



# **GROUP ASSIGNMENT**

## **TECHNOLOGY PARK MALAYSIA**

**CT044-3-1-IOOP**

**INTRODUCTION TO OBJECT ORIENTED PROGRAMMING**

**APU1F2006CS(CYB)-CGD-CS(IS)-MMT-MMT(VRAR)-SE**

**HAND OUT DATE: 08 DECEMBER 2020**

**HAND IN DATE: 28 FEBRUARY 2021**

**WEIGHTAGE: 50%**

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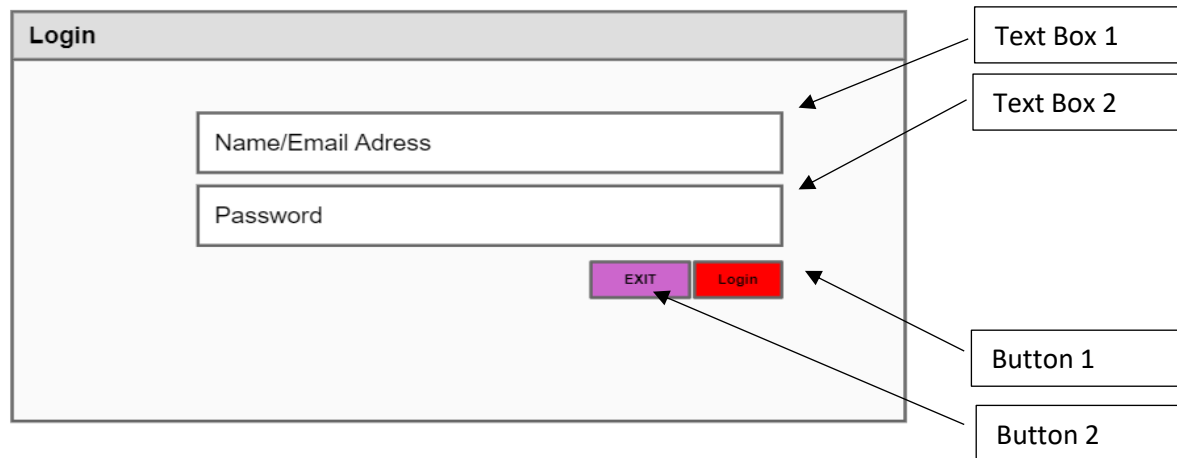
<b>No</b>	<b>Name</b>	<b>TP number</b>
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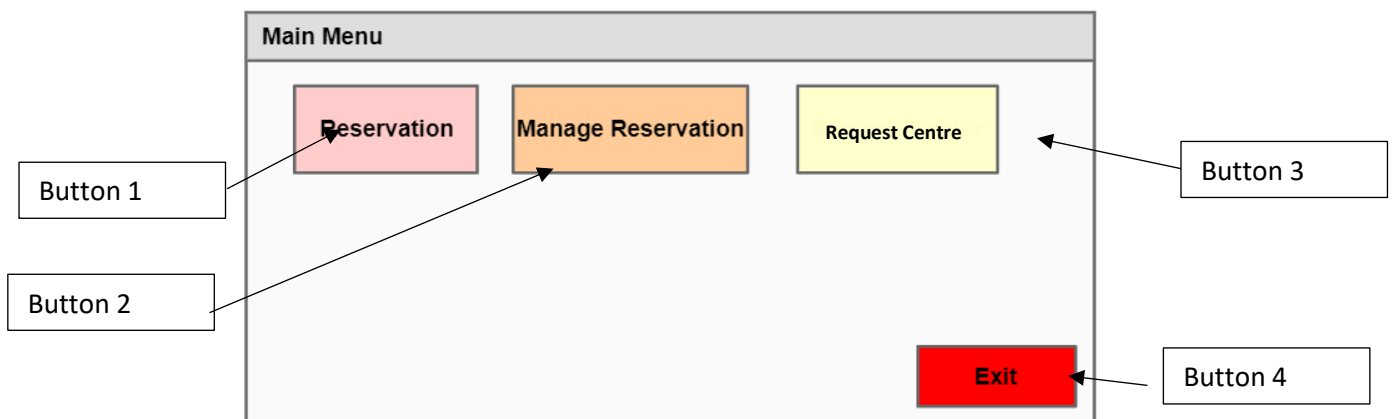
## 1.0 Storyboard

### 1.1 Login & Main Menu



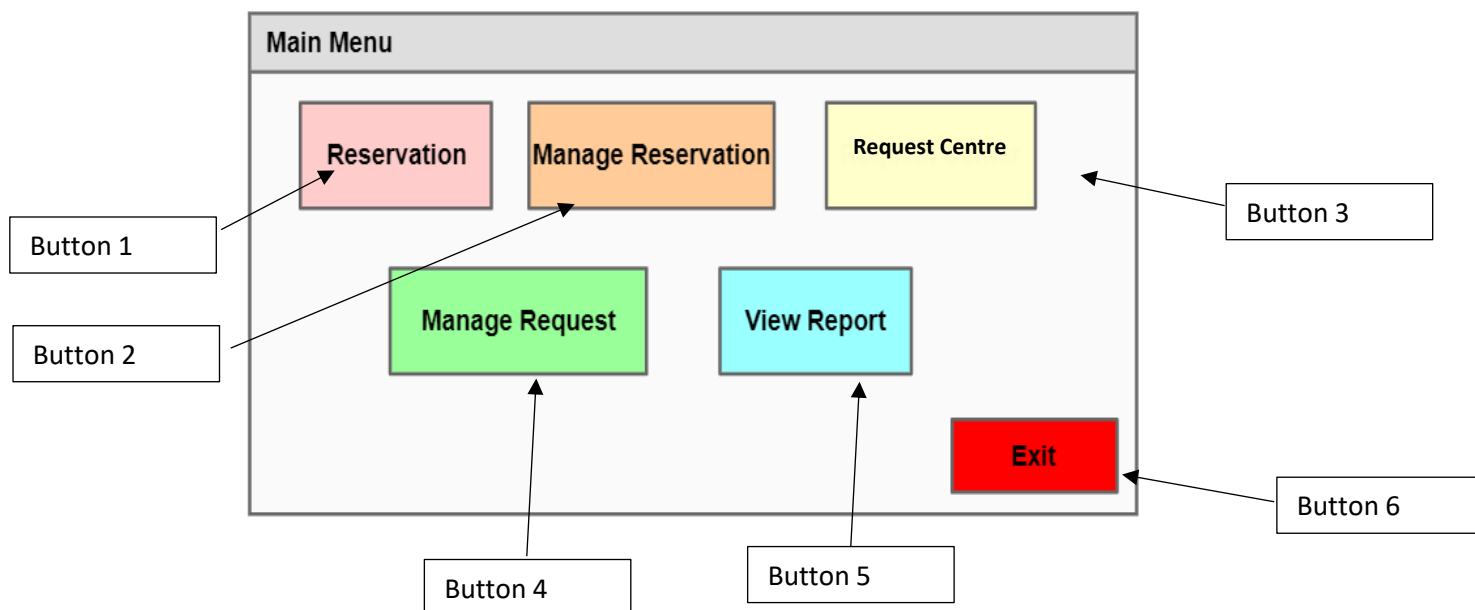
Control	Control Name	Description
Button 1	Button 1	To allow student Login
Button 2	Button 2	To allow student to Exit
Text Box 1	Text Box 1	To prevent an unauthorized access to confidential data
Text Box 2	Text Box 2	To prevent an unauthorized access to confidential data

### Main Menu(For Student)



Control	Control Name	Description
Button 1	Button 1	Allow student to make reservation
Button 2	Button 2	Allow student to edit their reservation time and date
Button 3	Button 3	for student to change or cancel existed reservation
Button 4	Button 4	Allow student to Exit

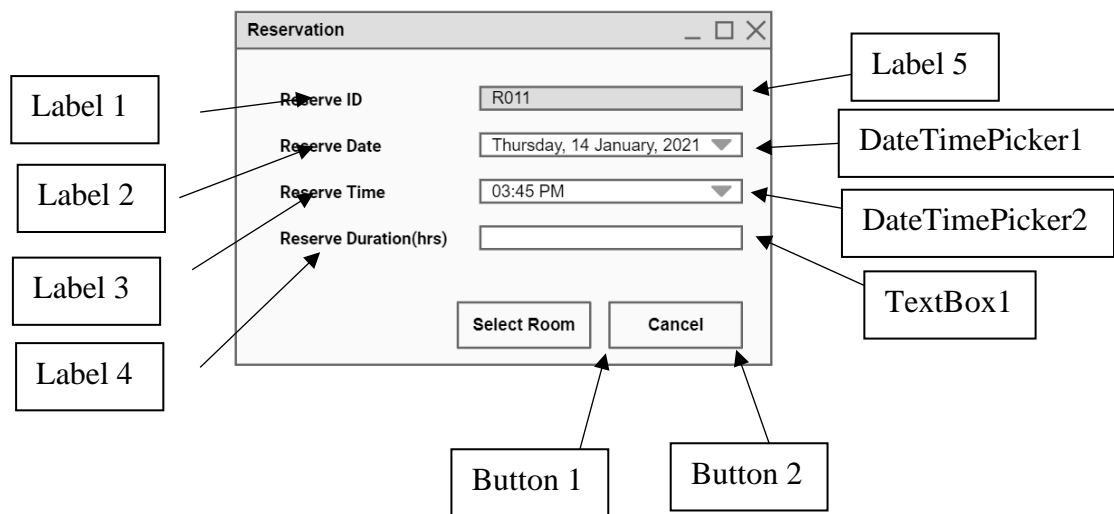
## Main Menu(For Librarian)



