

BRILLIANCE ONLINE TUITION SYSTEM

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BRILLIANCE ONLINE TUITION SYSTEM

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Database Management) with Honours.

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2022

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ABSTRACT

The Brilliance Online Tuition System is an online learning platform that allows users to easily access and manage their learning processes. Some tuitions still do not use online systems to manage their records, preferring to do everything on paper and manually, such as registering subjects and so on. This may waste time because students must physically attend the tuition centre to enrol in the desired subjects. Furthermore, in this Covid-19 era, some parents strictly prohibit their children from going outside because the virus can easily spread and harm them. This will have an effect on the tuition center's finances. Having this system may help to increase tuition centre sales because it can be used widely rather than just in one region. The system's development is based on a client-server architecture in which the database layer uses MySQL, the server-side layer uses Apache for PHP, and the client-side layer uses HTML, CSS, and JavaScript. Plus, Amazon S3, or Amazon Simple Storage Service, is an Amazon Web Services (AWS) object storage service that will be used in the system as a cloud for data backup and recovery. The system under test operates excellently in terms of process flow and management requirements. It is ensured that the system is error-free, effective, and being used for the organization's benefit.

ABSTRAK

Sistem Brilliance Online Tuition ialah platform pembelajaran dalam talian yang membolehkan pengguna mengakses dan mengurus proses pembelajaran mereka dengan mudah. Sesetengah tuisyen masih tidak menggunakan sistem dalam talian untuk menguruskan rekod mereka, malah lebih gemar untuk melakukan segala-galanya di atas kertas dan secara manual, seperti mendaftar mata pelajaran dan sebagainya. Hal ini agak membuang masa kerana pelajar mesti hadir secara fizikal ke pusat tuisyen untuk mendaftar dalam mata pelajaran yang dikehendaki. Tambahan pula, dalam era Covid-19 ini, sesetengah ibu bapa melarang keras anak-anak mereka daripada keluar rumah kerana virus itu mudah merebak dan membahayakan mereka. Ini akan memberi kesan kepada kewangan pusat tuisyen. Dengan adanya sistem ini boleh membantu meningkatkan kewangan pusat tuisyen kerana ia boleh digunakan secara meluas dan bukannya hanya di satu kawasan semata. Pembangunan sistem adalah berdasarkan seni bina pelayan-pelanggan di mana lapisan pangkalan data menggunakan MySQL, lapisan sisi pelayan menggunakan Apache untuk PHP dan lapisan sisi klien menggunakan HTML, CSS dan JavaScript. Selain itu, Amazon S3, atau Amazon Simple Storage Service, ialah perkhidmatan storan objek Amazon Web Services (AWS) yang akan digunakan dalam sistem untuk sandaran dan pemulihan data. Sistem yang diuji beroperasi dengan cemerlang dari segi aliran proses dan keperluan pengurusan. Ia dipastikan bahawa sistem itu bebas ralat, berkesan, dan digunakan untuk faedah organisasi.

TABLE OF CONTENTS

	PAGE
DECLARATION	ii
ABSTRACT	iii
ABSTRAK	iv
TABLE OF CONTENTS	v
LIST OF TABLES	ix
LIST OF FIGURES	xiii
ABBREVIATIONS	xvii
CHAPTER I - INTRODUCTION	1
1.1 INTRODUCTION	1
1.2 PROBLEM STATEMENTS	2
1.3 OBJECTIVES	3
1.4 SCOPE	3
1.4.1 USERS	3
1.4.2 MODULES	4
1.4.2.1 ADMIN MODULE	4
1.4.2.2 STUDENT MODULE	4
1.4.2.3 TEACHER MODULE	5
1.5 PROJECT SIGNIFICANCE	5
1.6 EXPECTED OUTPUT	6
1.7 CONCLUSION	7
CHAPTER II - PROJECT METHODOLOGY AND PLANNING	8
2.1 INTRODUCTION	8
2.2 PROJECT METHODOLOGY	9
2.3 PROJECT SCHEDULE AND MILESTONES	11
2.4 CONCLUSION	13

CHAPTER III - ANALYSIS	14
3.1 INTRODUCTION	14
3.2 PROBLEM ANALYSIS	15
3.2.1 CURRENT (AS-IS) SYSTEM SCENARIO	15
3.3 THE PROPOSED IMPROVEMENTS/SOLUTIONS	17
3.3.1 ADMIN	17
3.3.2 STUDENT	19
3.3.3 TEACHER	21
3.4 REQUIREMENT ANALYSIS OF THE TO-BE-SYSTEM	22
3.4.1 FUNCTIONAL REQUIREMENT (PROCESS MODEL)	22
3.4.1.1 STRUCTURE CHART	22
3.4.1.2 CONTEXT DIAGRAM	23
3.4.1.3 DFD LEVEL 0	24
3.4.1.4 DFD LEVEL 1	25
3.4.1.5 DFD LEVEL 2	26
3.4.2 NON-FUNCTIONAL REQUIREMENT	27
3.4.3 OTHERS REQUIREMENT	28
3.4.3.1 SOFTWARE REQUIREMENT	28
3.4.3.2 HARDWARE REQUIREMENT	29
3.5 CONCLUSION	29
CHAPTER IV - DESIGN	30
4.1 INTRODUCTION	30
4.2 INTRODUCTORY PREVIEW	30
4.3 DATABASE DESIGN	31
4.3.1 CONCEPTUAL DESIGN	32
4.3.1.1 ENTITY RELATIONSHIP DIAGRAM (ERD)	32
4.3.1.2 BUSINESS RULES	33
4.3.2 LOGICAL DESIGN	35
4.3.2.1 DATA DICTIONARY	35
4.3.2.2 QUERY DESIGN	43
4.3.3 PHYSICAL DESIGN	48
4.3.3.1 SELECTION OF DBMS	48
4.3.3.2 DATABASE OBJECTS	48

4.3.3.3 SECURITY MECHANISM	49
4.3.3.4 DATABASE CONTIGENCY (BACKUP MECHANISM)	50
4.4 GRAPHICAL USER INTERFACE (GUI) DESIGN	54
4.4.1 HOMEPAGE	52
4.4.2 ADMIN MODULE	56
4.4.3 TEACHER MODULE	74
4.4.4 STUDENT MODULE	84
4.5 CONCLUSION	97
 CHAPTER V - IMPLEMENTATION	 90
5.1 INTRODUCTION	98
5.2 SOFTWARE DEVELOPMENT ENVIRONMENT SETUP	98
5.2.1 DATABASE ENVIRONMENT SETUP	99
5.2.1.1 INSTALLATION STEP FOR LOCAL DATABASE	99
5.2.1.2 INSTALLATION STEP FOR CLOUD DATABASE	99
5.2.2 DATABASE CREATION AND DATABASE OBJECT CREATION	103
5.3 DATABASE IMPLEMENTATION	109
5.3.1 DDL/DCL STATEMENTS	109
5.3.2 DATA LOADING PROCESS	114
5.3.2.1 EXPORT	114
5.3.2.2 IMPORT	115
5.4 CONCLUSION	116
 CHAPTER VI - TESTING	 117
6.1 INTRODUCTION	117
6.2 TEST PLAN	118
6.2.1 TEST ORGANIZATION	118
6.2.2 TEST ENVIRONMENT	118
6.2.2.1 ENVIRONMENT OF TESTING TO BE CARRIED OUT ..	118
6.2.2.2 HARDWARE, PREPARATIONS AND TRAINING PRIOR TO TESTING	118
6.2.3 TEST SCHEDULE	119
6.3 TEST STRATEGY	120

6.3.1	CLASSES OF TESTS	121
6.4	TEST DESIGN	123
6.4.1	TEST DESCRIPTION	123
6.4.2	TEST DATA	178
6.5	TEST RESULTS AND ANALYSIS	180
6.6	CONCLUSION	226
 CHAPTER VII - CONCLUSION		227
7.1	INTRODUCTION	227
7.2	OBSERVATION ON WEAKNESSES AND STRENGTHS	228
7.2.1	WEAKNESSES	228
7.2.2	STRENGTHS	228
7.3	PROPOSITIONS FOR IMPROVEMENT	229
7.4	PROJECT CONTRIBUTION	229
7.4.1	USER MANUAL	229
7.5	CONCLUSION	230
 REFERENCES		231

