

Transiting of Excel Worksheet to Online System for Calista Music Centre

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Abstract: The implementation of the Music Centre Management System for Calista Music Centre has the goal to design, develop and test the web-based music centre management system of the music centre that uses a structured approach to provide individualized functions for each kind of user. The implemented system utilizes an Agile development methodology. There are three kinds of users in the system which are the administrator, instructor and student. Also, the implemented system provides six functional modules such as login, inventory management, scheduling management, attendance management, payment management and profile management. The implemented system carried out the test plan to ensure the modules functioned as planned. In short, the implemented system improves the management performance of Calista Music Centre and provides a platform to fulfil the requirement of users.

Keywords: music centre management system, Calista Music Centre, inventory management, attendance management, scheduling management, payment management

1. Introduction

According to the data from a research paper named “Music Education in Malaysia: An Overview” in 2021, people began to bring more focused on the development of Malaysian music education over recent years. Undeniably, the situation has a meaningful impact on putting effort to include the study of music into to curriculum for all schools in Malaysia [1]. From another point of view, the development of music has brought benefits to the local economy in Malaysia. The finding stated that the music festival attracts tourists and thus revitalizes the local economy through the sale of food, beverages, and art of culture [2]. Since the development of music becomes popular and widely accepted by the public, there is lots of music centre that can be found in the area of Batu Pahat, Johor.

Basically, a music centre will sell various musical instruments like piano, violin, electronic guitar, metronome and bass drum. Tracking inventory levels and ensuring enough time to replenish products allows a business to meet customer demand. Business performance depends on inventory as out-of-stock products might lose potential customers and uncontrolled inventory reduces business liquidity. Thus, inventory management is important for business to keep inventory levels in check and increase

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customer satisfaction to maximize the profit [3]. Not only that, but the music centre will also provide professional music lessons for the public who is interested to learn. Therefore, a scheduling management is crucial in assign each time to the appropriate persons without interrupting with other slot. Scheduling is a service to allocate manpower and resources to a task in sequence and time [4]. To store the payment transaction securely, payment management plays a crucial role to store the transaction permanently and in a reliable way.

There are three music centres located in Batu Pahat that have been visited which are Calista Music Centre, Sandman Guitar Centre and Chamber Music Studio. From author's observation and experience while visiting the music centre, the administrator of the music centre might face possibility of spending much time searching for the musical instrument for their customer due to there being a lot of musical equipment. Besides, there might be a human error occurring between the administrator and student in paying the lesson fee without having a proper recording transaction system. Also, a misunderstanding might happen between the administrator and the instructor while scheduling the lesson slot.

Therefore, the system aims to design a music centre management system for Calista Music Centre that uses a structured approach to provide individualized functions for each kind of user, to develop a music centre management system that can provide individualized functions for each kind of user and to test the efficiency of the developed system for each kind of user in daily life.

The target users for this system are administrator, instructors and students. At Calista Music Centre, the administrator is able to track the current stock information of the music centre. The administrator possesses the authority to view, add new, edit and delete information of classroom and music courses. Also, the administrator has the ability to schedule a lesson slot for talented instructors and students. The administrator is allowed to update the attendance and payment records. Also, the administrator has permission to update the personal information of instructors and students. Instructors have the capability to view their own timetable on the visual calendar. Instructor is able to take attendance and add notes to students' class records to mark their learning progress. Similarly, students can access their own timetable and view notes placed on their visual calendar. Students has the ability to check payment record history. Both instructors and students are permitted to edit selected personal information. All three types of users have the option to download reports in PDF format based on their demands.

There are a total of six modules provided in this system, namely login module, inventory management module, scheduling management module, attendance management module, payment management module and profile management module.

In the following section, Section 2 discusses the related work of the current Calista Music Centre management and conducted a literature review of existing systems. Followed by Section 3 discusses the methodology applied and the system analysis and design of the proposed system. Then, Section 4 discusses the results and outputs of the proposed system. Finally, Section 5 makes a short conclusion on the current works and highlights the future work to be performed in the implemented system.

2. Related Work

2.1 Current Calista Music Centre Management

The proposed system is designed for Calista Music Centre. Currently, the music centre is using a manual way to record inventory information. The administrator relies on physical counting and manual update stock quantity in an Excel spreadsheet. The current practice leads to a huge workload, time wastage and easier prone to errors. Additionally, the Calista Music Centre stores the payment records of students using the Excel spreadsheet. Sometimes, the manual entry of payment records brings the problem of human error and increases the inaccuracies payment fee due to incorrect data formula. Also, it takes time to search for the previous payment records for related students.

Moreover, the Calista Music Centre manually schedules the lesson slots for talented instructors and students. A misunderstanding and scheduling conflicts might happen between them while scheduling the lesson slot. The overlap lesson slot might happen due to human error. Any changes or update on lesson slot required the administrator to inform the talented instructor and students manually.

As a short conclude, the current management practices of Calista Music Centre require a huge amount of workload and time wastage to perform daily activities. The management needs to enhance to improve the performance and to reduce human error as much as possible.

2.2 Study of Existing System

There are three music centres which are Swee Lee Malaysia [5], The Academy Music Centre [6] and the Live Music Centre [7] have been studied via online sources. Table 1 shows the features between the three existing systems and the proposed system.

Swee Lee Malaysia offers a login module for the potential customers to register a new account and allows the existing account holders to make purchases. There is a search bar provided for potential customers to quickly search for their desired products. Each of the musical instruments is well categorized under its own sub-menu. The system has an add-to-cart feature and payment. The interested students are encouraged to reach them via WhatsApp by clicking the external link.

The Academy Music Centre has no musical instrument module and payment module. The interested users should visit The Academy Music Centre’s Shopee or Lazada online store to check out the available products. The Academy Music Centre has provided a wide range of lessons and a list of instructors’ information. However, the system does not provide a login module. The interested customers can read from the FAQ and Photo section to get to know more. Interested customers are encouraged to reach them on Facebook.

Live Music Centre provides a login module, search module and add-to-cart module. To enjoy the features of the add-to-cart module, the potential customer should register a new account with Live Music Centre. The search module allows potential customers directly search for desired and related products within a few seconds. Each product category is well designed and has its own sub-navigation menu. Besides, Live Music Centre provides a wide range of lessons. Interested students are encouraged to reach them on WhatsApp.

Table 1: Comparison between Existing System and Proposed System

No	Features	Swee Lee Malaysia	The Academy Music Centre	Live Music Centre	Proposed System
1.	Search Module	✓	×	✓	✓
2.	Login Module	✓	×	✓	✓
3.	Add-to-cart Module	✓	×	✓	×
4.	Musical Instrument Module	✓	×	✓	✓
5.	Lessons and Courses Module	×	✓	✓	✓
6.	Instructor Profile Module	×	✓	×	✓
7.	Inventory Module	×	×	×	✓
8.	Scheduling Module	×	×	×	✓
9.	Student Module	×	×	×	✓
10.	External Link Module	✓	✓	✓	✓

Legend : ✓=Yes ; ×= No

3. Methodology/Framework

The agile model is chosen to develop the Music Centre Management System for Calista Music Centre. There are five phases implemented iteratively throughout the development: planning, designing, developing, testing and deployment [8]. The Agile Methodology employs an ongoing cycle and an iterative process.