Control	Control Name	Description
Button 1	Button 1	Allow management team to check reservation
Button 2	Button 2	Allow management team to check the reservation time and date
Button 3	Button 3	for management to change or cancel existed reservation
Button 4	Button 4	This is the button which will shown only for the management team where management team can choose to accept or decline the request
Button 5	Button 5	result of research and analysis of data
Button 6	Button 6	Allow management team to Exit

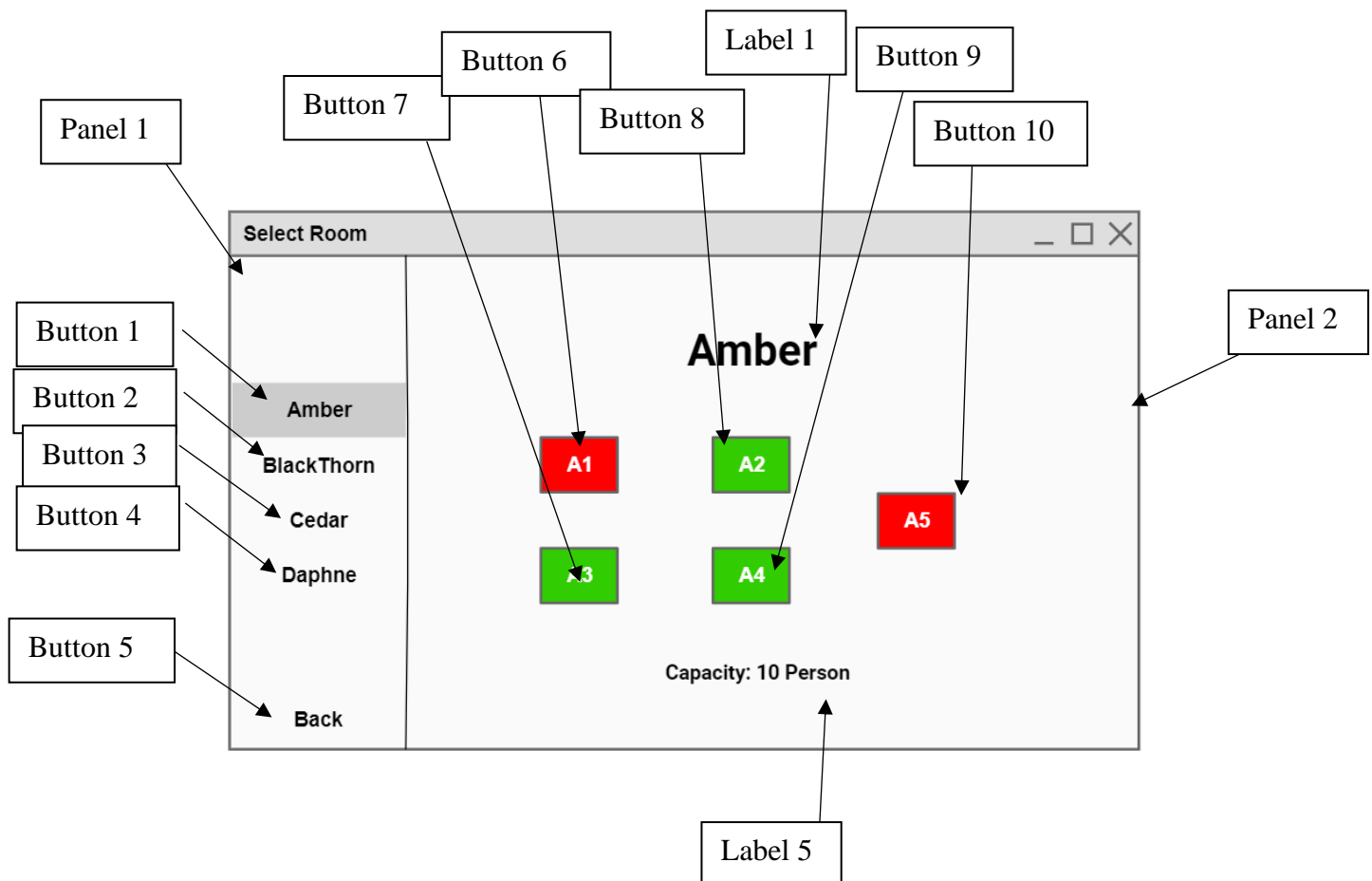
## 1.2 Student Function

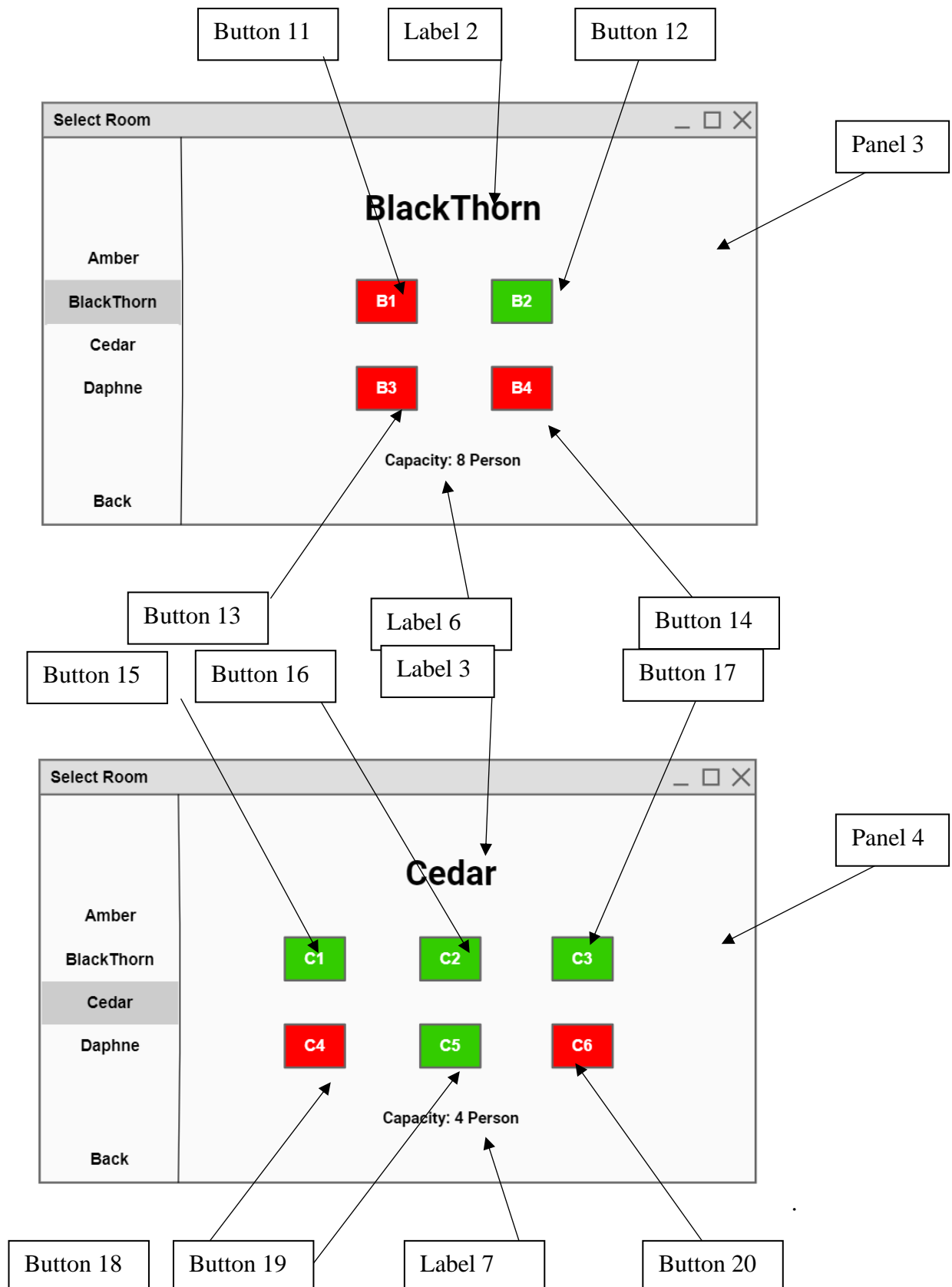
### Reservation Form

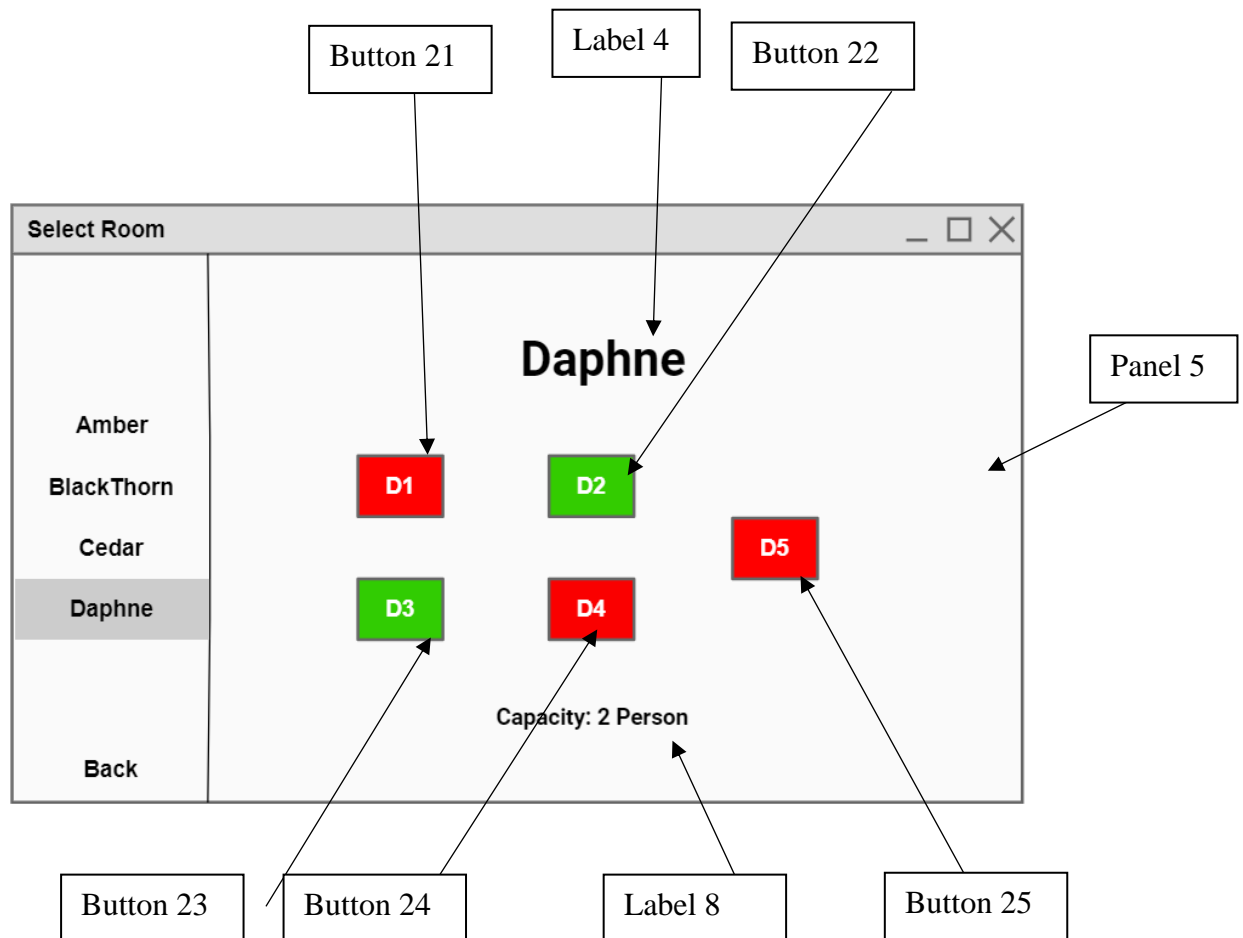


Control	Control Name	Description
Label 1	Label 1	These labels are to tell what is show on the right side of the label.
Label 2	Label 2	
Label 3	Label 3	
Label 4	Label 4	
Label 5	lblReserveID	This is a label with border which cannot be edit by user. The ID will be generated automatically follow by which ever ID is available in reservation table from the database.
DateTimePicker1	dtpDate	To let student can choose their reserve date with a calendar.
DateTimePicker2	dtpTime	To let student can pick the starting time for their reservation.
TextBox1	txtDuration	This is a textbox to let student key in their desired reserve duration in hour while it will not let student key in invalid value such as alphabet, negative value and value greater than 6.
Button 1	btnSelectRoom	This button will hide Reservation form temporary and open a new Select Room Form.
Button 2	btnCancel	This button will close Reservation form and open a new Main Menu Form.

## Select Room Form





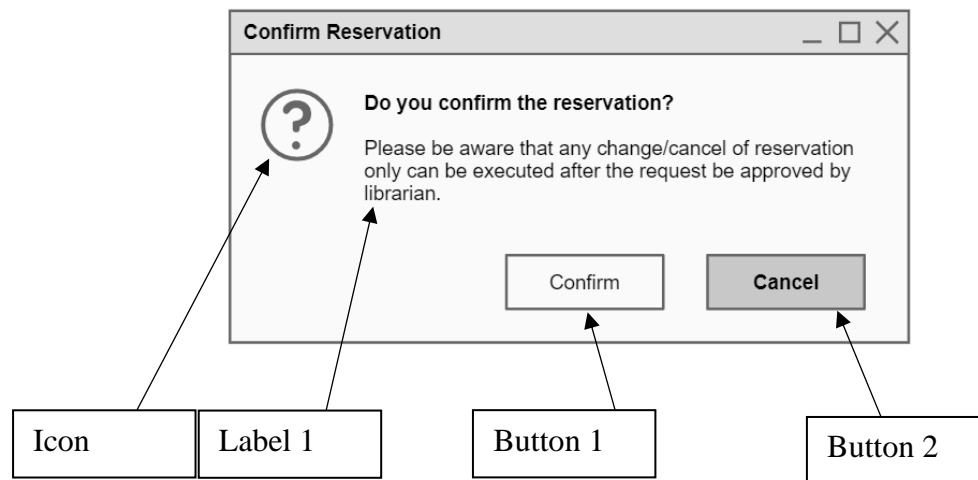


Control	Control Name	Description
Panel 1	Panel 1	To separate room type with room.
Panel 2	pnlAmber	Each panel will only display their respective room with any other detail.
Panel 3	pnlBlackThorn	
Panel 4	pnlCedar	
Panel 5	pnlDaphne	