LIST OF TABLES

Table 2.1	: Project Milestones	11
Table 3.1	: Non-Functional Requirement	27
Table 4.1	: Admin	35
Table 4.2	: SubjectType	36
Table 4.3	: Teacher	36
Table 4.4	: Subject	37
Table 4.5	: Student	38
Table 4.6	: RegistrationSubject	39
Table 4.7	: PaymentType	39
Table 4.8	: Payment	40
Table 4.9	: ExamType	40
Table 4.10	: Examination	41
Table 4.11	: Reference	42
Table 6.1	: Classes of tests	122
Table 6.2	: Admin Login Test Case	124
Table 6.3	: Admin Forget Password Test Case	126
Table 6.4	: Add Subject Test Case	128
Table 6.5	: Add Subject Details Test Case	130
Table 6.6	: Update Subject Image Test Case	130
Table 6.7	: Update Subject Timetable Test Case	131
Table 6.8	: Update Subject Day Test Case	132
Table 6.9	: Update Subject Time Test Case	133

Table 6.10	: Update Subject Age Test Case	134
Table 6.11	: Update Subject Price Test Case	134
Table 6.12	: Update Subject Quantity Test Case	135
Table 6.13	: Update Subject Description Test Case	135
Table 6.14	: Update Subject Terms & Condition Test Case	136
Table 6.15	: Remove Subject Test Case	137
Table 6.16	: Add Teacher Test Case	140
Table 6.17	: Assign Subject Test Case	141
Table 6.18	: Remove Teacher Test Case	142
Table 6.19	: Subject Intake Report Test Case	142
Table 6.20	: Monthly Report Test Case	143
Table 6.21	: Yearly Report Test Case	144
Table 6.22	: Update Profile Details Test Case	145
Table 6.23	: Change Password Test Case	147
Table 6.24	: Teacher Login Test Case	149
Table 6.25	: Teacher Forget Password Test Case	151
Table 6.26	: Add Reference Test Case	153
Table 6.27	: Update Reference Video Test Case	154
Table 6.28	: Update Material Test Case	155
Table 6.29	: Update Reference Description Test Case	156
Table 6.30	: Update Reference Month Week Test Case	156
Table 6.31	: Update Class Link Test Case	157
Table 6.32	: Remove Reference Test Case	158
Table 6.33	: Update Profile Details Test Case	159
Table 6.34	: Change Password Test Case	161
Table 6.35	: Sign Up Account Test Case	165
Table 6.36	: Student Login Test Case	167
Table 6.37	: Student Forget Password Test Case	169
Table 6.38	: Enrol Subject Test Case	171
Table 6.39	: Subject Payment Test Case	173
Table 6.40	: Update Grade Test Case	174
Table 6.41	: Update Profile Details Test Case	176
Table 6.42	: Change Password Test Case	177
Table 6.43	: Test Data	178

Table 6.44	: Admin Login Test Data	181
Table 6.45	: Admin Forget Password Test Data	184
Table 6.46	: Add Subject Test Data	185
Table 6.47	: Add Subject Details Test Data	188
Table 6.48	: Update Subject Image Test Data	189
Table 6.49	: Update Subject Timetable Test Data	189
Table 6.50	: Update Subject Day Test Data	190
Table 6.51	: Update Subject Time Test Data	190
Table 6.52	: Update Subject Age Test Data	191
Table 6.53	: Update Subject Price Test Data	191
Table 6.54	: Update Subject Quantity Test Data	192
Table 6.55	: Update Subject Description Test Data	192
Table 6.56	: Update Subject Terms & Condition Test Data	193
Table 6.57	: Remove Subject Test Data	193
Table 6.58	: Add Teacher Test Data	196
Table 6.59	: Assign Subject Test Data	197
Table 6.60	: Remove Teacher Test Data	198
Table 6.61	: Subject Intake Report Test Data	199
Table 6.62	: Monthly Report Test Data	199
Table 6.63	: Yearly Report Test Data	200
Table 6.64	: Update Profile Details Test Data	201
Table 6.65	: Change Password Test Data	202
Table 6.66	: Teacher Login Test Data	204
Table 6.67	: Teacher Forget Password Test Data	207
Table 6.68	: Add Reference Test Data	209
Table 6.69	: Update Reference Video Test Data	210
Table 6.70	: Update Material Test Data	210
Table 6.71	: Update Reference Description Test Data	211
Table 6.72	: Update Reference Month Week Test Data	211
Table 6.73	: Update Class Link Test Data	212
Table 6.74	: Remove Reference Test Data	213
Table 6.75	: Update Profile Details Test Data	213
Table 6.76	: Change Password Test Data	214
Table 6.77	: Student Login Test Data	216

Table 6.78	: Student Forget Password Test Data	219
Table 6.79	: Enrol Subject Test Data	219
Table 6.80	: Subject Payment Test Data	221
Table 6.81	: Update Grade Test Data	222
Table 6.82	: Update Profile Details Test Data	223
Table 6.83	: Change Password Test Data	224
Table 6.84	: Users' Ratings	225

LIST OF FIGURES

Figure 2.1	: Agile Methodology Process	9
Figure 2.2	: Project Gant Chart	12
Figure 3.1	: Flowchart Current System	15
Figure 3.2	: Example Online Tuition System	16
Figure 3.3	: Flowchart Proposed System (Admin)	17
Figure 3.4	: Flowchart Proposed System (Stdent)	19
Figure 3.5	: Flowchart Proposed System (Teacher)	21
Figure 3.6	: Structure Chart	22
Figure 3.7	: Context Diagram	23
Figure 3.8	: DFD Level 0	24
Figure 3.9	: DFD Level 1	25
Figure 3.10	: DFD Level 2	26
Figure 4.1	: Object-Oriented Analysis And Design Diagram	30
Figure 4.2	: Entity Relationship Diagram	32
Figure 4.3	: Mysqldump.sql File	51
Figure 4.4	: Contents Mysqldump.sql File	51
Figure 4.5	: Bucket Page	52
Figure 4.6	: Homepage	54
Figure 4.7	: List Of Subjects	54
Figure 4.8	: Frequently Asked Questions (FAQs)	55
Figure 4.9	: Administrators' Contact Details	55

Figure 4.10	: Admin Homepage	56
Figure 4.11	: Error Message	56
Figure 4.12	: Forget Password Page	57
Figure 4.13	: Error Message	57
Figure 4.14	: Success Message	58
Figure 4.15	: Report Page	58
Figure 4.16	: Registered Students' Details	59
Figure 4.17	: Students' Enrollment Details	59
Figure 4.18	: Teachers' Details	60
Figure 4.19	: Add New Subject Page	60
Figure 4.20	: Add New Subject Details Page	61
Figure 4.21	: Manage Subject Page	62
Figure 4.22	: Update Subject Page	64
Figure 4.23	: Remove Subject Page	65
Figure 4.24	: Total Teacher Page	65
Figure 4.25	: List Of Teachers Page	66
Figure 4.26	: Add New Teacher Page	67
Figure 4.27	: Assign Teacher To Specific Subject Page	68
Figure 4.28	: Remove Teacher Page	69
Figure 4.29	: Subject Intake Report Page	70
Figure 4.30	: Monthly Report Page	70
Figure 4.31	: Yearly Report Page	71
Figure 4.32	: Backup Data Page	72
Figure 4.33	: Update Personal Details Page	73
Figure 4.34	: Teacher Homepage	74
Figure 4.35	: Error Message	74
Figure 4.36	: Forget Password Page	75
Figure 4.37	: Error Message	75
Figure 4.38	: Success Message	76
Figure 4.39	: Student Details Page	76
Figure 4.40	: Students Information Page	76
Figure 4.41	: Student Details Monthly Page	77
Figure 4.42	: Students' Grades Page	78
Figure 4.43	: Add New Reference Page	79

Figure 4.44	: Manage Reference	79
Figure 4.45	: Update Reference	80
Figure 4.46	: Remove Reference Page	81
Figure 4.47	: Update Personal Details Page	83
Figure 4.48	: Sign Up Page	85
Figure 4.49	: Student Login Page	85
Figure 4.50	: Error Message	86
Figure 4.51	: Forget Password Page	86
Figure 4.52	: Error Message	87
Figure 4.53	: Success Message	87
Figure 4.54	: Subject Info Page	88
Figure 4.55	: Subject Enrollment Page	90
Figure 4.56	: Enrollment History Page	91
Figure 4.57	: Update Grade Page	91
Figure 4.58	: Grade Achievement Page	92
Figure 4.59	: Payment Details Page	92
Figure 4.60	: Payment Page	94
Figure 4.61	: Payment Records Page	94
Figure 4.62	: Reference Page	95
Figure 4.63	: Update Personal Details Page	97
Figure 5.1	: XAMPP for Windows	99
Figure 5.2	: XAMPP Contol Panel	99
Figure 5.3	: phpMyAdmin server	100
Figure 5.4	: AWS Account	101
Figure 5.5	: Cloud Database Service	101
Figure 5.6	: Create Bucket Steps	102
Figure 5.7	: Created Bucket	102
Figure 5.8	: Creation of tables	103
Figure 5.9	: Admin Table	103
Figure 5.10	: SubjectType Table	104
Figure 5.11	: Subject Table	104
Figure 5.12	: Teacher Table	105
Figure 5.13	: Student Table	105