3.1 Planning Phase

In the planning phase, there is an interview session to determine the user requirements from three perspectives which are administrator, instructor and student. Requirement analysis is a stage of requirement engineering to figure out the potential issues during system development [9]. Therefore, a Gantt Chart is produced to indicate the tasks to ensure completion within the period. The functional requirements and non-functional requirements are conducted in Table 2 and Table 3 respectively.

Table 2: Functional Requirement

No	Functional Requirements
1.	The system records the registration of users of the Music Centre Management System.
2.	The system can be accessed by each kind of user for different accessibility and restrictions.
3.	The system can check the inventory information such as brand, category, product and supplier.
4.	The system can add new and edit inventory information.
5.	The system allows users to upload images for each product.
6.	The system can record restock and sale history to generate a brief inventory report.
7.	The system can add new and edit course information.
8.	The system can add new and edit classroom information.
9.	The system can add new and edit lesson slots.
10.	The system allows to assign course and lesson slots for instructor and students.
11.	The system allows users to edit and manage current or new users.
12.	The system allows to update payment status.
13.	The system allows users to update and change personal information.
14.	The system allows input notes on timetables to mark student progress.
15.	The system allows to view payment records.
16.	The system allows recording the attendance.
17.	The system allows to view timetables.
18.	The system allows to edit notice on timetables.
19.	The system allows to upload file for achievement.
20.	The system allows to download full or customized PDF report.
21.	The system allows to generate invoice for Course payment.

Table 3 : non-Functional Requirement

A - Security Requirement	
1.	The database of the system should be able to protect well.
2.	The system should be accessed only if the email and password is authorized.
B - Operational Requirement	
1.	The system should be able to perform all existing actions on any device and at any time.
2.	The system is user-friendly to perform tasks.
C - Portability Requirement	
1.	The system should be able to run on every web browser.
D - Performance Requirement	
1.	The system should respond to the request quickly.
2.	The system should be able to work 24/7.
3.	The system should be able to perform tasks without logic error.

3.2 Designing Phase

In designing phase, the system User Interface (UI), workflow and relationship between entities and relationship are determined and analyzed. System analysis delivers a description to define the process of the system [10]. Therefore, the output from this phase is designing the wireframe, flowchart for each kind of user, Data Flow Diagram, Entity Relationship Diagram (ERD), User Interface (UI) design and software and hardware requirement.

3.2.1 Flow Chart

The flowchart illustrates the workflow of each kind of user for the proposed system. The flowchart for administrator, instructor and student are represented in Appendix A, Appendix B and Appendix C respectively.

3.2.2 Data Flow Diagram (DFD)

DFD Level 0 is also known as context diagram, describes the overall process of the entire system [11]. Figure 1 shows the context diagram of the Music Centre Management System. There are three entities which are administrator, instructor and student. The administrator, instructor and student perform several input or tasks and the corresponding output is displayed based on the request. More details of DFD Level 1 can be referred to in Appendix D.

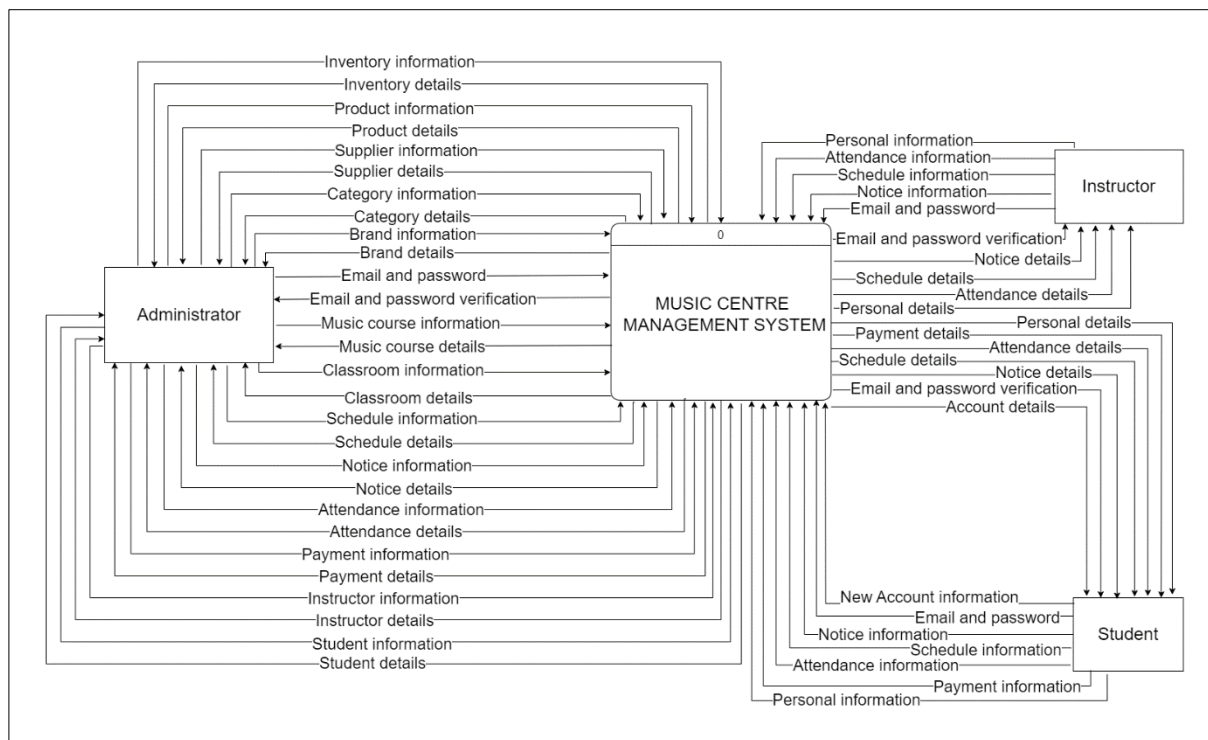


Figure 1 : DFD Level 0 for Music Centre Management System

3.2.3 Entity Relationship Diagram (ERD)

The ERD describes the relationship between entities along with primary key and foreign key [12]. Figure 2 shows the ERD to describe the database system for Music Centre Management System. There are twenty tables including admin, brand, category, supplier, product, inventoryrecord, musiccourse, classroom, student, student_course, instructor, instructor_course, full_state, daycomplete, monthcomplete attendance, achievement, notice, schedule and payment with own primary key and foreign key. The connecting line describe the relationship between entities.