Button 1	btnAmber	These buttons are to bring up their respective panel to the front while the button will change to highlighted colour to indicate which of the following panel is displaying. The default highlighted button will be Button 1.
Button 2	btnBlackThorn	
Button 3	btnCedar	
Button 4	btnDaphne	
Button 5	btnBack	To close Select Room Form and show again the last form which bring student to this form to let student can edit with last setting.
Label 1	Label 1	To emphasise which panel currently is.
Label 2	Label 2	
Label 3	Label 3	
Label 4	Label 4	
Label 5	Label 5	To let the student can know what is the max capacity for the current room type.
Label 6	Label 6	
Label 7	Label 7	
Label 8	Label 8	

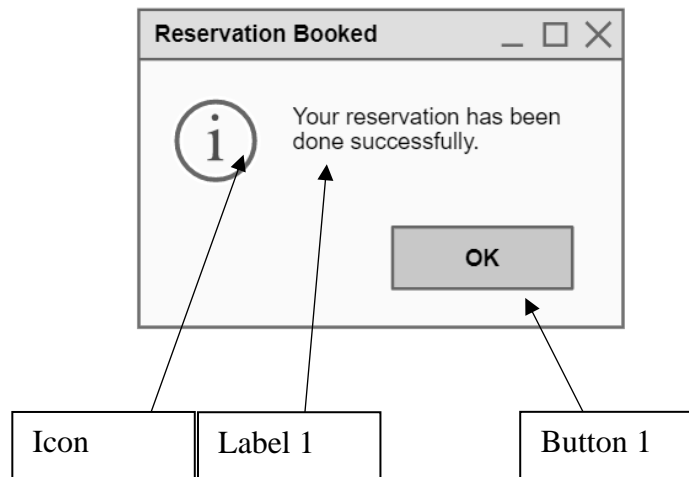


Button 6	btnA1	<p>Every button indicated as a room. When this Select Room Form is loaded, every room will be checked whether is free or not within the selected time range. If the room is available then it will show up as a green button while if the room is reserved then it will show up as a red button. Only Green button can be click. After that, it will pop up a Confirm Reservation Message Box or a Request Sent Message Box depend on the variable.</p>
Button 7	btnA2	
Button 8	btnA3	
Button 9	btnA4	
Button 10	btnA5	
Button 11	btnB1	
Button 12	btnB2	
Button 13	btnB3	
Button 14	btnB4	
Button 15	btnC1	
Button 16	btnC2	
Button 17	btnC3	
Button 18	btnC4	
Button 19	btnC5	
Button 20	btnC6	
Button 21	btnD1	
Button 22	btnD2	
Button 23	btnD3	
Button 24	btnD4	
Button 25	btnD5	

## Confirm Reservation Message Box



Control	Control Name	Description
Icon	Icon	A question mark icon to indicate this is a confirmation.
Label 1	Label 1	To tell the student for the reason of double-checking confirmation.
Button 1	Button 1	The reservation data will be stored in database and pop out a Reservation Booked Message Box.
Button 2	Button 2	To close this message box and let the student pick the room again.