Figure 5.14	: RegistrationSubject Table	106
Figure 5.15	: PaymentType Table	106
Figure 5.16	: Payment Table	106
Figure 5.17	: ExamType Table	107
Figure 5.18	: Examination Table	107
Figure 5.19	: Reference Table	108
Figure 5.20	: Export process	114
Figure 5.21	: Import process	115

ABBREVIATIONS

ERD : Entity Relationship Diagram
DFD : Data Flow Diagram
Wi-Fi : Wireless Fidelity
GUI : Graphic User Interface
DBMS : Database Management System
SQL : Structured Query Language

CHAPTER I

INTRODUCTION

1.1 INTRODUCTION

Brilliance Online Tuition System is an online learning platform for students, especially those preparing for major exams such as SPM, PT3, and others. As we all know, there is indeed a Covid-19 pandemic affecting a wide spectrum of people, including students and tuition centres. As we can see, as a result of the Covid -19 outbreak, many tuition centres are having physical difficulties continuing to operate their businesses, as the government occasionally issues Movement Control Orders (MCO), and many parents prefer to keep their children at home to ensure that they are safe and free of the virus. As a result, there is no income earned, and the majority of them are unable to satisfy their basic demands because the tuition centre is their primary source of income.

By establishing such a system, it is envisaged that persons who have been infected will be able to continue their lives by just doing it online. Furthermore, the impact of this epidemic extends to students who struggle to understand the things they are taught in school and require additional knowledge outside of school hours, therefore having this system can assist them in enhancing their understanding of those tough subjects through online platform. Aside from that, the tuition centre can monitor which subjects the students prefer to master in order to hire additional teachers to teach such subjects.

Students can track their progress before and after joining the tuition centre, and it will be reasonably easy for them too because, after they have enrolled, a schedule will be given in the system, along with a link to the class session. If they forget about the time session, they can simply check the system. It is intended that by making class scheduling more efficient, this system will benefit those students.

1.2 PROBLEM STATEMENTS

- 1.2.1 Tuition centres lack a comprehensive report that shows which subjects have the most students so that more teachers can be hired to teach those subjects. This issue arises as a result of bad database design, which does not use basic aggregate functions to calculate the overall number of students based on subjects chosen.
- 1.2.2 In student records, there is a problem with data duplication. As a result, the aggregate queries or reports that are generated are misleading. This issue arises as a result of a poor database design that fails to apply key constraints to identify individual student entries.
- 1.2.3 Students frequently overlook the time period of the subject for which they have registered. Referential integrity, one of the most significant features that database engines provide to ensure data quality at its best, is not adequately employed, causing this problem.
- 1.2.4 It's difficult to keep track of students' development before and after they enrol in the tuition centre. This is due to poor indexing.
- 1.2.5 Since the data is stored on a computer, it is possible that all of it will be lost. This is due to the absence of a cloud backup.

1.3 OBJECTIVES

- Objective 1:
To generate a thorough report that calculates the total number of students depending on the subjects selected, using the correct aggregate functions.
- Objective 2:
To produce accurate students' reports by eliminating data redundancy issues through the enforcement of key constraints.
- Objective 3:
To create an efficient and systematic timetable for students to view class schedule by using referential integrity.
- Objective 4:
To make it more efficient to track the development of students by improving indexing features.
- Objective 5:
To ensure the security of crucial and the important data are safe, no data lost occurred by using cloud backup.

1.4 SCOPE

1.4.1 USERS

Tuition Centre (Admin)

Teacher

Student (Preferably for students aged 10 to 17 years old)

1.4.2 MODULES

1.4.2.1 ADMIN MODULE

Login	: Login by IC number/ email and password as the data integrity and security will be used.
Manage Profile	: Admin can update personal details to ensure latest data is updated.
Manage Subject	: Admin can add new subjects, update or remove the subject.
Manage Teacher	: Admin can see the list of teachers, add new teachers, update or remove the teacher.
View Report	: Admin can see the subjects that are on highly demand and the sales.
Logout	: Exit the system.

1.4.2.2 STUDENT MODULE

Sign Up	: Student need to register an account to use the system.
Login	: Login by IC number/ email and password as the data integrity and security will be used.
Manage Profile	: Student can update personal details to ensure latest data is updated.
Manage Subject	: Student can view the list of subjects provided in the tuition centre and enrol the desired subjects.
Make Payment	: Student can proceed the payment online and get the receipt.
Update Grade	: Student must update their grades for the subjects in which they have enrolled.
View Timetable	: Student can view the schedules for the subjects they have registered for.

View Materials	: The materials from the class session can be obtained by students for reference.
Logout	: Exit the system.

1.4.2.3 TEACHER MODULE

Login	: Login by IC number/ email and password as the data integrity and security will be used.
Manage Profile	: Teacher can update personal details to ensure latest data is updated.
Manage Materials	: Teacher need to insert the reference materials before class session.
View Student Grade	: Teacher can view the progress of their respective students.
Logout	: Exit the system.

1.5 PROJECT SIGNIFICANCE

This system will clearly benefit the administrator because it will generate a detailed report that calculates the total number of students based on the subjects chosen, making it easier for the administrator to determine whether the number of teachers is sufficient and to generate accurate student reports. In addition to this, the system ensure the security of crucial and the important data is safe, no data lost occurred by using cloud backup. Other than that, it will also benefit students because it offers an effective and systematic timetable for students to view the class schedule, especially for those who have trouble remembering things. Furthermore, it will assist both teachers and students because it is an effective way to track students' development in studies.

1.6 EXPECTED OUTPUT

- Output 1:

This system will be a web-based system that the general public can access and the user can click on the dashboard to be redirected to that specific panel.
- Output 2:

Form for new students to fill in their personal information and form for administrators to manage subjects, whether they want to add, change, or remove them.
- Output 3:

Screen that displays a list of available subjects, together with the price and time, as well as a grades section for students to update and teachers to monitor the performance.
- Output 4:

Monthly sales report with accurate data in a tabular format that can be downloaded directly from the system.
- Output 5:

The administrator can use the sales tracking page to keep track of monthly registrations.
- Output 6:

Results screens for multi-dimensional searching that are generated depending on the results of join queries and subqueries.
- Output 7:

Screen of user's profile to be updated, if any.

1.7 CONCLUSION

In a nutshell, the Brilliance Online Tuition System will help users, particularly those in the education area, to simply monitor and handle the learning records. This system may indeed be useful during the pandemic to assist those who are struggling to earn a living, understand subjects in school, or even need something extra to touch-up and deepen their understanding of a subject but are afraid to go to tuition physically due to the Covid-19 virus since classes will be conducted online.

Aside from that, this system provides a coherent method for administrator to view the tuition center's sales report and other important information. It also makes it easier for students to see their class schedule in an efficient way. Data redundancy or data lost perhaps can be avoided by using this system.

Last but not least, the project methodology and planning will be further detailed in the next chapter. This also applies to the project's milestones and schedule.

CHAPTER II

PROJECT METHODOLOGY AND PLANNING

2.1 INTRODUCTION

This chapter will discuss in more details about the system methodology and planning for Brilliance Online Tuition System. There will be two major things that will be discussed in this chapter which are Project Methodology and Project Schedule (Milestones). These two elements have significantly influence on the system development processes, and if they are overlooked, a project's chances of failing are high. System failure will occur due to a lack of a full requirements specification and a poor development methodology. Furthermore, project milestones are crucial since they assist in keeping track of the timeline and the deadlines. With the completion of consecutive milestones, management will have a better knowledge of how the project is progressing in accordance with the original plan.

2.2 PROJECT METHODOLOGY



Figure 2.1: Agile Methodology Process

Agile Methodology will be used as the Structured Systems Analysis and Design Method (SSADM) in this Brilliance Online Tuition System project. This is due to the fact that Agile Methodology is well-suited to planning and achieving the system's development goals. If this Agile Methodology is implemented, it will be easier to build and understand the stages that must be followed during the completion of the Brilliance Online Tuition System. It can also keep the client, who is the supervisor, informed about its progress.

For the first phase, the Plan Phase, all of the information and requirements for developing this Brilliance Online Tuition System are required. Information on how to register subjects based on the students' preferred subjects, for example, and what other features should be added to the system to make implementation easier will be stated here. Aside from that, high thinking is required throughout this phase in order to meet the level of user expectations and satisfaction. All of the planning ideas will be included in a proposal report that will be presented to the client for approval.

