will increase by one and run the inner for loop again until the row is equal to line.

**3.7.4: Break Statement**

Text

Description automatically generated

If the condition in while bracket is achieved, the statement will stop.

**3.8: Switch case**

Timeline

Description automatically generated

Switch expression evaluated once and value of expression is compared with the value of case which is case 1, case 2, case 3 and case 0. If there is a match, associated block of code will execute. Break is helping to break out switch block and stop execution more code and case testing inside the block when a match is found.

**3.9: Object Oriented Code**

**3.9.1: Class**

Graphical user interface, text, application, email

Description automatically generated

A class GUI\_Helper is created using keyword class to create object.

**3.9.2: Object**

Text

Description automatically generated

An object is created by specifying the class name which is HomePageForm, follow by object name “hpf” and use the keyword new.

**3.9.3: Encapsulation**



One of the concepts of object-oriented programming is encapsulation concept which can content all the information within the object and only expose selected variables to be open. Encapsulation used for “sensitive” data is hidden from user. A class variable is declared using keyword private to ensure it can only access within the class. After that, a private variable will be access and update the value through get and set method.

**3.9.4: Get Set Method**

Text

Description automatically generated

Since id and login\_name are private variables, to access the data from this class setter which is SetID() and SetName() was set to allow the system to set the value. Then, getter which is GetID() and GetName() was set to access the variable in other classes.

**3.9.5: Constructor**

A picture containing text

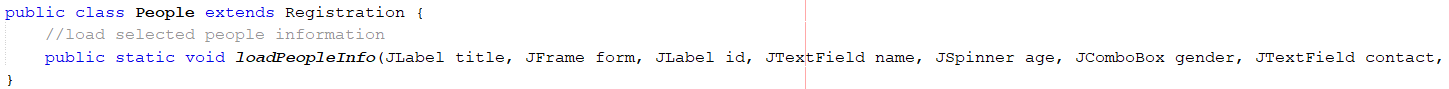
Description automatically generated

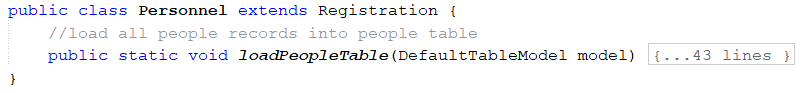
Constructor method is used to initialize object. The constructor method is implemented in RecordPeopleForm to set the initial value for background colour, table row selection, table cell selection and table column size.

**3.9.6: Inheritance**

Text

Description automatically generated with medium confidence





Another concept of object-oriented programming is inheritance concept which acquires the variables and methods from one class to another classes. A class inheritance was created using keyword extend to extend the variable of children class from parent class. In this case, the 2 children class which is Personnel and People have extend their parent class which is Registration which means that they are sharing the method available in their parent class.

**3.9.7: Exceptional handling**

a. Try-catch

Text

Description automatically generated

Try statement allows system to write the data into “appointment.txt”, catch allows to define the error in try block. If a statement in try block raised an exception, rest of the try block will not execute and control passes to catch block, printStackTrace() method use to display error message in console.

b. Try-catch Finally

Text

Description automatically generated

Try statement allows system to write the data into “centre.txt”, catch allows to define the error in try block. If a statement in try block raised an exception, rest of the try block will not execute and control passes to catch block, printStackTrace() method use to display error message in console. Finally, in any case the RecordVaccineForm will be shown.

**3.9.8: File Concept**

a. Write

Graphical user interface, text

Description automatically generated

The FileWriter class and write() method used to write data into “people.txt”. The close() method used to close the stream to retrieve the allocated resources.

b. Read

Text

Description automatically generated

An object appointmentfile created to read data from “appointment.txt”. In order to read data from a file, hasNextLine() and nextLine() method is used for reading each line and Scanner class is used to write data into file.

c. Modify

A picture containing graphical user interface

Description automatically generated

An object peoplefile created to read data from “people.txt”. In order to read data from a file, hasNextLine() and nextLine() method is used for reading each line, Scanner class is used to write data into file, and getAbsolutepath() is used to return the absolute pathname of peoplefile. If the “data” equal to lf.GetID(), modify() method is used to update the latest details modify by user into file.