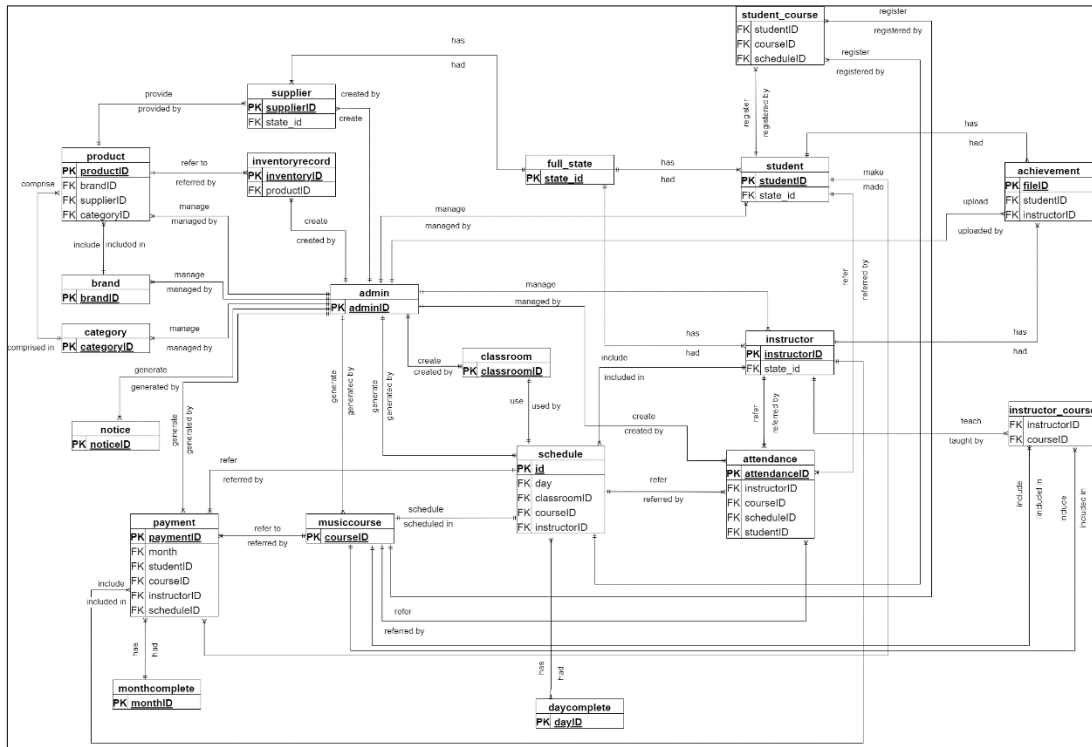


Figure 2 : ERD for Music Centre Management System

3.2.4 User Interface (UI) Design

The user interface (UI) design is the design of the user interface of the system. In this project, the wireframes are drawn to illustrate the system user interface using draw.io. The implemented system has three user sites which are administrator site, instructor site and student site. Each user sites have different layout and sites to perform different tasks. Figure 3 shows the dashboard for the administrator.

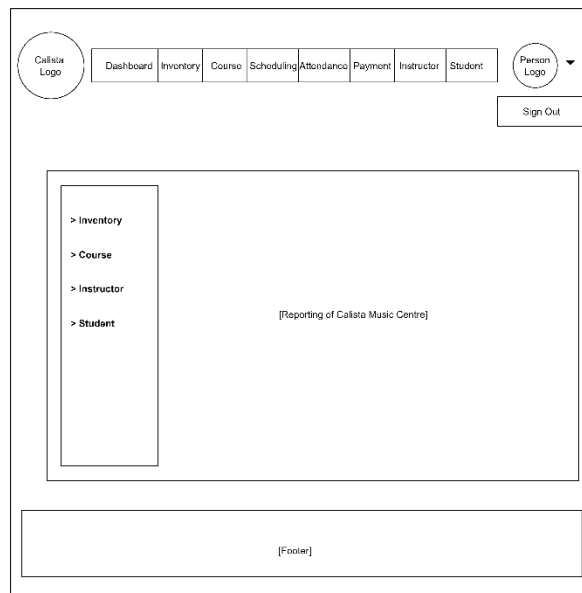


Figure 3 : Dashboard Administrator

3.3 Developing Phase

In the developing phase, the development of the music centre management system is implemented until the UI and functionalities system performs well to achieve the objectives. The programming languages

applied and implemented in the implemented system are PHP, JavaScript, HTML, CSS, jQuery and AJAX with Visual Studio Code as an Integrated Development Environment (IDE). The database used is the phpMyAdmin database with MySQL to execute SQL commands. The implemented system is a user-friendly system, and the database system can perform as expected.

3.4 Testing Phase

In the testing phase, the system has been undergoing testing to fix the bug and avoid logic error. The testing phase can be divided into two phases which are alpha testing and beta testing [13]. The alpha testing was carried out by the author to fix the bug and critical issues before the system is released to the public. In alpha testing, the performance of the system is determined by the stakeholder of Calista Music Centre and minimizes the bug as much as possible. The feedback from target users is collected via questionnaire. Table 4 shows the functional testing output for each module while Table 5 shows the non-functional testing output for the proposed system.

Table 4: Functional Testing Output for each module

Modules	Roles	Test Plan	Expected Output	Result
Login Management	Administrator, Instructor, Student	The system implements role-based access control.	Different kinds of users redirect to different homepage once login successfully.	Pass
		User login with correct username and password.	Login successful and redirect to related page.	Pass
		Users with blank input or wrong password or wrong username or direct go to a specific URL without login credentials has restricted from accessing the system.	Restrict them to direct access without login to the system.	Pass
Inventory Management	Administrator	Performs CRUD on brand, category, supplier, product, sale record and restock record information.	Action taken successfully with related success messages and information change to latest based on requested.	Pass
		Click button to download each report in full version or customized version.	The report is downloaded successfully based on the criteria selected.	Pass
		View the whole or filtered report based on year and month selected	Display the related information in selected year and month or display reminder message if there is no record within the specific month and year.	Pass
		The quantity of product change dynamically based on the sale or restock records.	The quantity of product successfully to change dynamically based on the sale or restock records or display error message if the quantity inserted exceeds the current quantity of product in stock.	Pass

Table 4: (cont.)

Modules	Roles	Test Plan	Expected Output	Result	
Scheduling Management		Total price in RM is automatically calculate based on the product selected and quantity inserted.	The total price in RM is automatically calculated correctly based on the product selected and quantity inserted.	Pass	
		Search for desired information by keywords.	The desired information displays for the administrator based on the keywords inserted.	Pass	
		Views the brief and short report of whole inventory situation.	Able to view the inventory information like the total quantity product in stock, total product sold and restock in yesterday and today, top 3 hot sale products and unpopular products, the product run in low quantity and out of stock.	Pass	
	Administrator		Performs CRUD on classroom and music course, schedule information.	Action taken successfully with related success messages and information change to latest based on requested.	Pass
			Assign lesson slots to instructors and students as well.	Action taken successfully with related success messages and related instructor and student able to view the schedule in their profile	Pass
		View the whole or related instructor or student or music course schedule	Display a visual calendar that includes the schedule of specific information	Pass	
		Display list of instructors based on course selected	Display list of instructors accurately based on course selected	Pass	
		Select more students which exceed the limitation of the number of students.	Display related error message and failed to input student if exceed the limitation number.	Pass	
		Add notice to specific role.	The notice is displayed based on specific role.	Pass	
		Instructor, Student	View the schedule and notice on visual calendar.	Their own schedule and notice displayed on a visual calendar in their dashboard.	Pass
			View course assigned and registered.	Display related information in their dashboard.	Pass

Table 4: (cont.)