The Design Phase is the next step. It will begin with the fundamentals of project construction, which will include designing the project structure, such as providing an Entity Relationship Diagram and a Data Flow Diagram to help with the next steps. After that, some interface sketches will be created, and the best one to use in the project will be chosen, with the selection being taken in accordance with the main goal of user convenience. Furthermore, the project will be continued by coding for the Develop Phase, in accordance with the design that has been chosen. After that, the coding will be incorporated for the following phase, which will involve a test (debug and run) to check that there are no issues.

The Testing Phase will then be completed, during which all of the coding that was tested during the Develop Phase will be integrated and re-tested to ensure that everything works as expected. Testing is also done to confirm that the system accomplishes its basic objectives. The Release Phase ensures that everything is in the same state as it was during the planning phase and that there are no issues before it is widely distributed.

Finally, the Brilliance Online Tuition System must be tested to ensure that it can be utilised properly by the company, especially by the students who will register for the classes and those in charge of processing the applications. If there is any negative feedback as a result of a system crash, the issue will be given special attentions. If any coding has to be changed, the concerned company will be notified.

2.3 PROJECT SCHEDULE AND MILESTONES

No.	Milestones	Expected Documents	Date
1.	Plan	<ul style="list-style-type: none"> • A complete proposal • A complete report for Chapter I • A complete report for Chapter II 	15-April-2022
2.	Design	<ul style="list-style-type: none"> • A complete report for Chapter III • A complete report for Chapter IV • A complete ERD & DFD • Data dictionary • System normalization 	13-May-2022
3.	Develop	<ul style="list-style-type: none"> • Progress development of system 	16-May-2022
4.	Test	<ul style="list-style-type: none"> • System acceptance 	23-May-2022
5.	Release	<ul style="list-style-type: none"> • Project demonstration 	18-June-2022
6.	Feedback	<ul style="list-style-type: none"> • System up-to-date and no bugs found 	22-June-2022

Table 2.1: Project Milestones

Brilliance Online Tuition System																				
Task	No	Activities	Duration (Day)	Start Date	End Date	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15
		Brilliance Online Tuition System	107	07/03/2022	22/06/2022															
		Specification																		
T1	1.1	Plan	39	07/03/2022	15/04/2022															
	1.1.1	Complete the proposal	15	07/03/2022	22/03/2022															
	1.1.1.1	Prepare proposal and get recommendation	4	07/03/2022	11/03/2022															
	1.1.1.2	Get proposal amendments	7	11/03/2022	18/03/2022															
	1.1.1.3	Submit completed proposal to ePSM	4	18/03/2022	22/03/2022															
	1.1.2	Complete the report for Chapter I	10	22/03/2022	01/04/2022															
	1.1.2.1	Prepare Chapter I report	6	22/03/2022	28/03/2022															
	1.1.2.2	Submit Chapter I report	4	28/03/2022	01/04/2022															
	1.1.3	Complete the report for Chapter II	14	01/04/2022	15/04/2022															
	1.1.3.1	Prepare Chapter II report	7	01/04/2022	08/04/2022															
	1.1.3.2	Submit Chapter II report	3	08/04/2022	11/04/2022															
	1.1.3.3	Present project progress	4	11/04/2022	15/04/2022															
		System Design & Development																		
T2	1.2	Design	28	15/04/2022	13/05/2022															
	1.2.1	Complete the report for Chapter III	14	15/04/2022	29/04/2022															
	1.2.1.1	Prepare Chapter III report	7	15/04/2022	22/04/2022															
	1.2.1.2	Submit Chapter III report	7	22/04/2022	29/04/2022															
	1.2.2	Complete the report for Chapter IV	14	29/04/2022	13/05/2022															
	1.2.2.1	Prepare conceptual design	3	29/04/2022	2/05/2022															
	1.2.2.1.1	Develop a complete ERD & DFD	3	29/04/2022	2/05/2022															
	1.2.2.2	Prepare logical data model	5	2/05/2022	7/05/2022															
	1.2.2.2.1	Develop data dictionary	3	2/05/2022	5/05/2022															
	1.2.2.2.2	Do system normalization	2	5/05/2022	7/05/2022															
	1.2.2.3	Prepare physical data model	6	7/05/2022	13/05/2022															
T3	1.3	Develop	35	11/04/2022	16/05/2022															
	1.3.1	Start develop system application	35	11/04/2022	16/05/2022															
		System Testing																		
T4	1.4	Test	7	16/05/2022	23/05/2022															
	1.4.1	Develop Software Test Result	7	16/05/2022	23/05/2022															
	1.4.1.1	Do final code review	4	16/05/2022	20/05/2022															
	1.4.1.2	Do system debugging	1	20/05/2022	21/05/2022															
	1.4.1.3	Perform system acceptance	2	21/05/2022	23/05/2022															
T5	1.5	Release	26	23/05/2022	18/06/2022															
	1.5.1	Project demonstration	26	23/05/2022	18/06/2022															
		Maintenance																		
T6	1.6	Feedback	4	18/06/2022	22/06/2022															
	1.6.1	Operate the system	4	18/06/2022	22/06/2022															
	1.6.1.1	Monitor and control risks and quality	2	18/06/2022	20/06/2022															
	1.6.1.2	Change request or add additional features	2	20/06/2022	22/06/2022															

2.4 CONCLUSION

In a summary, System Methodology and Planning allow for the most efficient and successful implementation of stages in the database system development lifecycle. The mission statement clarifies the database project's goal, paving the way for the efficient and successful design of the crucial database system. Finally, the purpose of having a methodology is to increase the likelihood of a project's success.

The next chapter will go over the system analysis phase in greater depth. This also applies to the system's functional requirements, which will cover the project's process as illustrated by a Data Flow Diagram (DFD), as well as non-functional requirements, such as the quality requirements and other requirements such as the software and hardware that will be used to complete the project.

CHAPTER III

ANALYSIS

3.1 INTRODUCTION

The system analysis will be discussed in this chapter. Analysis system is one of the parts in researching and analysing current system in order to develop a new system. The analysis is carried out to discover the user's problem as well as to ensure that all of the user's requirements are met in the new system. As a result, analysing a strategic system planning is required to verify that a system development may be used. This chapter will go over the existing and future system analyses. The current system analysis is a system that has already been developed by a company and is in use by a large number of students. There are certain drawbacks to the current system. To establish a better system in the to-be system analysis, various research and improvements are needed.