# **Chapter 4.0: Additional Features**

## **4.1: JDateChooser**

### **4.1.1: Download and Apply JDateChooser**

A picture containing text, water

Description automatically generated

JCalendar can be found in the palette by downloading jcalendar-1.4 jar and apply into NetBeans using:

RightClickPalette > Select Palette Manager > Select Swing Controls > Click Add from JAR > Select jcalendar-1.4.jar frame desktop, select available component needed such as JCalendar, JDateChooser, etc > Click Finish

### **4.1.2: Set Selectable Data Range**

Text, letter

Description automatically generated

The getInstance() method is a static method used with calender to get the instance of calendar according to current time zone. An object cal is created and used with getInstance() method. Then, add() method used to add the date of calendar which is 3 day after and 3 month after. The min date and max date is saved in an object call min and max using getTime() method. The date in JDateChooser is set with the minimum date which is 3 days after the current time zone using setDate() method. Additionally, setSelectableDataRange() method is used to set the range of date available in the JDateChooser which is between 3 days to 3 months.

### **4.1.3: Format JDateChooser**



The SimpleDateFormat used to set the format of JDateChooser as “dd-MM-yyyy”.

### **4.1.4: Set Date**



The getDate() method used to set the date of JDateChooser.

### **4.1.5: Get Date**



The getDate() method used to get the date of JDateChooser.

## **4.2: JTable**

### **4.2.1: Default Table Model / Get Model**



DefaultTableModel used to implement TableModel that use vectors to store the cell value objects.

### **4.2.2: Set Selection Mode**



The setSelectionMode() method used to set the selection mode in JTable either single selection, single interval selection and multiple interval selection.

### **4.2.3: Get Column / Set Preferred Width**



The getColumn() method used to select the column in JTable and setPreferredWidth() method used to set the width of column in JTable.

### **4.2.4: Set Focusable**



The setFocustable(false) method used to disable the user selects a specific cell and can only select the entire row in JTable.

# **Chapter 5.0: Screenshot of Input/Output**

## **5.1 System Homepage/Functions**

Graphical user interface, text, application, email

Description automatically generated

After vaccine system start, welcome message and some information about the vaccine system will be shown and allow user to select login function, register function or exit the system.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generated

While user select register, a “Registration Form” frame will be shown. If user select citizen, system requires user to enter IC number, else if user select non-citizen, system requires user to enter passport number. This frame is accessible from homepage and personnel main frame.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generated

If user entered invalid IC or passport number, an error message “Identification Number Invalid” will be shown and require user to check again.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generated

If user entered valid identification number but invalid name, contact number, email or address, an error message “Invalid Input” will be shown and require user to check again.

Graphical user interface, application

Description automatically generatedGraphical user interface

Description automatically generated

If user entered IC or passport number that have been registered, an error message “Account Already Registered” will be shown and require user to login.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generated

If user entered valid details, a message “Account Register Successfully” will be shown and require user to login.

Graphical user interface

Description automatically generated

When user select login, registered successfully or have registered before, “Login” frame will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

If user entered invalid name, IC or passport number, an error message “Invalid Name/IC/Passport Number” will be shown and require user to check again.

## **5.2 Personnel Homepage/Functions**

Graphical user interface

Description automatically generated

If user entered valid name, IC or passport number, system will verify user type. If user is identified as personnel, “Personnel Homepage” frame will be shown. In other case, the personnel could logout to return to “Homepage” frame.

Graphical user interface, table

Description automatically generated with medium confidence

If personnel select “User Record”, system allow personnel to enter “IC/Passport/Name” to search the user record or select a user record to view or modify.

Graphical user interface

Description automatically generated Graphical user interface

Description automatically generated

If personnel select search without enter “IC/Passport/Name”, an error message “Please enter a search keyword” will be shown. If personnel select view or modify without selecting a user record, an error message “Please select a record” will be shown.

Graphical user interface, table

Description automatically generated Graphical user interface, text

Description automatically generated

If personnel entered “09” and select search, the user record contain “09” will be shown.