**Reservation Booked Message Box**

Control	Control Name	Description
Icon	Icon	An info icon to tell the student that this is just for information.
Label 1	Label 1	Message for student.
Button 1	Button 1	To close all the existed form and open a new Reservation Form.

## Manage Reservation Form

The diagram shows a 'Manage Reservation' form with the following controls and labels:

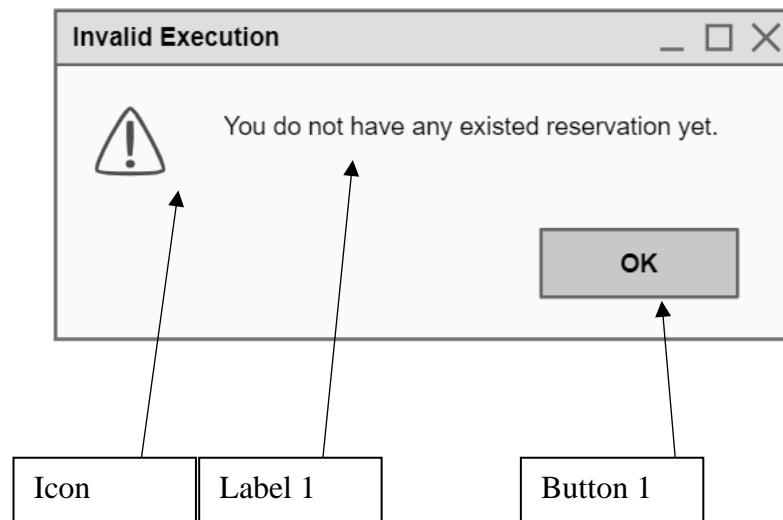
- Label 1** points to the form title 'Manage Reservation'.
- Label 2** points to the 'Reservation ID' label.
- Label 3** points to the 'Room Type' label.
- Label 4** points to the 'Room' label.
- Label 5** points to the '\*Change Time?' label.
- Label 6** points to the '\*New Reserve Date' label.
- Label 7** points to the '\*New Reserve Time' label.
- Label 8** points to the '\*New Reserve Duration(hrs)' label.
- Label 9** points to the 'Yes' radio button.
- Label 10** points to the 'No' radio button.
- ComboBox 1** points to the 'Reservation ID' dropdown.
- RadioButton 1** points to the 'Yes' radio button.
- RadioButton 2** points to the 'No' radio button.
- DateTime Picker1** points to the '\*New Reserve Date' date picker.
- DateTime Picker1** points to the '\*New Reserve Time' time picker.
- TextBox1** points to the '\*New Reserve Duration(hrs)' text box.
- Button 1** points to the 'Change Time Only' button.
- Button 2** points to the 'Change Room' button.
- Button 3** points to the 'Cancel Reservation' button.
- Button 4** points to the 'Back' button.

Control	Control Name	Description
Label 1	Label 1	These labels are to tell what is show or use for on the right side of the label.
Label 2	Label 2	
Label 3	Label 3	
Label 4	Label 4	
Label 5	Label 5	
Label 6	Label 6	
Label 7	Label 7	
Label 8	Label 8	To tell student that label marked with '*' is only for student who wants to change room for their reservation.
Label 9	Label 9	This is a label with border which cannot be edit by user. The content will be following with which Reservation ID chosen and the content is read from database where Reservation ID in the table is same with what the student chooses.
Label 10	Label 10	
ComboBox 1	cboReservationID	A combo box for student to choose which of their reservation needed to be

		modify. Only existed reservation for the current student will be displayed.
RadioButton 1	rdoYes	To let student can choose whether they want to change time or not if they want to change room for their reservation.
RadioButton 2	rdoNo	
DateTimePicker1	dtpNewDate	To let student can choose their new reserve date with a calendar.
DateTimePicker2	dtpNewTime	To let student can pick the new starting time for their reservation.
TextBox1	txtNewDuration	This is a textbox to let student key in their new desired reserve duration in hour while it will not let student key in invalid value such as alphabet, negative value and value greater than 6.
Button 1	btnChangeTimeOnly	This button only enables if RadioButton 1 is checked and if click it will pop out a Request Sent Message Box.
Button 2	btnChangeRoom	This button can be click either RadioButton 1 or RadioButton 2 checked. After click, it will hide Manage Reservation Form and open a new Select Room Form.
Button 3	btnCancelReservation	To send a request to librarian and it will pop out a Request Sent Message Box.
Button 4	btnBack	To close Manage Reservation Form and open a new Main Menu Form

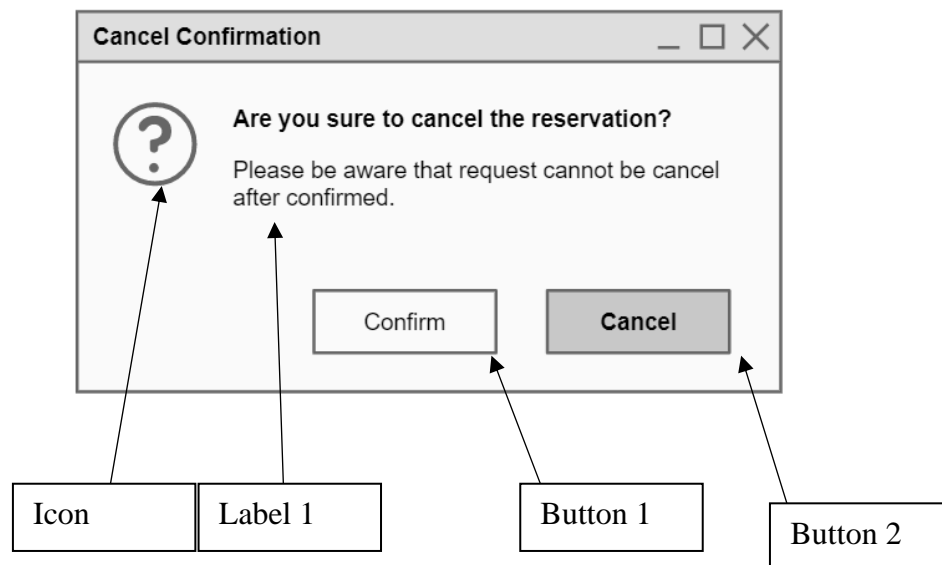
## Invalid Execution Message Box

This message box only will pop out if the current student does not have any existing reservation but he/she click the “manage reservation” button in main menu.



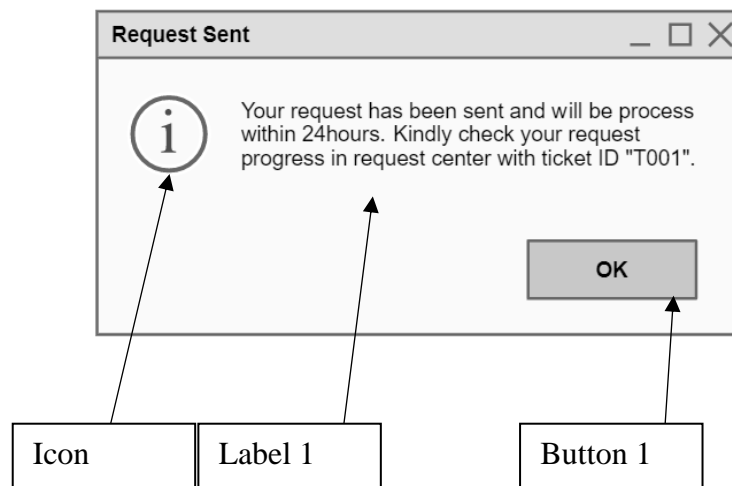
Control	Control Name	Description
Icon	Icon	A warning icon to tell user the action is invalid.
Label 1	Label 1	Tell the student for the reason of invalid.
Button 1	Button 1	To close this message box.

## Cancel Confirmation Message Box



Control	Control Name	Description
Icon	Icon	A question mark icon to indicate this is a confirmation.
Label 1	Label 1	To tell the student for the reason of double-checking confirmation.
Button 1	Button 1	The request data will be stored into database and wait for librarian approval and pop out a Request Sent Message Box.
Button 2	Button 2	To close this message box and stay on Manage Reservation Form.

## Request Sent Message Box



Control	Control Name	Description
Icon	Icon	An info icon to tell the student that this is just for information.
Label 1	Label 1	Message for student.
Button 1	Button 1	To close all the existed form and open a new Reservation Form.



## Request Centre

The screenshot shows a window titled "Request Centre" with a table and an "OK" button. The table has four columns: Ticket ID, Room, Request, and Approval. It contains two rows of data. Below the table, there are two labels: "RichTextBox 1" pointing to the table area and "Button 1" pointing to the "OK" button.