3.2 PROBLEM ANALYSIS

3.2.1 CURRENT (AS-IS) SYSTEM SCENARIO

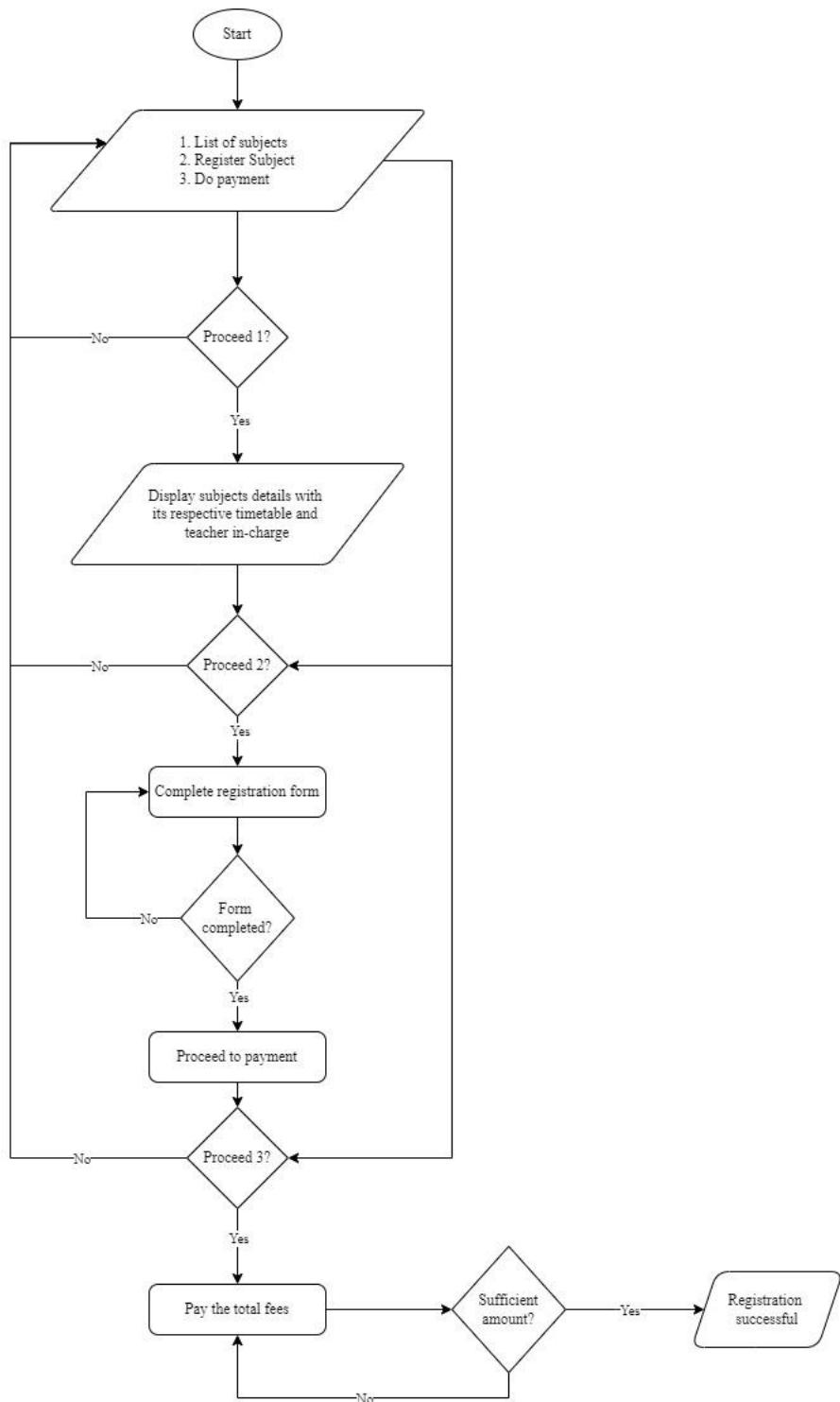


Figure 3.1: Flowchart Current System



Figure 3.2: Example Online Tuition System

Genius Online Tuition Center is a current online system that students can use to supplement their education outside of classroom hours. This system is designed for students in Year 5 until Form 5. It lists the available packages as well as their monthly fees. Students must first create an account in order to log into the system and proceed with the subjects enrollment by clicking the 'Subscribe' option. The system also includes a list of teachers who teach each subject as well as the timetables. After selecting the desired subjects, the total fees will be displayed, and the students must pay the entire amount and select the month in which they wish to begin the classes. The dashboard will then show live classes, seminars, expired classes, and an affiliate programme.

Although this system is simple to use, it does not supply any materials or references for the students to use during their class. It also does not require students' grades, making it difficult to track students' achievement after they have enrolled in the online classes.

3.3 THE PROPOSED IMPROVEMENTS/SOLUTIONS

3.3.1 ADMIN

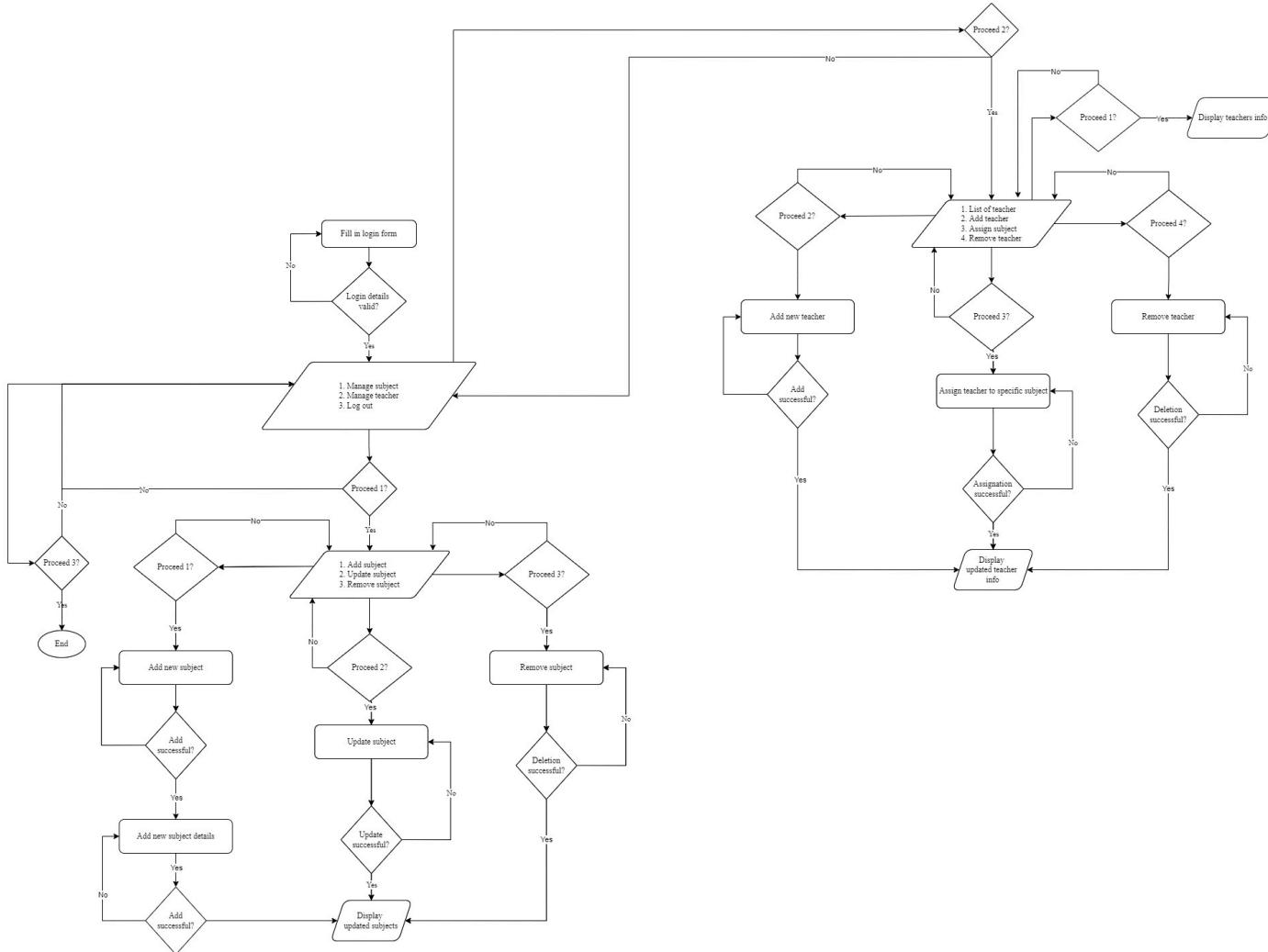


Figure 3.3: Flowchart Proposed System (Admin)

Admins must first log in to the system using their IC number or email address and password correctly, or they will be unable to access it. The admins can pick whether they want to manage profile, manage subject, manage teacher, or view report sales from the main menu.

The admins can change personal details under the manage profile section. Other than that, they can select whether to add new subjects, change subject details, or remove undesired subjects from the manage subject page. The revised list of subjects will be shown if it is successful.

This proposed system will display the manage teacher module. The admins can choose whether they want to browse a list of teachers, add teachers, assign students, or remove the teachers from this page. If all goes well, the updated list of teachers and students information will be displayed.

In addition to this, the system can also display information about the students. The teachers must be assigned to specific students depending on their enrollment in the specific subjects. The information will be saved in the database if the update is successful.