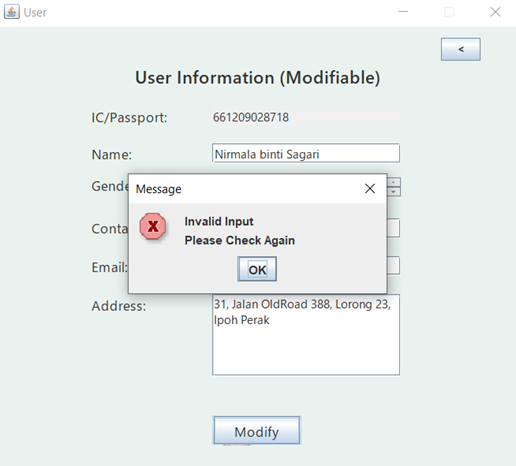
Graphical user interface, text, application

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel select a user and select view or modify, the user information of the following user will be shown but the IC or passport number is not able to modify.

Graphical user interface, application

Description automatically generated

If personnel modify the user information but enter invalid name, contact number, email or address, an error message “Invalid Input” will be shown and require personnel to check again.

Graphical user interface, application

Description automatically generatedGraphical user interface

Description automatically generated

If personnel modify the user information and enter valid details, a message “Account Updated Successfully” will be shown and system will return to “User Records” frame.

Graphical user interface, text, application

Description automatically generatedGraphical user interface, table

Description automatically generated

The contact number of Nirmala binti Sagari has changed from “0127229398” to “0127228036”.

Graphical user interface

Description automatically generated

If personnel select “Book Appointment”, system allows personnel book an appointment for people. For booking, date 3 days after the current date and within 3 months will only be available.

Graphical user interface

Description automatically generated Graphical user interface

Description automatically generated

Personnel must select the centre before select vaccine, else vaccine name will not be shown.

Graphical user interface

Description automatically generated Graphical user interface

Description automatically generated

If an appointment based on the IC or passport number have been booked, personnel will not be able to book an appointment for people again and an error message “Appointment Already Booked” will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

If personnel entered invalid IC or passport number, an error message “Invalid IC/Passport” will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

If personnel did not select a centre or vaccine, an error message “Please select a centre/vaccine” will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

If personnel enter valid IC or passport number and select a centre and vaccine, a message “Appointment Booked Successfully” will be shown and return to “Personnel Homepage” frame.

Graphical user interface, table

Description automatically generated

If personnel select “Appointment Record”, system allow personnel to enter “IC/Passport/Date” to search the appointment record or select an appointment record to view, modify or remove.

Graphical user interface

Description automatically generatedGraphical user interface

Description automatically generated

If personnel select search without enter “IC/Passport/Date”, an error message “Please enter a search keyword” will be shown. If personnel select view, modify or remove without selecting an appointment record, an error message “Please select a record” will be shown.

Graphical user interface, table

Description automatically generated Table

Description automatically generated

If personnel entered “010” and select search, the appointment record contain “010” will be shown.

Graphical user interface

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel select an appointment record that have passed, an error message “Appointment not able to modify” will be shown when view or modify is selected or an error messgae “Appointment not able to cancel” will be shown when remove is selected.

Graphical user interface

Description automatically generated with low confidence Graphical user interface, application

Description automatically generated

If personnel select an appointment that can be modify, the appointment information of the following user will be shown but the IC or passport number is not able to modify.

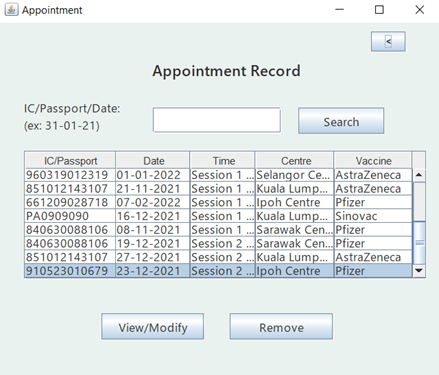
Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

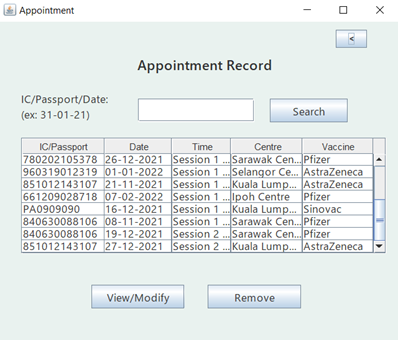
When personnel change the appointment information and select modify, a message “Appointment Updated Successfully” will be shown and return to “Appointment Record” frame.