Modules	Roles	Test Plan	Expected Output	Result
Attendance Management	Administrator, Instructor, Student	Click button to download each report in full version or customized version.	The report is downloaded successfully based on the criteria selected.	Pass
		Search for desired information by keywords.	The desired information displays for the administrator based on the keywords inserted.	Pass
	Administrator	Performs CRUD on attendance information.	Action taken successfully with related success messages and information of attendance change to latest based on requested.	Pass
		Add new attendance record	Action taken successfully with related success messages and information of attendance change to latest based on requested.	Pass
		Display a list of related schedules and students which assigned to him.	A list of related schedules and students successfully to display there.	Pass
	Instructor	The ticked student checkbox marked as Attend.	The attendance of ticked student successfully recorded with status Attend.	Pass
		The unticked student checkbox marked as Absent.	The attendance of unticked student successfully recorded with status Absent and highlight in yellow color.	Pass
	Instructor, Student	The number of lessons taught and attended increase 1 if the attendance is recorded	Number of lessons taught and attended on current increase 1 successfully.	Pass
		View the number of lessons taught and attended on current month.	Number of lessons taught and attended on current month displayed accurately.	Pass
		View the whole or filtered report based on year and month selected	Display the related information in selected year and month or display reminder message if there is no record within the specific month and year.	Pass
		Administrator, Instructor, Student	Click button to download each report in full version or customized version.	The report is downloaded successfully based on the criteria selected.
	Search for desired information by keywords.		The desired information displays for the administrator based on the keywords inserted.	Pass

Table 4: (cont.)

Modules	Roles	Test Plan	Expected Output	Result
Payment Management	Administrator	Performs CRUD on payment information.	Action taken successfully with related success messages and information of payment change to latest based on requested.	Pass
		Display related courses registered by the selected student.	A list of related courses information successfully to display there.	Pass
		Update total paid of course fee automatically.	The total paid of course fee is updated successfully based on the checkboxes ticked.	Pass
		Generate invoice for each payment made	An invoice is successfully generated for each payment.	Pass
	Administrator, Student	View the whole or filtered payment report based on year and month selected	Display the related information in selected year and month or display reminder message if there is no record within the specific month and year.	Pass
		Click button to download each report in full version or customized version.	The report is downloaded successfully based on the criteria selected.	Pass
		Search for desired information by keywords.	The desired information displays based on the keywords inserted.	Pass
		Performs CRUD on instructor and student information.	Action taken successfully with related success messages and information of instructor and student change to latest based on requested.	Pass
		Upload achievement file to related instructor and student.	Information updated successfully.	Pass
		Change email of the instructor and student.	Information updated successfully with the condition the email existed only once in related database tables.	Pass
Profile Management	Administrator	Click button to download instructor and student information report.	The report is downloaded successfully.	Pass
		Search for desired information by keywords.	The desired information displays based on the keywords inserted.	Pass
		View personal information	Successfully to view personal information accurately.	Pass
		Instructor, Student		

Table 4: (cont.)

Modules	Roles	Test Plan	Expected Output	Result
		Update personal information	Successfully to update personal information with the condition not leaving any input blank	Pass
		Update password	Successfully to update password with the condition password and confirmation password is same and fulfill requirements.	Pass
		Click button to view or download own achievement file.	The file is ready to view or download.	Pass
	Student	Register account.	Successfully to register an account.	Pass

Table 5: non-Functional Testing Output for proposed system

Requirement	Functionalities	Result
Security	<ul style="list-style-type: none"> Only authorized users can access the system. Users who direct go to a specific URL without login credentials has restricted from accessing the system. 	Pass
Operational	<ul style="list-style-type: none"> The action executed well and in a correct way to produce expected outcome. 	Pass
Portability	<ul style="list-style-type: none"> The system run well in any web browser. 	Pass
Performance	<ul style="list-style-type: none"> Every output response within 3 seconds. 	Pass

3.5 Deployment Phase

In the deployment phase, the feedback and suggestions collected from the target users are dealt with and implemented into the system. Also, there is a user manual provided for target users. The developed system is ready to be released and deployed to the target user for commercial usage. For a better understanding of the developed system, a user manual is provided for the target users' reference.

4. Results and Discussion

The implemented system has six functionalities for different users to perform tasks. In this section, the User Acceptance Testing (UAT) is carried out to collect feedback and satisfaction from the real target users and the functionalities of each module are discussed in detail.

4.1 User Acceptance Testing

A user acceptance testing is crucial to be carried out to obtain feedback from the stakeholders involved. In this case, the implemented system is tested by the administrator, instructors and students of the Calista Music Center and each of them answered the questionnaires based on the real user experience. There a total of twenty-six respondents including one administrator, five instructors and twenty students involved in the testing. The feedback form is divided into three different roles and each role has different questions based on the functionalities of the implemented system. The feedback is collected and represented in table form. The rating starts from 1 which is strongly disagree or strongly unsatisfied to 5 which is strongly agree or strongly satisfied.

Table 6 shows the result of users on User Interface design. The overall result voted by the respondents is between 3 to 5 which indicates a varying degree of satisfaction among the respondents regarding the UI design of implemented system. The respondents recommend implementing a vibrant and visually appealing color scheme to enhance the attractiveness of the UI design.

Table 6: Result of users on User Interface design

No	Feature	Rating					Total
		1	2	3	4	5	
1	How the overall design of the interface?	0	0	1	17	8	26
2	The layout of the user interface intuitive?	0	0	1	20	5	26
3	Easy to navigate on the system?	0	0	1	14	11	26
4	Is the user interface easy to understand with relevant titles that describe functionality?	0	0	2	16	8	26
5	How satisfied on current interface design?	0	0	3	12	11	26

Table 7 shows the result of the administrator voted on system functionalities. The overall result voted by the administrator is 4 and 5 which means that the satisfaction of the administrator for the implemented system is generally high. However, the administrator suggests enabling the option for users to upload real profile images.

Table 7: Result of Administrator on System Functionalities

No	Feature	Rating					Total
		1	2	3	4	5	
1	Login Function	0	0	0	0	1	1
2	Inventory Management Function	0	0	0	1	0	1
3	Scheduling Management Function	0	0	0	1	0	1
4	Attendance Management Function	0	0	0	1	0	1
5	Payment Management Function	0	0	0	1	0	1
6	Profile Management Function	0	0	0	1	0	1
7	Search and Filter Function	0	0	0	0	1	1
8	Download report Function	0	0	0	0	1	1

Table 8 shows the result of the instructors voted on system functionalities. The overall result voted by the instructors is between 3 to 5 which indicates a varying degree of satisfaction. The instructors recommend implementing real-time communication features and a salary view.

Table 8: Result of Instructors on System Functionalities

No	Feature	Rating					Total
		1	2	3	4	5	
1	Login Function	0	0	0	3	2	5
2	Scheduling Management Function	0	0	1	3	1	5
3	Notice Management Function	0	0	1	3	1	5
4	Attendance Management Function	0	0	1	4	0	5
5	Profile Management Function	0	0	1	3	1	5
6	Search and Filter Function	0	0	1	3	1	5
7	Download report Function	0	0	1	4	0	5

Table 9 shows the result of the students voted on system functionalities. The overall result voted by the students is between 3 to 5, which indicates a varying degree of satisfaction. The students suggest

implementing a real online payment gateway, enabling the implemented system in mobile application and incorporating jump notifications to remind them of upcoming class.