3.3.2 STUDENT

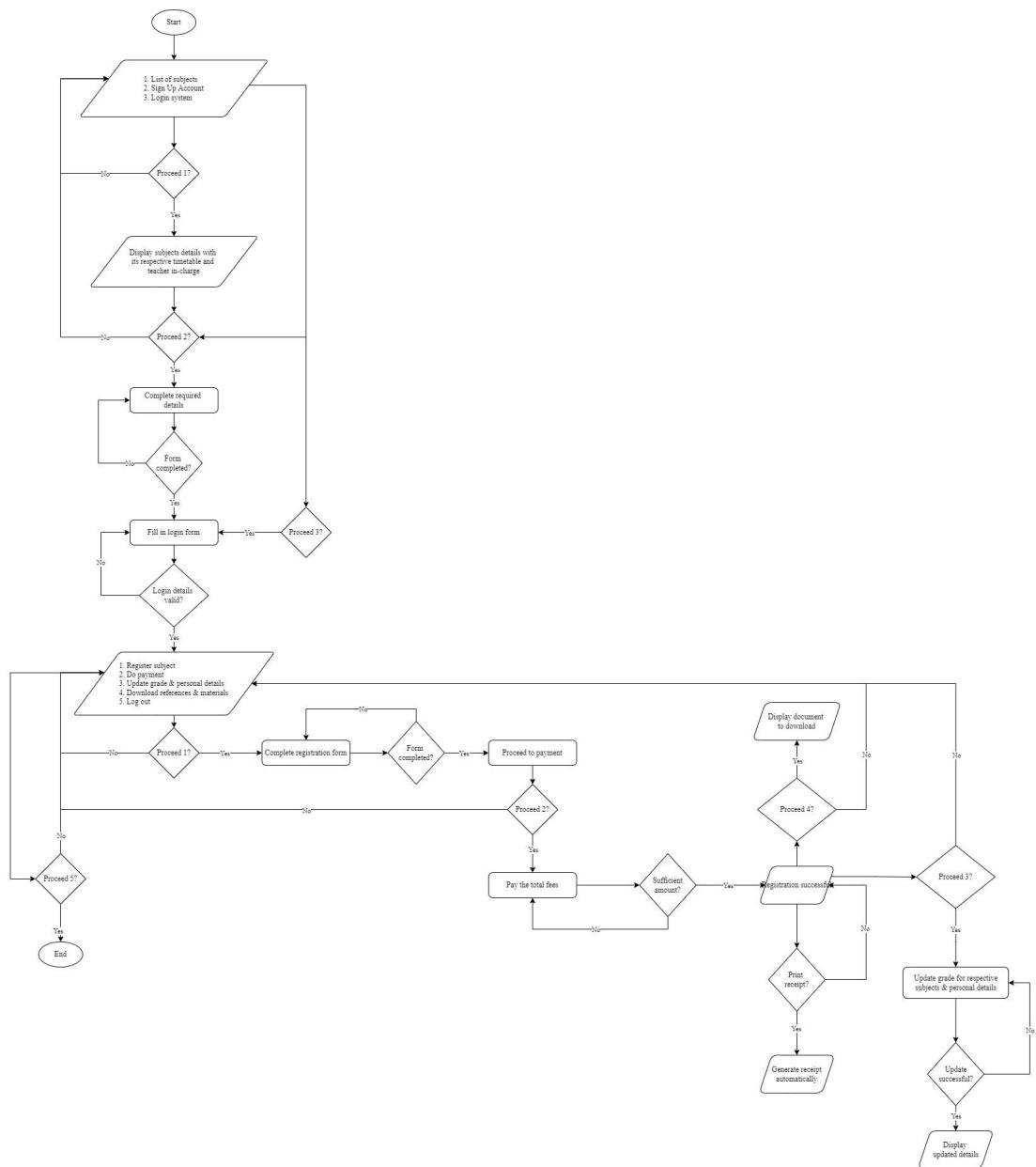


Figure 3.4: Flowchart Proposed System (Student)

On the portal, the students can see a list of subjects as well as their fees. They must successfully log in to the system using their IC number or email address and password to continue using it, otherwise they will be unable to access the portal. If the students forget their password, they can click on the ‘Forget Password’ button, but they must provide the right phone number and email address. The student must first create an account in order to log into the system.

Once the students have logged into the system, they can choose to manage their profile, view subjects, enroll for desired subjects, view teacher information, manage grades, either update current grades or view grade achievements for the subjects they are enrolled in, and view all of their enrollment history.

The student must then pay the total fee before proceeding with the subject enrolment. The system will then print the payment receipt. The students can also view and download the schedule. Finally, they will be given class materials as well as video references to refer to.

3.3.3 TEACHER

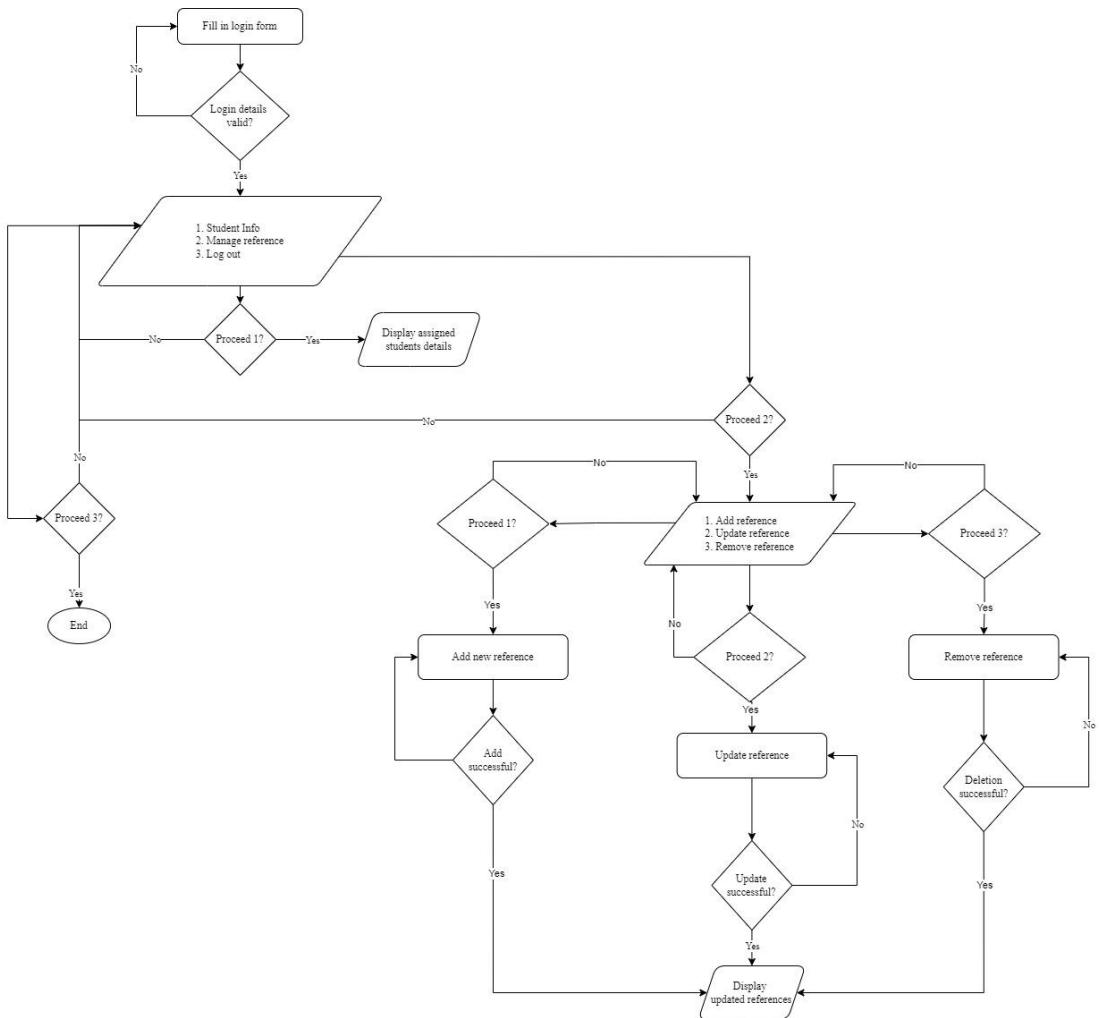


Figure 3.5: Flowchart Proposed System (Teacher)

The teachers must successfully log in to the system using their IC number or email address and password to continue using it, otherwise they will be unable to access it. After all, they have the option of managing their profile, viewing student information, or managing references. The teachers can choose to add, update, or remove references for their students to refer to on the manage reference page.