Graphical user interface

Description automatically generated with low confidence

The appointment date of IC number “910523010679” has change from 06-12-2021 to 23-12-2021 and time has change from session 1 to session 2.

Graphical user interface, application

Description automatically generated

If personnel select an appointment record and select remove, a message “Appointment Cancelled Successfully” will be shown and the appointment record has been removed from the “Appointment Record” form.

Graphical user interface

Description automatically generated

If personnel select “Vaccine Appointment”, system allows personnel to register vaccine. For register, date 3 days before the current date for manufacture date and 6 months after the current date for expired date will only be available and the minimum quantity for vaccine is 100.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

If a vaccine has been registered, personnel is not able to registered again. An error message “Vaccine Already Booked” will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel entered invalid vaccine ID, vaccine name, origin country, an error message “Invalid IC/Passport” will be shown and require personnel to check again.

Graphical user interface, application

Description automatically generatedGraphical user interface, application

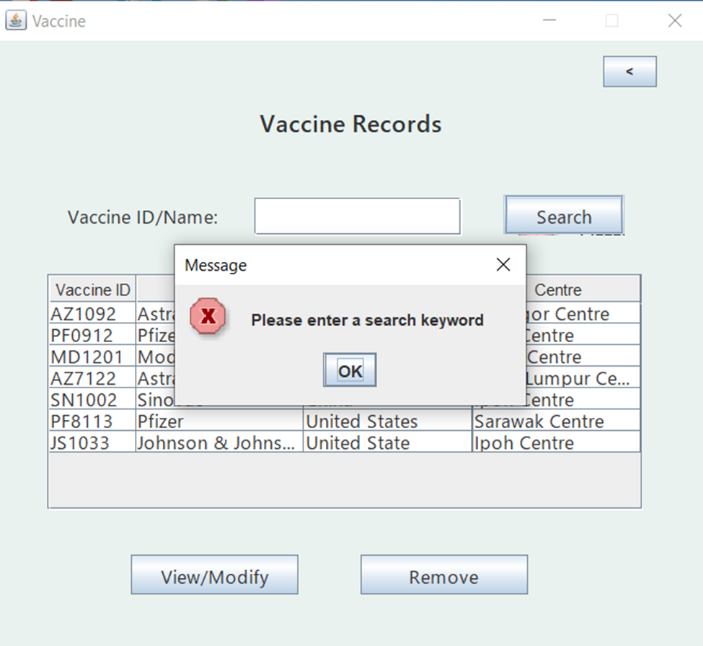
Description automatically generated

If personnel entered valid vaccine ID, vaccine name and origin country, a message “Vaccine Register Successfully” will be shown and return to “Personnel Homepage” frame.

Graphical user interface, table

Description automatically generated with medium confidence

If personnel select “Vaccine Record”, system allow personnel to enter “Vaccine ID/Name” to search the vaccine record or select a vaccine record to view, modify or remove.

 Graphical user interface

Description automatically generatedIf personnel select search without enter “Vaccine ID/Name”, an error message “Please enter a search keyword” will be shown. If personnel select view, modify or remove without selecting a vaccine record, an error message “Please select a record” will be shown.

Graphical user interface, table

Description automatically generated Graphical user interface

Description automatically generated

If personnel entered “As” and select search, the user record contain “As” will be shown.

Graphical user interface

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel select a vaccine record and select view or modify, the vaccine information of following vaccine will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

Personnel can only modify quantity of vaccine. If personnel modify the vaccine quantity and select modify, a message “Vaccine Updated Successfully” will be shown and system will return to “Vaccine Record” frame.

Graphical user interface

Description automatically generated Table

Description automatically generated

If personnel select a vaccine record and select remove, a message “Vaccine Removed Successfully” will be shown and the vaccine record has been removed from “Vaccine Record” frame.