Ticket ID	Room	Request	Approval
T001	B2	Cancel	In Progress
T042	A5	Change Time	Rejected

OK

RichTextBox 1

Button 1

Control	Control Name	Description
RichTextBox 1	rtbRequest	All the request will be display in here.
Button 1	Button 1	To close Request Centre Form and open a new Main Menu Form.

## 1.3 Librarian Function

### Student Request

The screenshot shows a window titled "Room Changes Approval". It contains a table with the following data:

	Student Name	Student ID	Room Name	Origin Date	Origin Time	Request Change Date	Request Change Time
<input type="radio"/>	John	TP061532	A1	2/Feb/2021	10am - 12pm	3/Feb/2021	10am - 12pm
<input type="radio"/>	James	TP056895	C1	24/Jan/2021	3pm - 6pm	21/Jan/2021	3pm - 6pm
<input type="radio"/>	Sally	TP056893	A2	24/Jan/2021	3pm - 6pm	21/Jan/2021	3pm - 6pm
<input type="radio"/>	Katie	TP064689	B1	24/Jan/2021	3pm - 6pm	21/Jan/2021	3pm - 6pm

Annotations in the image include:

- A box labeled "Table" with an arrow pointing to the table.
- A box labeled "Radio Buttons" with arrows pointing to the radio buttons in the first column of the table.
- Below the table are two buttons: "Approve" and "Decline".
- Below the buttons are two boxes labeled "Button 1" and "Button 2", with arrows pointing to the "Approve" and "Decline" buttons respectively.

### Approved

The screenshot shows the "Room Changes Approval" window with the same table as before. The radio button for James is selected. An "Approval Passed" dialog box is overlaid on the table, displaying:

**Approval Passed**

**Room Approved**

The current Room Change Request have been approved

OK


Below the table, the "Approve" and "Decline" buttons are visible.

## Declined

Room Changes Approval

	Student Name	Student ID	Room Name	Origin Date	Origin Time	Request Change Date	Request Change Time
<input checked="" type="radio"/>	John	TP061532	A1	2/Feb/2021	10am - 12pm	3/Feb/2021	10am - 12pm
<input type="radio"/>	James	TP0				21/Jan/2021	3pm - 6pm
<input type="radio"/>	Sally	TP0				21/Jan/2021	3pm - 6pm
<input type="radio"/>	Katie	TP0				21/Jan/2021	3pm - 6pm

Declined

**Room Declined**  
The current Room Change Request have been declined

OK

Approve


Decline

## Room Unavailable

Room Changes Approval

	Student Name	Student ID	Room Name	Origin Date	Origin Time	Request Change Date	Request Change Time
<input checked="" type="radio"/>	John	TP061532	A1	2/Feb/2021	10am - 12pm	3/Feb/2021	10am - 12pm
<input type="radio"/>	James	TP0				21/Jan/2021	3pm - 6pm
<input type="radio"/>	Sally	TP0				21/Jan/2021	3pm - 6pm
<input type="radio"/>	Katie	TP0				21/Jan/2021	3pm - 6pm

Approval Rejected

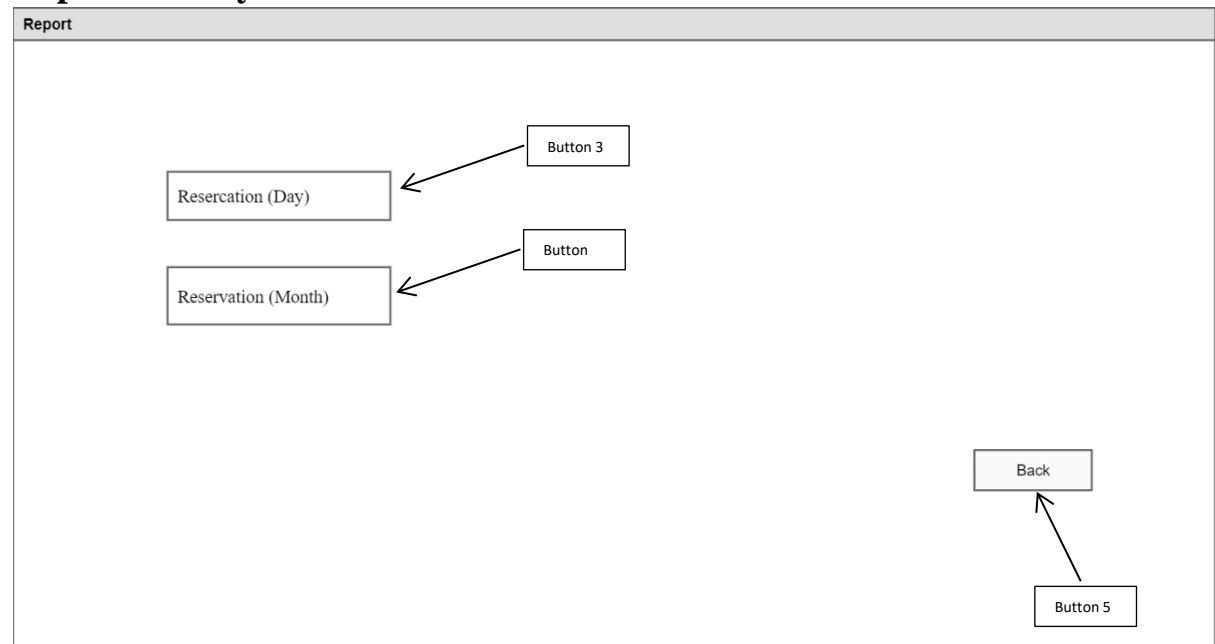
**Room Unavailable**  
The room have been booked. Please decline this Room Change Request.

OK

Approve

Decline

## Report for Day or Month



## Day Report

Room Reservation (Day)

Monday 2/Nov/2020

Student Name      Student ID      Room Name      Time

Jamie	TP061567	A2	10am - 1pm
Candy	TP063537	B1	12pm - 2pm
Mickey	TP069645	B3	11am - 12pm
Mini	TP057894	C4	2pm - 4pm

Search      Back

Button 6      Button 7

## Choose Date

Room Reservation (Day)

Monday 2/Nov/2020

November - 2020

S	M	T	W	T	F	Sa	Student ID	Room Name	Time
1	2	3	4	5	6	7	TP061567	A2	10am - 1pm
8	9	10	11	12	13	14	TP063537	B1	12pm - 2pm
15	16	17	18	19	20	21	TP069645	B3	11am - 12pm
22	23	24	25	26	27	28	TP057894	C4	2pm - 4pm
29	30	1	2	3	4	5			
6	7	8	9	10	11	12			

Search      Back

## Search

Room Reservation (Day)

Monday 2/Nov/2020

Student Name	Student ID
Jamie	TP061567
Candy	TP063537
Mickey	TP069645
Mini	TP057894

Search

Back

**Title**

Please Enter Student ID or Name

Text Box 1

Search

Button 8

h - 4pm

## Search (Name)

Room Reservation (Day)

Monday 2/Nov/2020

Student Name	Student ID
Jamie	TP061567
Candy	TP063537
Mickey	TP069645
Mini	TP057894

Search

Back

**Title**

Jamie

Search

C4

2pm - 4pm

## Search (ID)

**Room Reservation (Day)**

Monday 2/Nov/2020

1

2

3

4

5

6

7

8

9

10

11

12

Student Name	Student ID
Jamie	TP061567
Candy	TP063537
Mickey	TP069645
Mini	TP057894

Title

TP061567

Search

C42pm - 4pm

SearchBack

## Search Result

**Room Reservation (Day)**

Monday 2/Nov/2020

1

2

3

4

5

6

7

8

9

10

11

12

Student Name	Student ID	Room Name	Time
Jamie	TP061567	A2	10am - 1pm

SearchBack

## Month

Room Reservation (Month)

December 2020

Student ID Room Name Date Time

Mindy TP065989 A1 1/Dec/2020 10am - 12pm

Kyle TP068549 A3 2/Dec/2020 12pm - 2pm

Samuel TP056464 B1 13/Dec/2020 10am - 12pm

Toby TP059875 B2 14/Dec/2020 12pm - 4pm

Search Back

Button 9 Button 10

## Choose Month and Year

Room Reservation (Month)

December 2020

☐ January  
☐ February  
☐ March  
☐ April  
☐ May  
☐ June  
☐ July  
☐ August  
☐ September  
☐ October  
☐ November  
☒ December

Enter Year

Text Box 2

Student ID Room Name Date Time

TP065989 A1 1/Dec/2020 10am - 12pm

TP068549 A3 2/Dec/2020 12pm - 2pm

TP056464 B1 13/Dec/2020 10am - 12pm

TP059875 B2 14/Dec/2020 12pm - 4pm

Search Back



## Search

Room Reservation (Month)

December 2020

Student Name	Student ID
Mindy	TP065989
Kyle	TP068549
Samuel	TP056464
Toby	TP059875

Search

Please Enter Student ID or Name

Search

Text Box 3

Button 11

Back

## Search (Name)

Room Reservation (Month)