3.4 REQUIREMENT ANALYSIS OF THE TO-BE SYSTEM

3.4.1 FUNCTIONAL REQUIREMENT (PROCESS MODEL)

3.4.1.1 STRUCTURE CHART

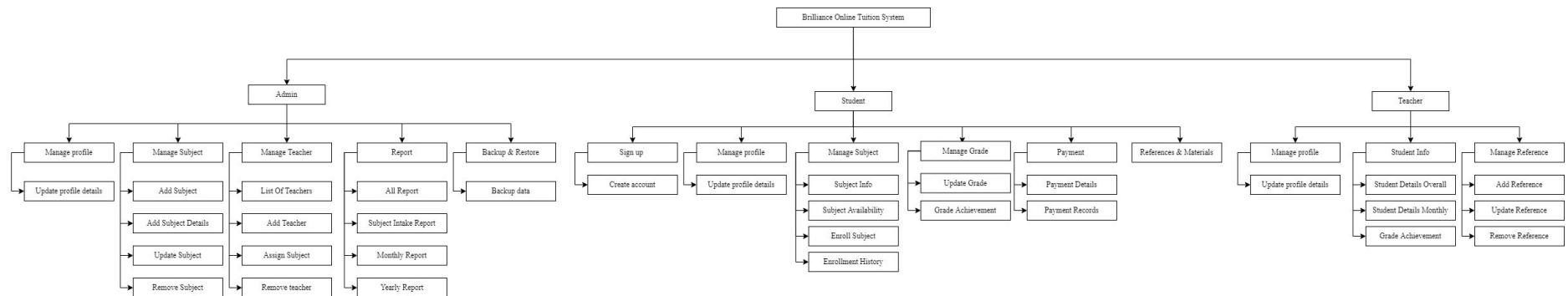


Figure 3.6: Structure Chart

3.4.1.2 CONTEXT DIAGRAM

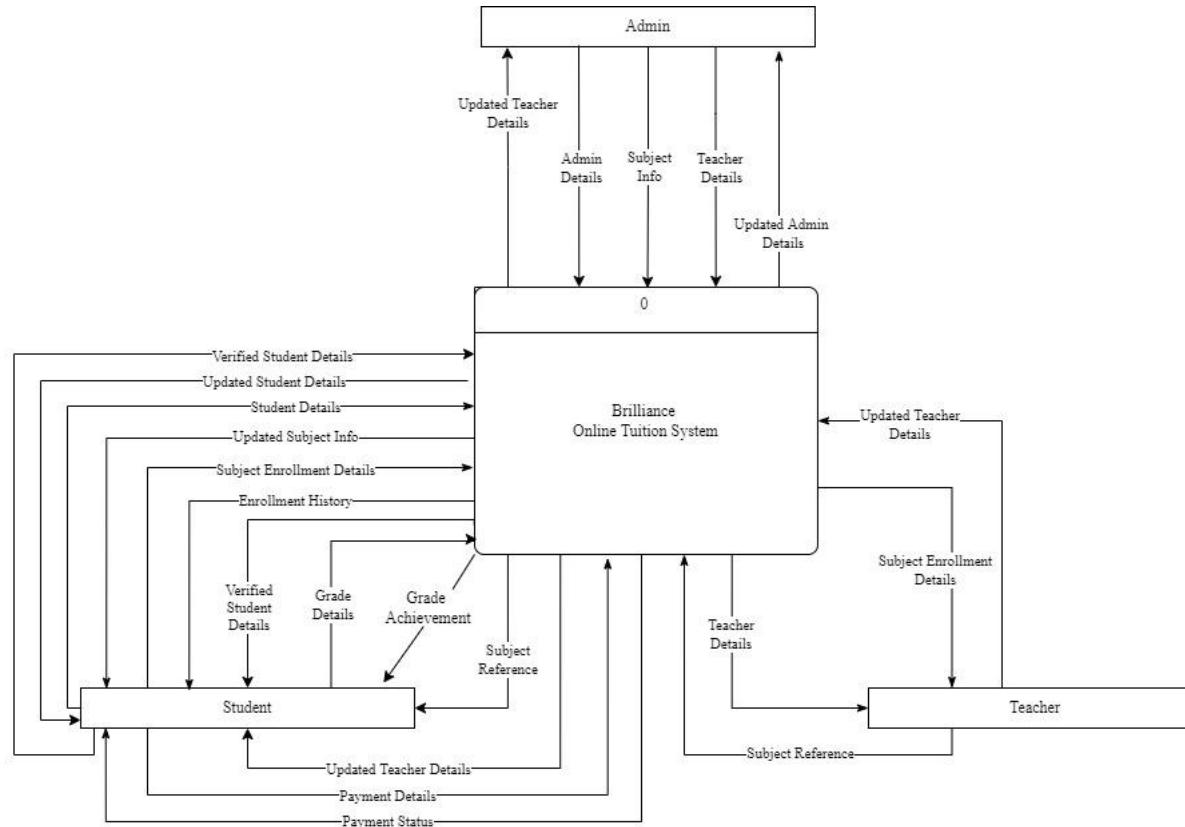


Figure 3.7: Context Diagram

3.4.1.3 DFD LEVEL 0

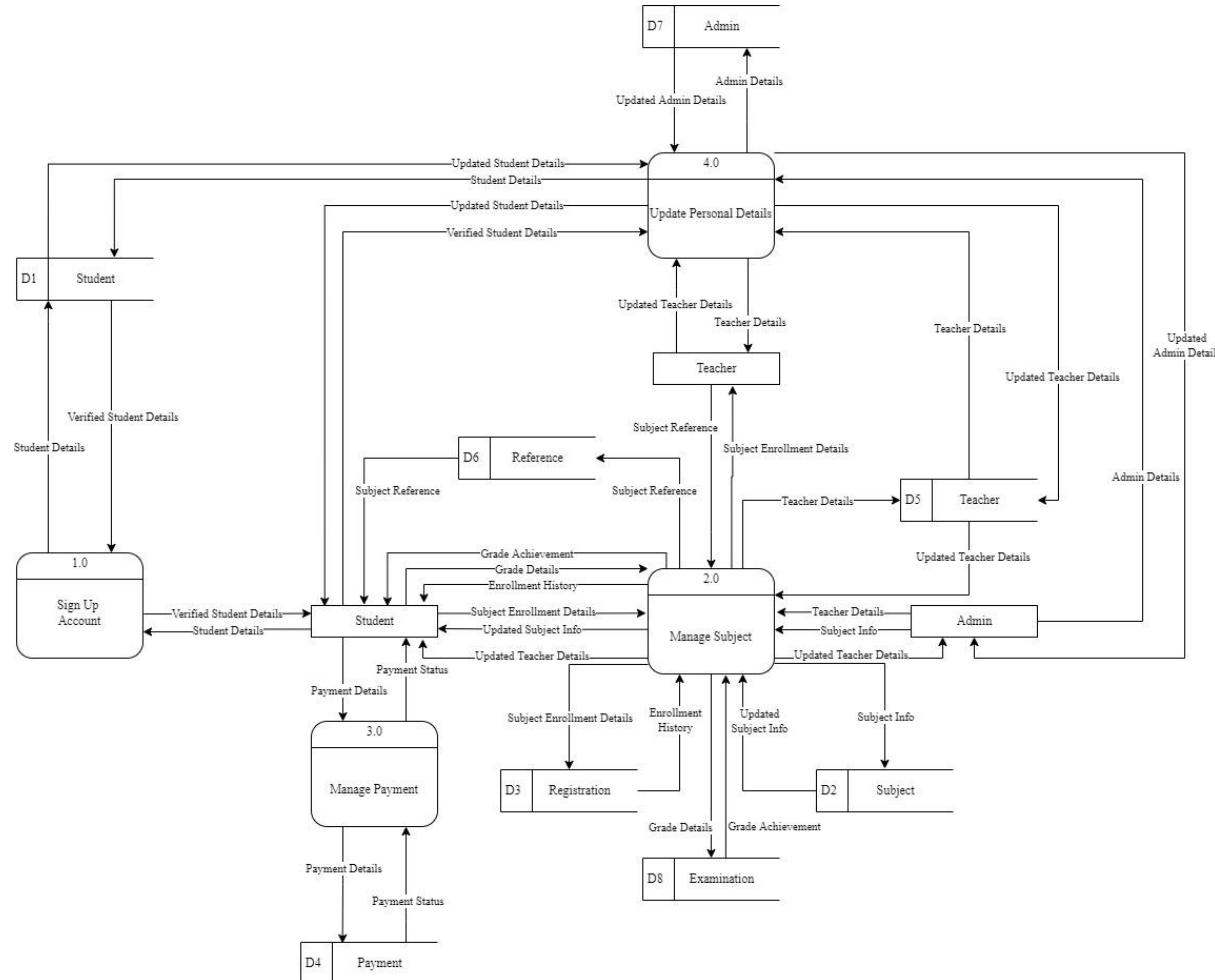


Figure 3.8: DFD Level 0

3.4.1.4 DFD LEVEL 1

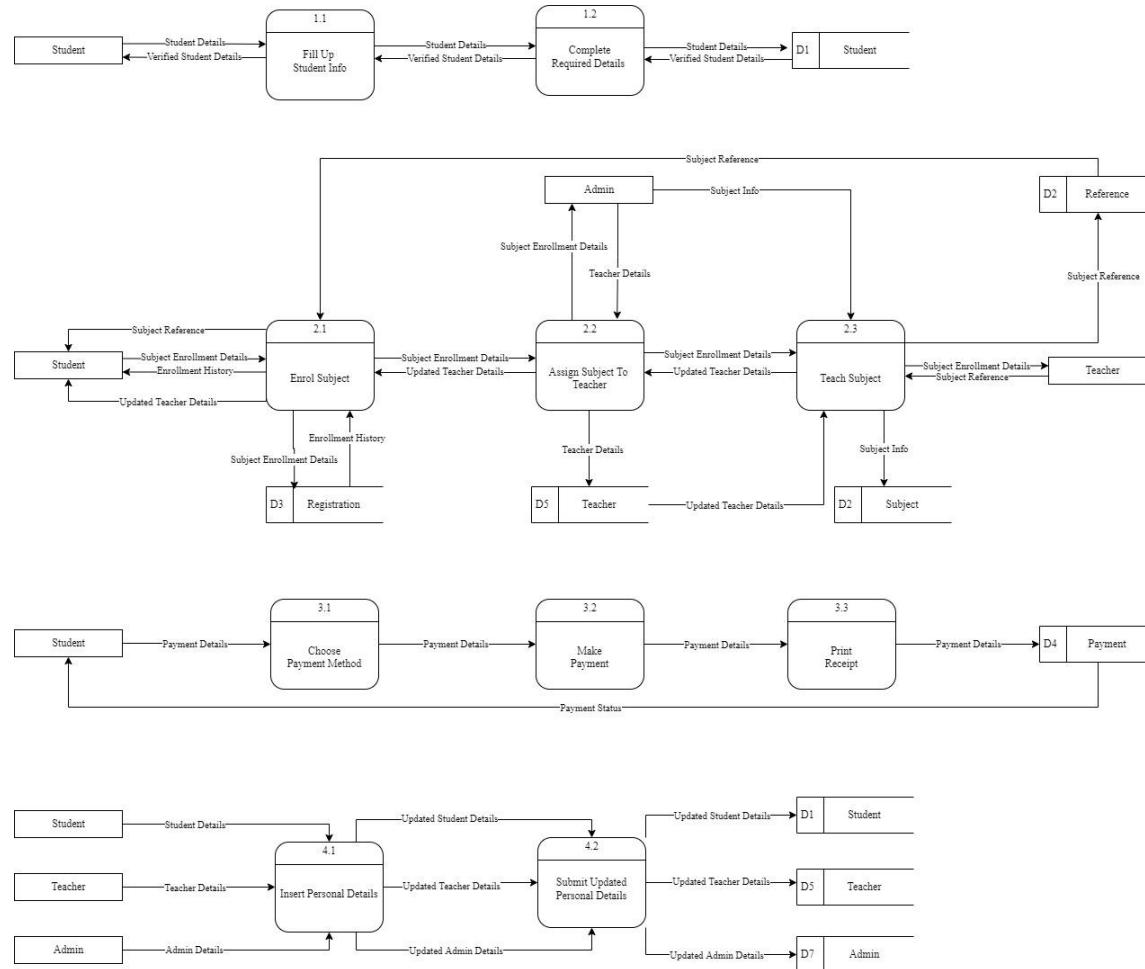


Figure 3.9: DFD Level 1

3.4.1.5 DFD LEVEL 2

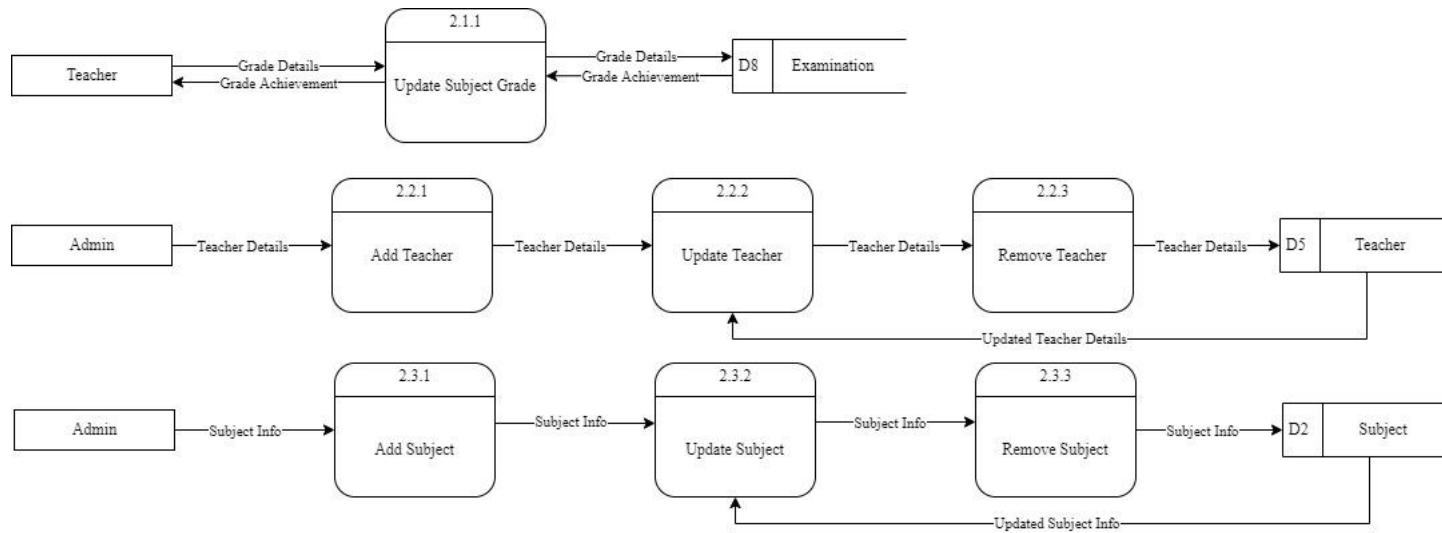


Figure 3.10: DFD Level 2

3.4.2 NON-FUNCTIONAL REQUIREMENT

Non-functional requirement	Explanation
Performance	Each page must load within 10 seconds.
Security	Require strong password at least 8 characters, mix letter lower and upper case, number, and symbol.
Reliability	The system will be functioning 24 hours 7 days a week.
Usability	The navigation and icons are easy to understand at various ages.
Maintainability	A high chance of issue-fixing within 24 hours.

Table 3.1: Non-Functional Requirement

3.4.3 OTHERS REQUIREMENT

3.4.3.1 SOFTWARE REQUIREMENT

Development Tool: **Microsoft Visual Studio 2019**

Programming Language: **PHP**

Microsoft Visual Studio 2019 was chosen as the coding development tool. PHP is also used as a programming language. Microsoft Visual Studio 2019 is the best development tool to utilise. Furthermore, as compared to other programming tools, Microsoft Visual Studio 2019 is simpler to use, making it easier to execute this Brilliance Online Tuition System project more efficiently and systematically.

Operating System / Server: **Microsoft Windows 10**

Database: **MySQL (PHPMyAdmin), AWS Management Console, Composer**

Microsoft Windows 10 is used as the operating system because it is compatible with the hardware tools used throughout the development of this Brilliance Online Tuition System project. As for the database, MySQL (PHPMyAdmin) is being used because for the database is easier to connect with the development tools that have been used. AWS Management Console was picked as the cloud database as it is free and simple to use, has a good SQL engine compatibility and provides SQL tools and applications required for database creation.

Other software: **WPS Office, XLSX Worksheet, Microsoft Visio Drawing**