Graphical user interface, application

Description automatically generated

If personnel select “Centre Registration”, system allow personnel to register centre.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel entered invalid centre name, contact number, address, an error message “Invalid input” will be shown and require personnel to check again.

Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

If personnel entered valid centre name, contact number, address, a message “Centre Register Successfully” will be shown and return to “Personnel Homepage” frame.

Graphical user interface

Description automatically generated with medium confidence

If personnel select “Centre Record”, system allows personnel to enter “Centre Name” to search the centre record or select a centre record to view, modify or remove.

Graphical user interface

Description automatically generated Graphical user interface

Description automatically generated

If personnel select search without enter “Centre Name”, an error message “Please enter a search keyword” will be shown. If personnel select view, modify or remove without selecting a centre record, an error message “Please select a record” will be shown.

Graphical user interface, table

Description automatically generated with medium confidence Table

Description automatically generated

If personnel entered “S” and select search, the centre record contain “S” will be shown.

Graphical user interface, table

Description automatically generated with medium confidence Graphical user interface, application

Description automatically generated

If personnel select a centre record and select view or modify, the centre information of the following centre will be shown.

Graphical user interface, application

Description automatically generated Graphical user interface, application

Description automatically generated

If personnel entered invalid Contact number, an error message “Invalid Input” will be shown and require personnel to check again.

Graphical user interface, application

Description automatically generated Graphical user interface

Description automatically generated

If personnel entered valid contact number, a message “Centre Updated Successfully” will be shown and return to “Centre Records” frame.

Graphical user interface, table

Description automatically generated with medium confidenceGraphical user interface

Description automatically generated

The contact number of Seremban Centre has been changed from “0107641534” to “010771934”.

Graphical user interface

Description automatically generated Table

Description automatically generated

If personnel select a centre record and select remove, a message “Centre Removed Successfully” will be shown and the centre record has been removed from “Centre Record” frame.

## **5.3 User Homepage/Functions**

Graphical user interface

Description automatically generated

If user entered valid name, IC or passport number, system will verify user type. If user is identified as people, “User Homepage” frame will be shown. In other case, the user could logout to return to “Homepage” frame.

Graphical user interface, application

Description automatically generated

If people select “My Account”, the personal detail of the login people will be shown and allow people to modify their personal details. People can only modify their own personal detail and not able to modify their IC or passport number. The remaining functions of people modifying the personal detail will be exactly the same as personnel.

Graphical user interface

Description automatically generated

If people select “My Appointment”, the appointment record of the following people will be shown. People are not able to search the appointment record but remaining functions of view, modify or remove will be exactly the same as personnel.

Graphical user interface

Description automatically generated

If people select “Book Appointment”, the “Appointment Booking Form” frame will be shown and the IC or passport number of the following people will show automatically. The remaining functions of people booking an appointment will be exactly the same with personnel.

Table

Description automatically generated

If people select “Vaccine”, system allows people to enter “Vaccine ID/Name” and select the search and view function. The function of people will be exactly the same with personnel, but people are not able to view and modify the vaccine record.

Table

Description automatically generated with low confidence

If people select “Centre”, system allow people to enter “Centre Name” and select the search and view function. The function of people is exactly the same with personnel, but people are not able to view and modify the centre record.

# **Chapter 6.0: Conclusion**

Vaccine system had developed successfully, and a lot of function had been created.

With the help of vaccine system, personnel is able to:

* login with username and password
* help people register their account
* modify the personal details of people
* view the personal details of people
* search the personal details of people
* help people register vaccination appointment
* cancel vaccination appointment of people
* modify vaccination appointment of people
* view vaccination appointment of people
* search vaccination appointment of people
* add the supply details of vaccine at centre
* remove the vaccine at centre
* modify the vaccine details at centre
* to search the vaccine details at centre

With the help of vaccine system, people is able to:

* register their account
* login using their passport or IC number
* register their account
* modify their personal details
* view their account
* register vaccination appointment
* cancel their vaccination appointment
* view their vaccination appointment
* view their vaccination status
* search their vaccination status

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