Table 9: Result of Students on System Functionalities

No	Feature	Rating					Total
		1	2	3	4	5	
1	Login Function	0	0	0	12	8	20
2	Scheduling Management Function	0	0	3	11	6	20
4	Attendance Management Function	0	0	3	10	7	20
5	Payment Management Function	0	0	3	13	4	20
6	Profile Management Function	0	0	4	10	6	20
7	Search and Filter Function	0	0	4	9	7	20
8	Download report Function	0	0	3	9	8	20

According to the collective assessment, the overall result voted is between 3 to 5. The ratings indicate a varying degree of satisfaction among the users regarding the proposed system. However, it is noteworthy that the number of users who voted for a rating of 3 is considerably low.

4.2 Functionalities of the modules

The first module is the login module. Administrator, instructor and student are allowed log in to the system if the input email and password are authorized. The input email and password will match the database table of administrator, instructor and student. Figure 4 shows the login interface.

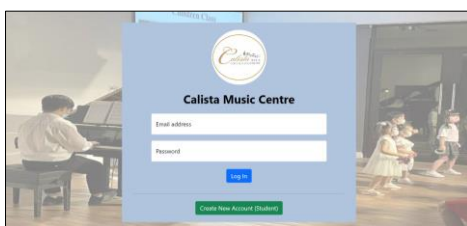


Figure 4 : Login Interface

The second module is the inventory management module. The short brief inventory report is displayed for the administrator to have a direct and clear view. Administrators can perform CRUD on product brand information, product category information, supplier information and product information. The latest information reports will update based on the administrator's request. The administrator allows to download each report in PDF format. Also, the administrator is able to add restock records and sale records to calculate the stock availability and the record will be stored inside the table inventoryrecord. The administrator allows to view all inventory sales and restock reports or by month and year. Also, the administrator is able to download the inventory sales and restock report in PDF format within the desired month and year range. Figure 5 shows the interface of inventory module while Figure 6 shows the interface of report generated.

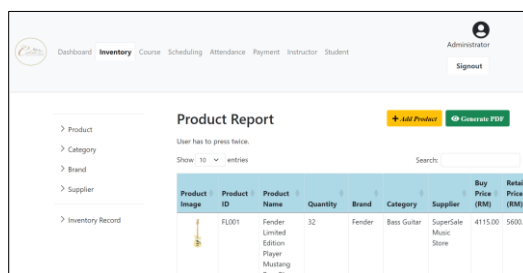
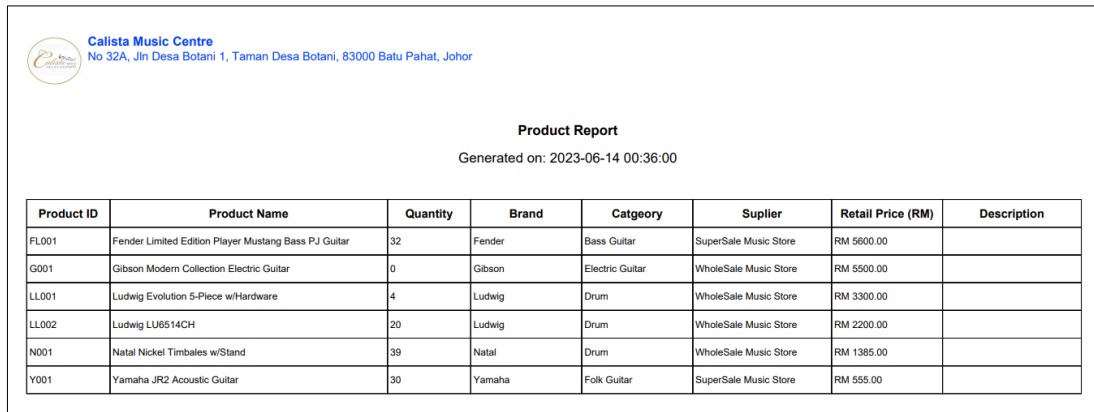


Figure 5 : Inventory Interface



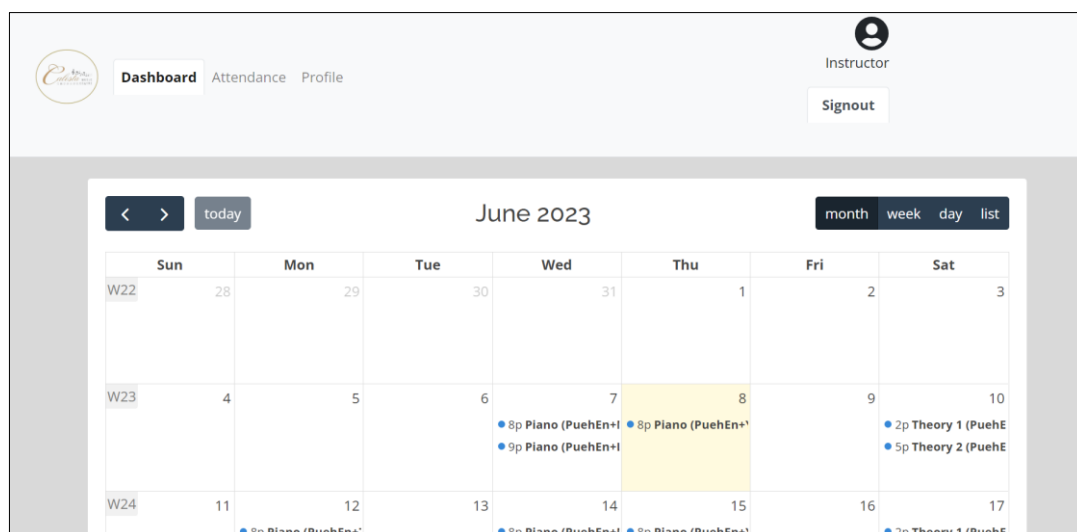
Callista Music Centre
No 32A, Jln Desa Botani 1, Taman Desa Botani, 83000 Batu Pahat, Johor

Product Report
Generated on: 2023-06-14 00:36:00

Product ID	Product Name	Quantity	Brand	Category	Supplier	Retail Price (RM)	Description
FL001	Fender Limited Edition Player Mustang Bass PJ Guitar	32	Fender	Bass Guitar	SuperSale Music Store	RM 5600.00	
G001	Gibson Modern Collection Electric Guitar	0	Gibson	Electric Guitar	WholeSale Music Store	RM 5500.00	
LL001	Ludwig Evolution 5-Piece w/Hardware	4	Ludwig	Drum	WholeSale Music Store	RM 3300.00	
LL002	Ludwig LUBS14CH	20	Ludwig	Drum	WholeSale Music Store	RM 2200.00	
N001	Natal Nickel Timbales w/Stand	39	Natal	Drum	WholeSale Music Store	RM 1385.00	
Y001	Yamaha JR2 Acoustic Guitar	30	Yamaha	Folk Guitar	SuperSale Music Store	RM 555.00	

Figure 6 : Product Report Interface

The third module is the scheduling management module. The administrator is able to perform CRUD on course information, classroom information and schedule information. There are three types of course modes which are 1 VS 1, small class and big class. Each class has a different limit of students. Class mode 1 VS 1 is only available for the number of 1 student, small class is available for the number of a maximum of up to 5 students and big class mode is available for the number of a maximum of up to 20 students. The latest course, classroom and schedule information report will update based on the administrator's request. In this module, the administrator is responsible for assign courses, classrooms, days, and times to start and end classes to related instructors and students. The administrator allows viewing the whole timetable of the Music Centre Management System while instructor and student can view their own timetable based on the course assigned in their own account. The administrator allows viewing the specific timetable of related instructors or related students or related music courses. The administrator is able to download each report in PDF format. For schedule report, the report enables to display of the schedules that are related to the specific instructor, student, music course and day to have class. Also, the administrator can assign the notice for all to view or a specific group level to view the related notice. The instructor and student are allowed to view the notice on their dashboard. Figure 7 shows the interface of scheduling module from instructor site.