December 2020

Student Name	Student ID
Mindy	TP065989
Kyle	TP068549
Samuel	TP056464
Toby	TP059875

Search

Mindy

Search

Back

## Search (ID)

Room Reservation (Month)

December 2020

1

2

3

4

5

6

7

8

9

10

11

12

Student Name	Student ID
Mindy	TP065989
Kyle	TP068549
Samuel	TP056464
Toby	TP059875

Search

Search

TP065989

Search

B2

14/Dec/2020

12pm - 4pm

Back

## Search Result

Room Reservation (Month)

December 2020

1

2

3

4

5

6

7

8

9

10

11

12

Student Name	Student ID	Room Name	Date	Time
Mindy	TP065989	A1	1/Dec/2020	10am - 12pm
Mindy	TP065989	B3	27/Dec/2020	10am - 2pm

Search

Back

Control	Control Name	Description
Table	Table	To display request
Radio Button	Radio Button	To allow selecting the request
Button 1	btnApprove	To approve the student request
Button 2	btnDecline	To decline the student request
Button 3	btnDay	To enter the daily report
Button 4	btnMonth	To enter the monthly report
Button 5	btnBack	To go back to Menu
Button 6	btnSearch1	To go to search Menu for daily report
Button 7	btnBackDay	To go back to Choosing daily or monthly report
Button 8	btnSearchDay	To search for corresponding student by name or id (Day)
Button 9	btnSearch2	To go to search Menu for monthly report
Button 10	Btnback	To go back to Menu
Button 11	btnSearchMonth	To search for corresponding student by name or id (Month)
ListBox	ListBox	To show calendar for librarian to choose date
Text Box 1	txtday	To allow entering student ID or Name (Day)
Text Box 2	txtyear	To allow entering year
Text Box 3	txtmonth	To allow entering student ID or Name (Month)
Combo Box	Combo Box	To allow selection for month

## 2.0 Use-case Diagram

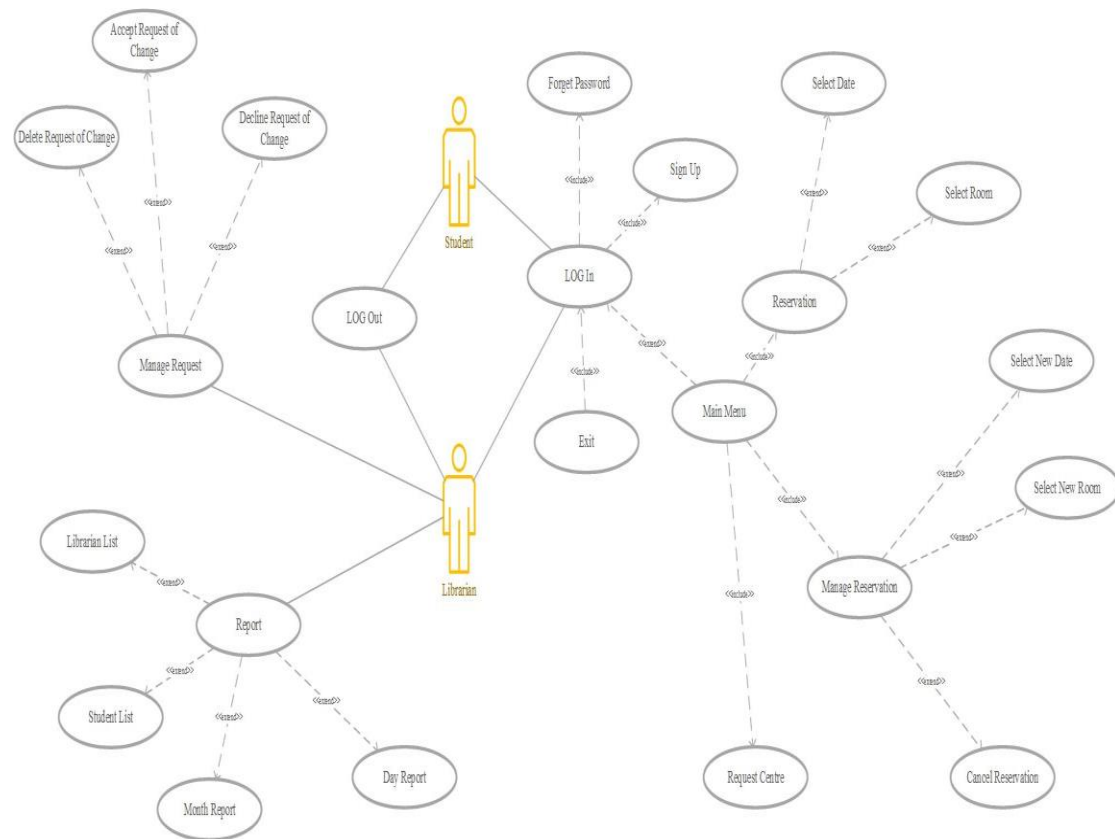


Figure 1: Use-Case Diagram

## 3.0 Class Diagram



Figure 2: Class diagram

Figure 2 showed the relationship between classes implemented in the system. The team decided to let classes having association relationship in order to maintain the structure for every classes. For example, LibraryUser class only will have related attributes/fields/properties in it as well as related methods. Besides that, every SQL execution will be done by SqlExecutor, hence LibraryUser class and Reservation class will be having many-to-one relationship with SqlExecutor class.

## 3.1 Classes

This section is purposely created to display the classes detail clearer since the aim of figure 2 is to emphasis the relationship between classes.

### LibraryUser

```

-userId : string
-password : string
-userName : string
-userEmail : string
-userRole : string
-userExistence : bool

+<<Constructor>> LibraryUser(id : string)
+Register() : bool
  