Dashboard Attendance Profile Instructor Signout

June 2023 month week day list

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
W22	28	29	30	31	1	2	3
W23	4	5	6	7	8	9	10
				8p Piano (PuehEn+) 9p Piano (PuehEn+)	8p Piano (PuehEn+)		2p Theory 1 (PuehE) 5p Theory 2 (PuehE)
W24	11	12	13	14	15	16	17
		8p Piano (PuehEn+)		8p Piano (PuehEn+)	8p Piano (PuehEn+)		2p Theory 1 (PuehE)

Figure 7 : Scheduling Interface from Instructor Site

The fourth module is the attendance management module. The administrator is able to perform CRUD on attendance information. In this module, the administrator is able to take attendance for related instructors and students. The administrator is able to view the whole attendance report of the Music Centre Management System while the instructor and student can view their own attendance report in

their own account. The administrator allows to view all attendance reports or by desired month and year selected. The latest attendance information report will update based on the administrator's request. The administrator is able to download the attendance report in PDF format within the desired month and year range, specific instructor and student and also the attendance status whether is Attend or Absent. Each student with Absent status will be highlighted in a yellow row. Also, the instructor is able to take attendance for the related class and students on his own. The instructor is able to download the attendance report based on the desired month and year range and student in PDF format. The instructor is able to place note for students to view their progress. Figure 8 shows the interface of attendance module from the student site.

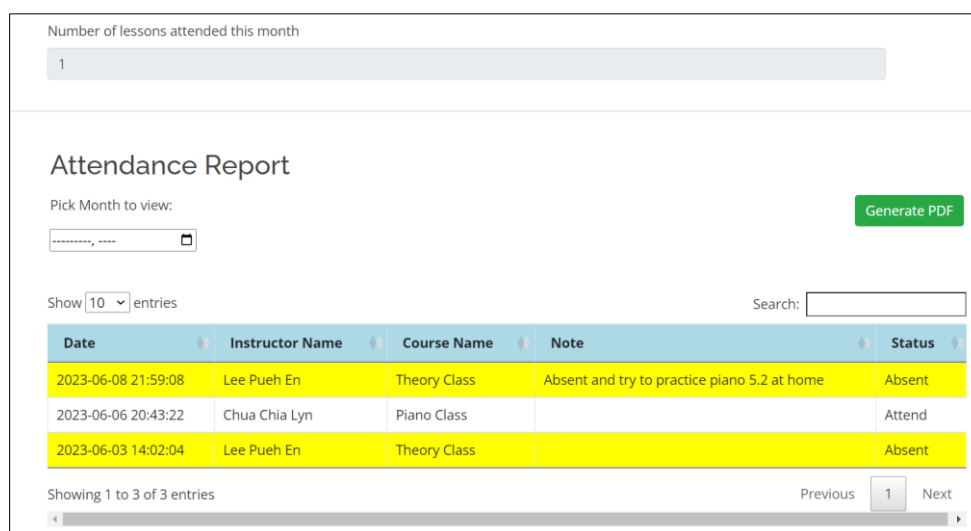


Figure 8 : Attendance Interface from Student Site

The fifth module is the payment management module. Administrators is able to perform CRUD on payment information and the latest payment information report will update based on the administrator's request. The administrator can view all payment reports or by desired month and year. The administrator is able to download the payment report based on the desired month and year range and student in PDF format. The administrator allows to select a student from the list and there will be a list of checkboxes displayed related to the course registered by that particular student. Then, the administrator can make the payment record for students. Each payment record is able to generate an invoice by clicking on the button. Then, the student can view the payment history record on their account. Figure 9 shows the interface of payment module from student site while Figure 10 shows the interface of the invoice.

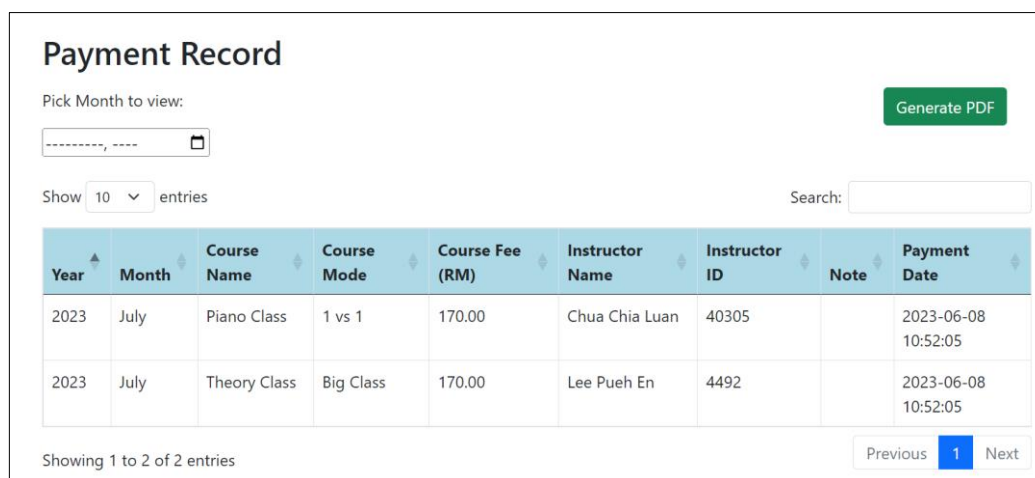


Figure 9 : Payment Interface from Student Site



Figure 10 : Invoice Interface

The sixth module is the profile management module. The administrator is able to perform CRUD on instructor and student information. The latest profile information report will update based on the administrator's request. The administrator is able to download the instructor and student reports in PDF format. The administrator allows to add new file achievements to each instructor or student for them to view or download on their personal accounts. Besides, the instructor and student can update their personal information and account password on their own. For students who do not have an account with the Music Centre Management System, they can register a new account. Figure 11 shows the interface of profile module from instructor site.