```

Figure 3: Class LibraryUser

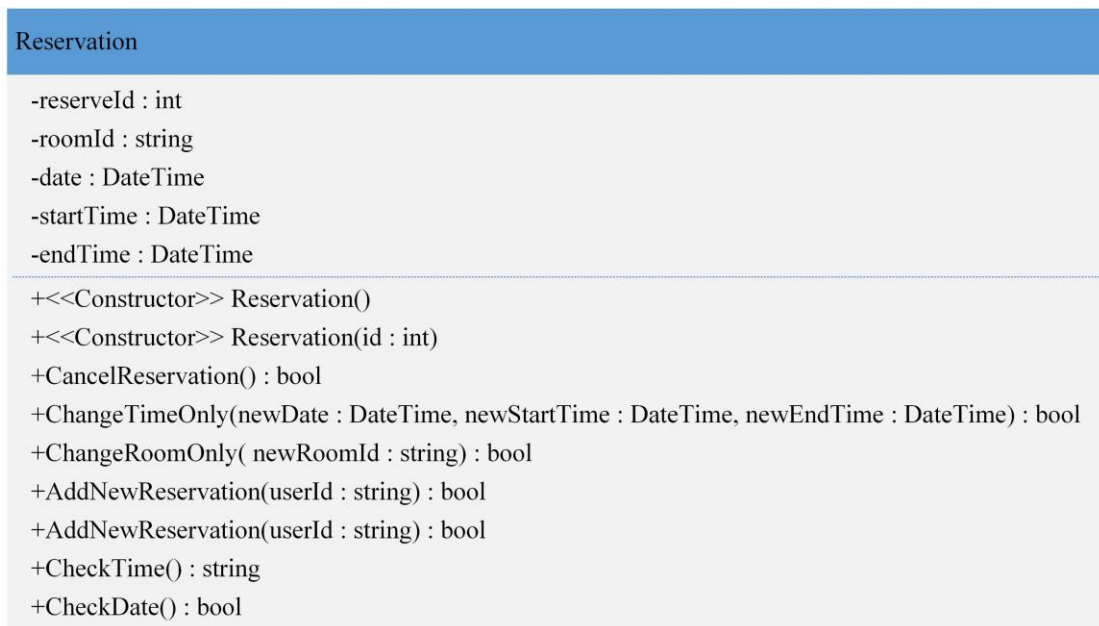


Figure 4: Class Reservation

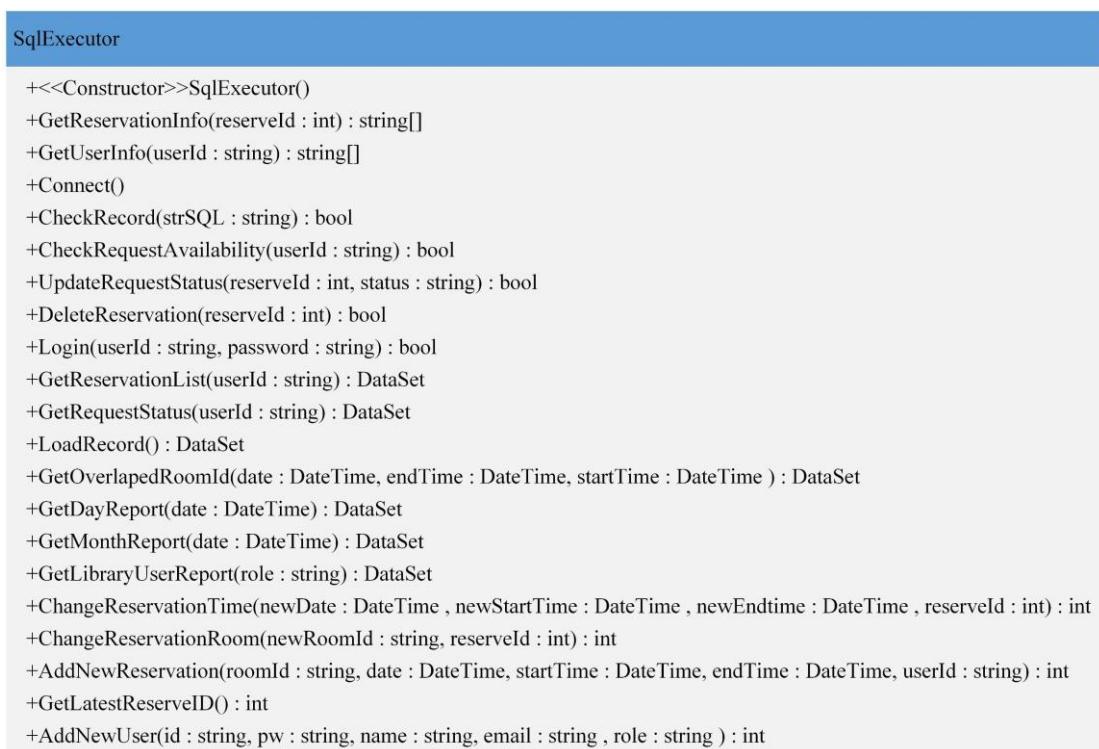


Figure 5: Class SqlExecutor

## **4.0 Explanation of the codes**

In this section, the team will be explaining the parts of codes implemented in the system where are using the object-oriented programming concept including the logic of it.

### **4.1 Add New Library User/Reservation**

When the system wants to register a new library user or do a new reservation, they will be going through a similar process. The example of registering a new library is shown on figure 6.

```
//Declare an object for LibraryUser Class
LibraryUser usr = new LibraryUser(txtUserId.Text);
//Check the duplication of user ID
if (usr.UserExistance)
{
    //Display message if an account already exists
    MessageBox.Show("The user ID already have an account.", "Registration", MessageBoxButtons.OK, MessageBoxIcon.Exclamation);
    txtUserId.Clear();
    txtUserId.Focus();
}
else
{
    //Add new account
    usr.UserPassword = txtPassword.Text;
    usr.UserName = txtName.Text;
    usr.UserEmail = txtEmail.Text;
    usr.UserRole = cboRole.SelectedItem.ToString();
    if (usr.Register())
    {
        //Display message when successful
        MessageBox.Show("Account Registered successfully!", "Registration", MessageBoxButtons.OK, MessageBoxIcon.Information);
        Login lg = new Login();
        lg.Show();
        this.Hide();
    }
}
```

Figure 6: Codes of Registering A New Library User

First and foremost, it will be declaring an object of class LibraryUser class while passing an new user ID. Since the class is having a method for checking if the ID already having an account, the system can use it to avoid any ID to have two account, else, all the other new user detail will be passed to setter of the object such as UserName. Last but not least, the system will be calling Register method to complete the registration.

## 4.2 Get A Proper Date&Start Time&End Time for Reservation

```
1 reference
private void dtpReservationDate_ValueChanged(object sender, EventArgs e)
{
    //Check for date validation
    Reservation rsv = new Reservation();
    rsv.Date = dtpReservationDate.Value.Date;

    if (rsv.CheckDate())
    {
        //Set start time and end time to valid time
        dtpStartTime.Value = rsv.ProperStartTime;
        dtpEndTime.Value = rsv.ProperEndTime;
    }
    else
    {
        MessageBox.Show("You only can make reservation at least 2 days before.",
            "Invalid Date", MessageBoxButtons.OK, MessageBoxIcon.Exclamation);
        //Set reservation date to a valid date
        dtpReservationDate.Value = rsv.ProperDate;
    }
}
```

Figure 7: Codes of Setting Valid Time for DateTimePicker

When the reservation date changed in DateTimePicker, the system will then create an object for class Reservation and give the date value to the object by using setter Date. After that, by calling the method CheckDate, the system can verify that validation of the day. If the date is valid, then the start time and end time will be receiving a proper time from getter ProperStartTime and ProperEndTime, else, the date will be receiving a proper date from getter ProperDate. The data from getter is shown as figure 8.

```
3 references
public DateTime ProperStartTime
{
    get { return date.AddHours(7); }
}

3 references
public DateTime ProperEndTime
{
    get { return date.AddHours(8); }
}

3 references
public DateTime ProperDate
{
    get { return DateTime.Today.AddDays(3); }
}
```

Figure 8: Getter for Proper Time



### 4.3 Checking Request validation When Approving Request

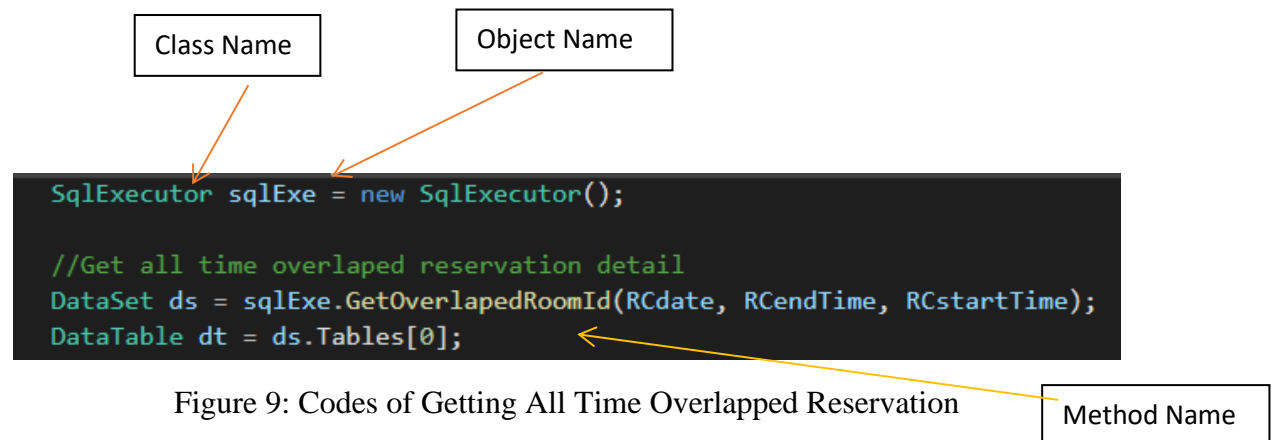


Figure 9: Codes of Getting All Time Overlapped Reservation

Figure 9 shows how the method in SqlExecutor can be called to get all the overlapped reservation when given time. The method will be retrieving data from database using defined SQL code as shown on figure 10.

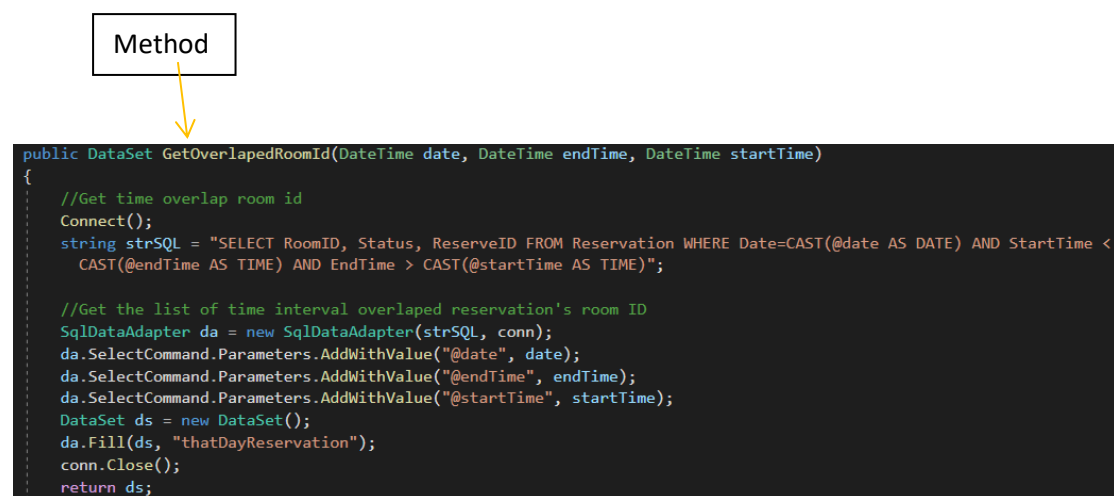


Figure 10: Method GetOverlapedRoomId

## 4.4 Getting Report Data Source

Everytime user want to read report in the system, the system will create an object from class `SqlExecutor` first then call a respective method to get the report data source then display the data source in crystal report.