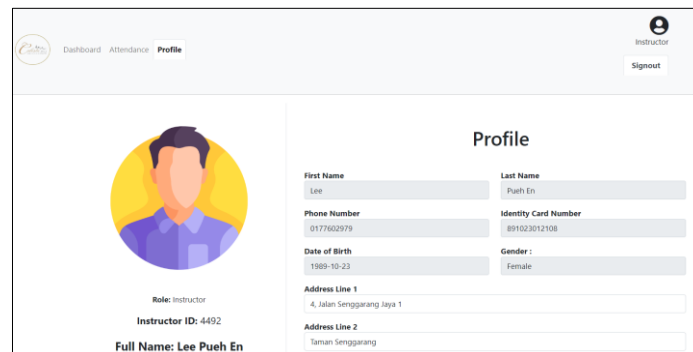


Figure 11 : Instructor Profile Interface

5. Conclusion

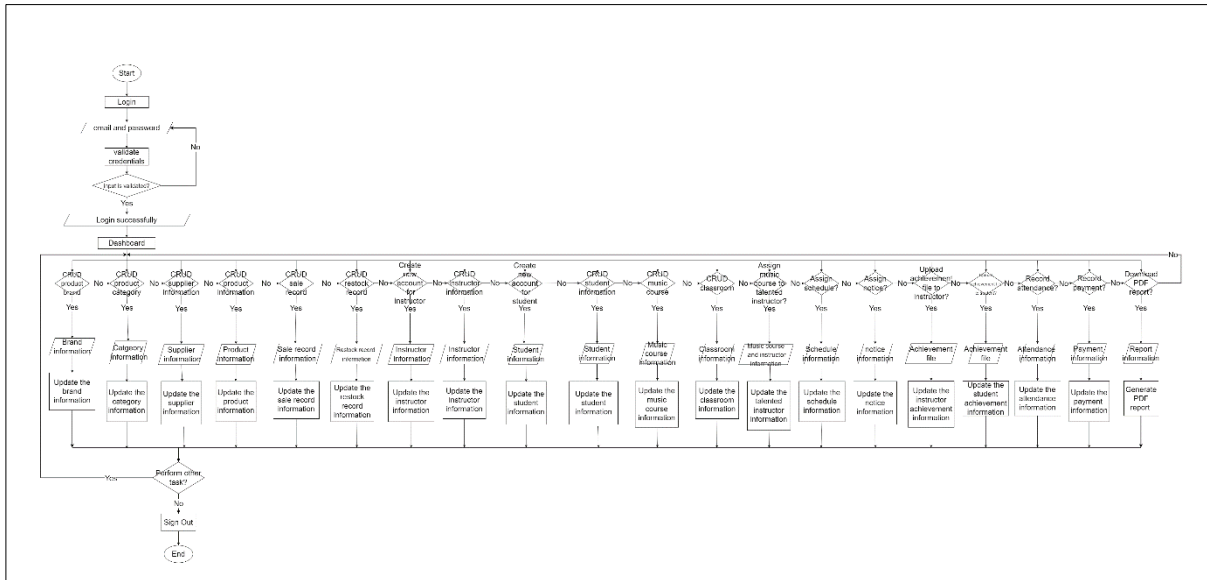
In short, the music centre management system is designed for Calista Music Centre and achieved the objectives of the project. The implemented system successfully reduced the workload and save time as much as possible. The system provides an efficient means of managing the Calista Music Centre, offering a range of functionalities tailored to different users. These functionalities enable users to perform various tasks effectively and smoothly.

There the current system offers valuable functionalities for managing the Calista Music Centre, there is still considerable room for further enhancements. The first enhancement is to integrate with the barcode scanner to work with the inventory management module. Therefore, the automation is built and workload is reduced. Also, adding the module of an online payment gateway provides flexibility for students to make the transaction to pay the course fee. The electronic nature of the payment process guarantees efficiency and reduces the need for manual payment processing.