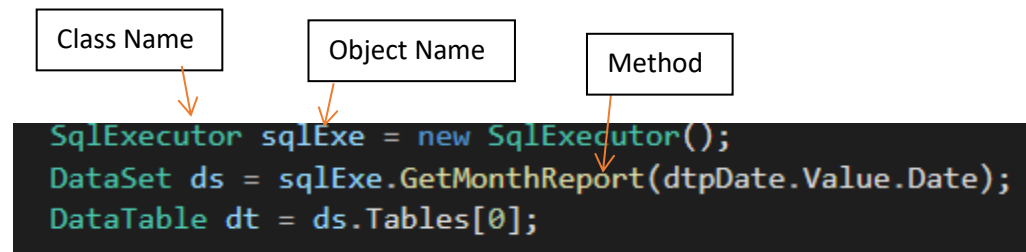


Figure 11: Codes of Getting Month Report Data Source

```
public DataSet GetMonthReport(DateTime date)
{
    //Get month report
    Connect();
    string strSQL = "SELECT LibraryUser.Name, Reservation.RoomID, Reservation.Date, Reservation.StartTime,
        Reservation.EndTime FROM LibraryUser INNER JOIN Reservation ON LibraryUser.UserID = Reservation.UserID WHERE
        month(Date) = @month AND year(Date) = @year";
    SqlDataAdapter da = new SqlDataAdapter(strSQL, conn);
    DataSet ds = new DataSet();
    da.SelectCommand.Parameters.AddWithValue("@month", date.ToString("MM"));
    da.SelectCommand.Parameters.AddWithValue("@year", date.ToString("yyyy"));
    da.Fill(ds);
    conn.Close();
    return ds;
}
```

Figure 11: Method GetMonthReport

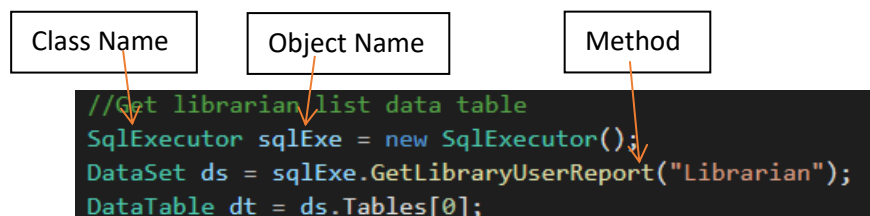


Figure 12: Codes of Getting Librarian List Data Source

```
public DataSet GetLibraryUserReport(string role)
{
    //Get library user report with choosing the role
    Connect();
    string strSQL = "SELECT UserID, Name, EmailAddress FROM LibraryUser WHERE Role = @role";
    SqlDataAdapter da = new SqlDataAdapter(strSQL, conn);
    DataSet ds = new DataSet();
    da.SelectCommand.Parameters.AddWithValue("@role", role);
    da.Fill(ds);
    conn.Close();
    return ds;
}
```

Figure 13: Method GetLibraryUserReport

To check the role of student or librarian

## 5.0 Test Plan and Test Cases

Test Case	Function Name	Test Objective	Expected Results	Actual Results	Remark
1	Sign Up	To test whether new member could sign up	Message will show whether sign up is successful or account already existed	Message pop up when sign up successful  Message pop up when account exist	
2	Forget Password	To test whether user will receive email - password	An email will send to the user's email with their password in it	User's did received the email	
3	Login	To test whether user could successfully log in	Message will pop up showing welcoming message with user's name	Message successfully popped up with the welcoming message	
4	Room Reservation	To test whether the user could successfully book the room	Message will pop up to show that room is successfully booked with the room ID	Message successfully pop up to show that room is successfully booked with the room ID	
5	Choosing Time	To test whether student could choose the date out of range	Message will pop up when student selected date that is not in range	Message successfully pop up when student selected date that is not in range	
6	Choosing Room	To test whether student could choose the room	1)Room colour will be shown as green if available and red if booked  2)Message will pop up to remind students that after selecting room any changes will need to apply request change for librarian to approve  3)Capacity of room will also be	1)Room colour successfully shown as green if available and red if booked  2)Message successfully pop up to remind students that after selecting room any changes will need to apply request change for librarian to approve  3)Capacity of room successfully shown	

			shown at the bottom of the system	at the bottom of the system	
7	Manage Reservation	To test whether users are able to request change of time or date or room on their booked room	1)Room colour will be shown red if booked and green is available  2)Message will pop up to inform user that a request has been sent to the librarian and will reply in 24 hours	1)Room colour successfully shown red if booked and green is available  2)Message successfully pop up to inform user that a request has been sent to the librarian and will reply in 24 hours	
8	Request centre	To test whether user are able to view the status of their request change of booking	1)Message will pop up telling librarian that are no data existing  2)New date, new start time and new end time will show the request change date and time  3)Status will show pending, accepted or decline.	1)Message successfully pop up telling librarian that are no data existing  2)New date, new start time and new end time successfully show the request change date and time  3)Status successfully show pending, accepted or decline.	
9	Accept Manage Request	To test whether the librarian is able to accept the request change sent by student	1)Message will pop up showing that the request is accepted when accept button is pressed  2)Message will pop up telling librarian that no data selected  3)Message will pop up when the librarian accept the request but the requested change time or date is unavailable or booked	1)Message will successfully up showing that the request is accepted when accept button is pressed  2)Message successfully pop up telling librarian that no data selected  3)Message successfully pop up when the librarian accept the request but the requested change time or date is unavailable or booked	

10	Decline Manage Request	To test whether the librarian is able to decline the request change sent by student	1)Message will pop up showing that the request is declined when declined button is pressed  2)Message will pop up telling librarian that no data selected	1)Message successfully pop up showing that the request is declined when declined button is pressed  2)Message successfully pop up telling librarian that no data selected	
11	Delete Manage Request	To test whether the librarian is able to delete the request change sent by student	1)Message will pop up showing that the request is deleted when delete button is pressed  2)Message will pop up telling librarian that no data selected	1)Message successfully pop up showing that the request is deleted when delete button is pressed  2)Message successfully pop up telling librarian that no data selected	
12	Day Report	To test whether librarian can view the day report	When day report is selected, if there are any booking on that day the Name, Room ID, Start Time and End Time will be shown	When day report is selected, if there are any booking on that day the Name, Room ID, Start Time and End Time are successfully shown	
13	Month Report	To test whether librarian can view the Month report	When Month report is selected, if there are any booking on that month the Name, Room ID, Date, Start Time and End Time will be shown	When Month report is selected, if there are any booking on that month the Name, Room ID, Date, Start Time and End Time are successfully shown	
14	Student List	To test whether librarian can	When student list is selected, User ID, Name and Email will be	When student list is selected, User ID, Name and Email	

		view the student info	shown(student info)	are successfully shown(student info)	
15	Librarian List	To test whether librarian can view the librarian info	When librarian list is selected, User ID, Name and the email will be shown(librarian info)	When librarian list is selected, User ID, Name and the email are successfully shown(librarian info)	

## **6.0 Conclusion**

In a nutshell, the team had developed a system that meet all the requirement and being able to provide the mentioned functionalities. There are some strength and weakness for the system.

The strength of our system is that it enables the librarian to easily manage and keep track of the bookings. Also, the system also allows the librarian to view the daily booking and the rooms that are booking in the month. Not only that, in the system the librarian could also view the information of the librarian and student that registered for the library account. The report includes User ID of librarian or student, Name and the email address. Moreover, another features that I favour a lot is the forget password. Whenever the user forgets the password, they could always request for their password by entering the user ID and an email will automatically send the password to their email. It is such a convenience for people like me that always forgot my password. Students could also book, cancel their reservation, and request to change the library discussion room easily from their devices.

The weaknesses in this system is that users could only request change for their room bookings for one time. This is because the reservation and request of change is saved under one table. Besides that, the system does not recommend to the user which room type should choose according to the room capacity but room capacity is stated in the select room user interface, hence user need to double check themselves to get a desired room size.

In order to overcome the system weakness, the team come out with some recommendations for the system. Firstly, a request table can be added to the system so that user can make more request to their own reservation, therefore, more detailed data can be saved in the system. Besides that, the system should have a user interface that receive the people will be using the room so that the system can give recommendation about which room type the user should do reservation to.

## **7.0 Workload Matrix**

No.	Assigned Task & Brief Description	Assigned Member Name	Completion Status / Comment
1.	Student Function <ul style="list-style-type: none"><li>- Reserve Room</li><li>- Request Change/ Cancel Room</li></ul> Log In <ul style="list-style-type: none"><li>- Forget password</li><li>- Sign up</li></ul> Class diagram Explanation of the Codes Conclusion	Sia De Long	
2.	Librarian Function <ul style="list-style-type: none"><li>- Approve or Reject Change Room Request</li><li>- Reports</li></ul> Use Case Diagram Test Plan and Test Case Explanation of Codes Conclusion Workload Matrix	Emerson Kong Zee Xin	
3.	Log In Function Main Menu	Chieng Shoa Wei	