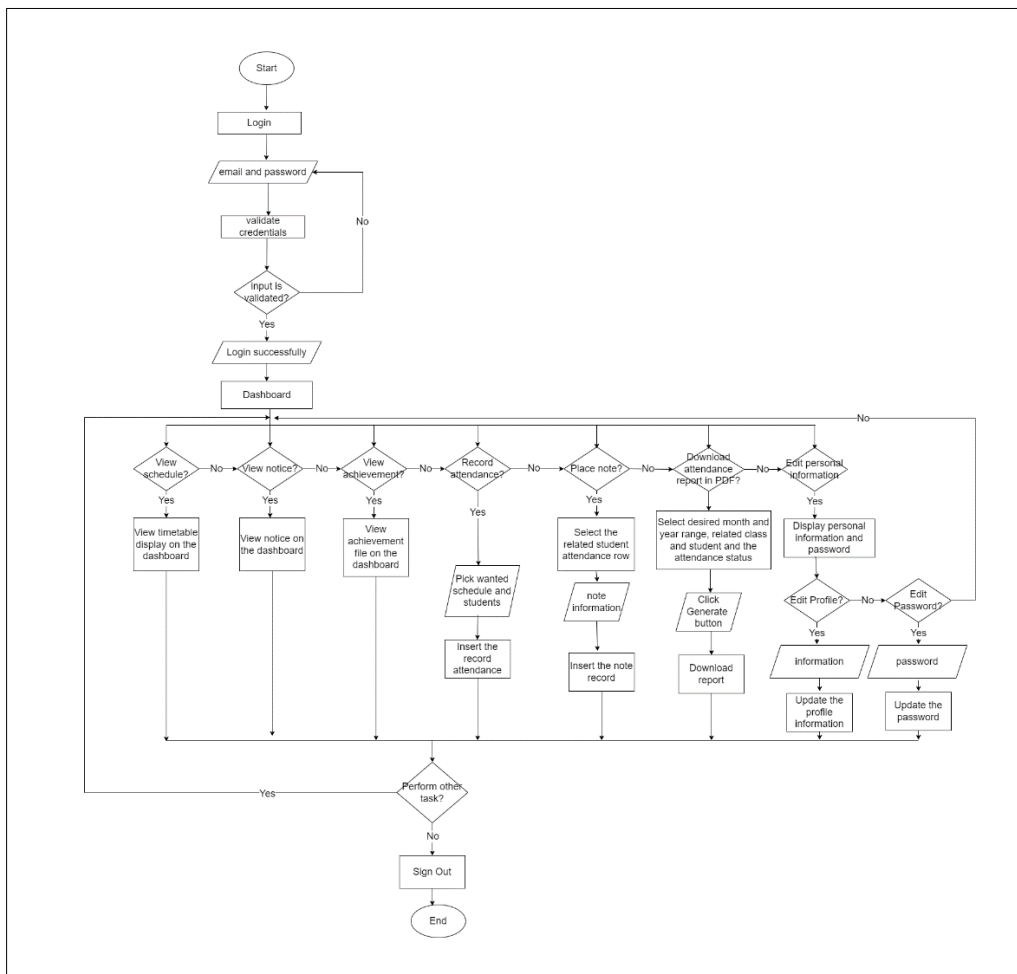
Acknowledgment

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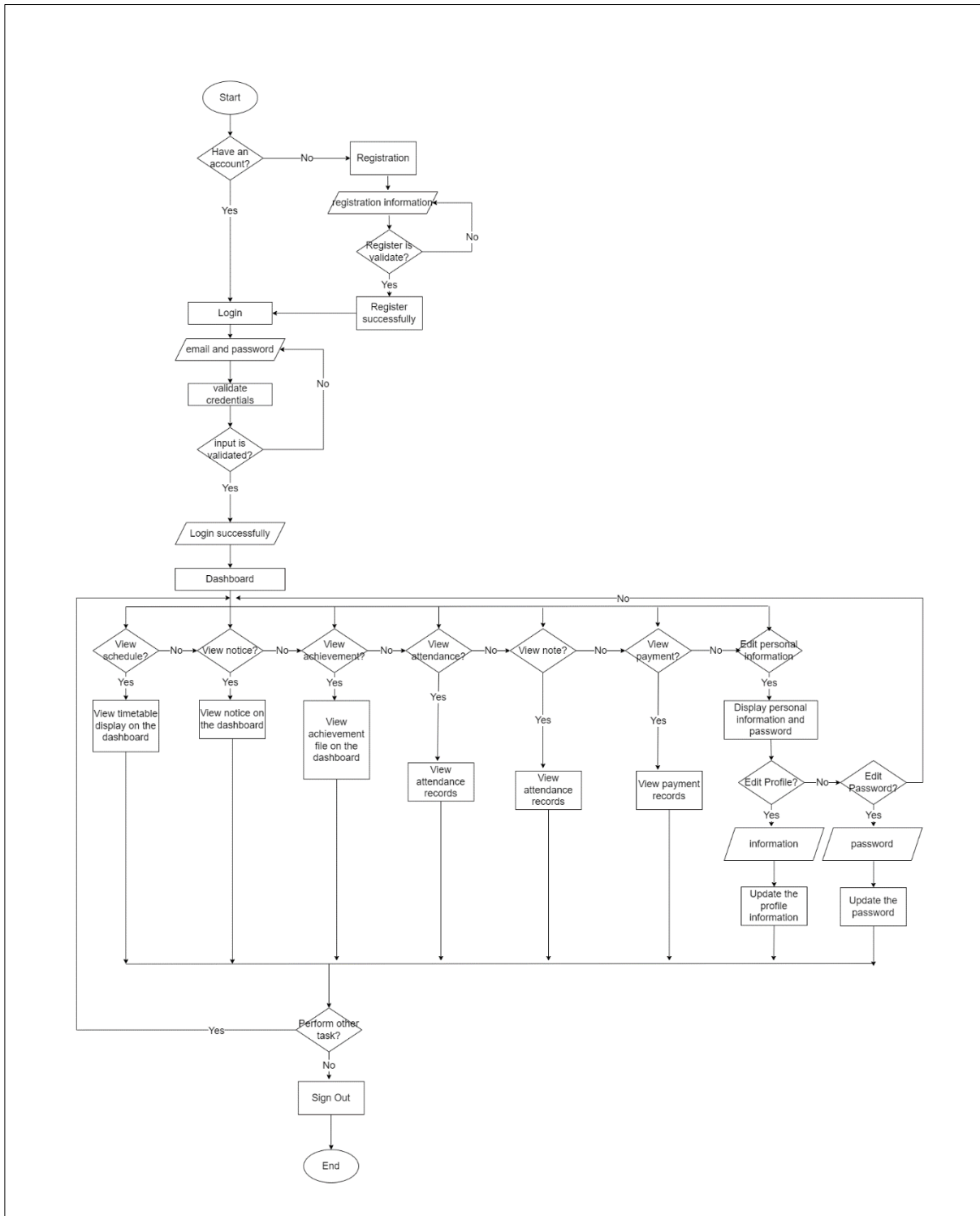
Appendix A Administrator Flowchart



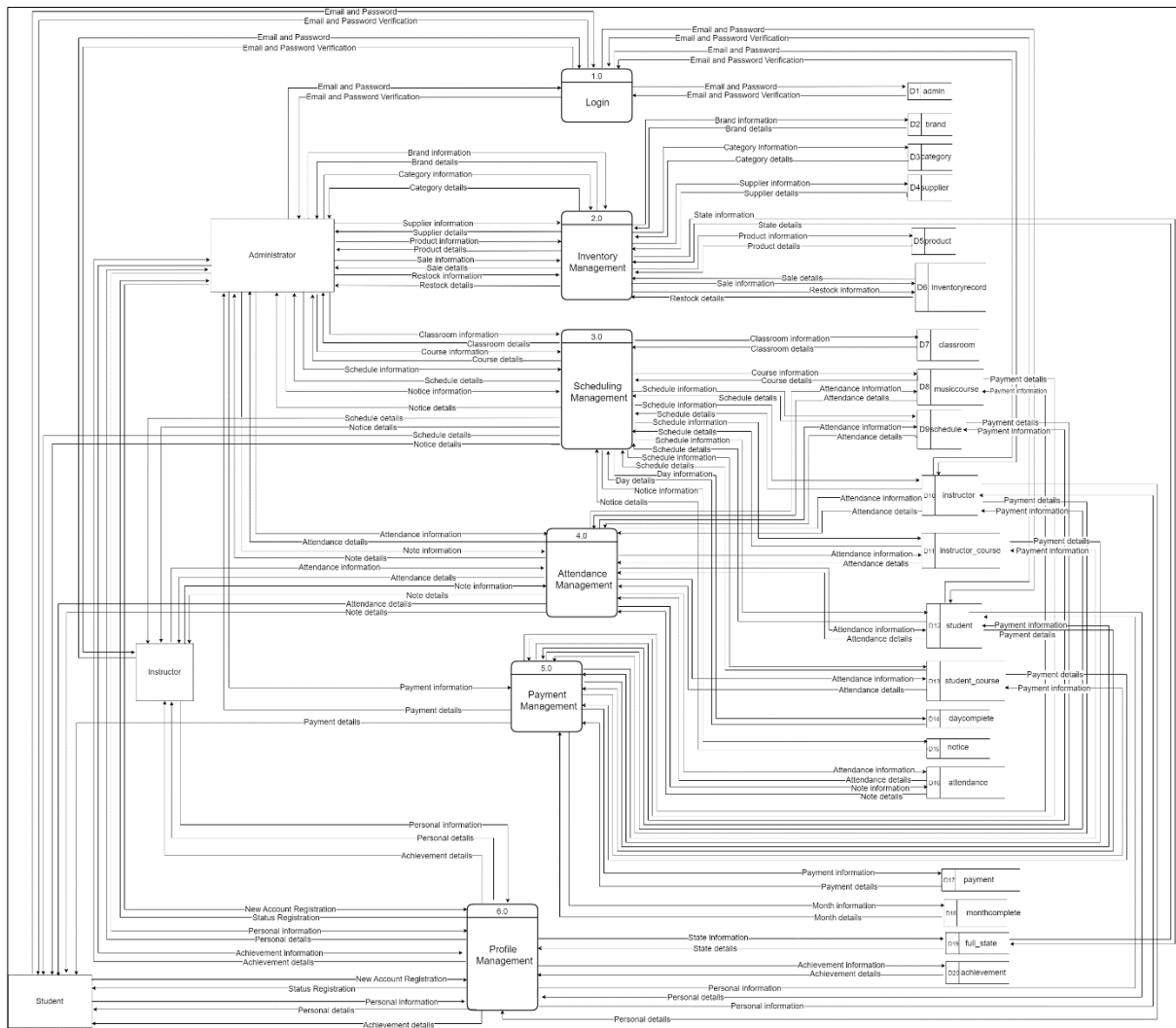
Appendix B Instructor Flowchart



Appendix C Student Flowchart



Appendix D DFD Level 1



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