WPS Office is used in the system project report since the hardware tool, such as a laptop, already includes this software and it is free. The Gantt Chart is made using an XLSX Worksheet. Microsoft Visio Drawing is an application for creating diagrams like Entity Relationship Diagrams (ERD), Context Diagrams (CD), and Data Flow Diagrams (DFD). This is due to the ease of use of this software application, particularly with the design that corresponds to the diagram.

3.4.3.2 HARDWARE REQUIREMENT

Hardware Requirement: Laptop

The use of a laptop is essential to completing this project successfully. This is because launching a development tool, software, or even a database requires a laptop. Furthermore, due to their lightweight design and weight, laptop is relatively simple to use as it can be brought everywhere. As a result, this project can be completed anywhere.

Network Requirement: Wi-Fi

This Brilliance Online Tuition System project also necessitates network requirement such as WiFi. This is because information and reference materials from the Internet must be searched in order to create a project that is unique and tailored to the needs of the user.

3.5 CONCLUSION

As a result, we can see the differences between the present and the proposed system. All of the class materials and references are easily accessible and downloadable by the students. Not only that, they can also download or check the timetable on the system if they forget their class schedule. Aside from that, the system assists the students in monitoring their grade achievement in the subjects they are learning.

The next chapter will go over the system design phase in greater depth. This also applies to the system's database design, which will cover the project's conceptual, logical and physical design. The output of the GUI according to the functional and non-functional requirement stated in this chapter also will be provided.

CHAPTER IV

DESIGN

4.1 INTRODUCTION

This chapter will discuss about the system design phase to provide sufficient detailed data and information about the Brilliance Online Tuition System. This is one of the important parts before the project begin as the process of designing the elements of a system such as the architecture, modules and interfaces design of those components and the data that goes through this project. In order to complete this system design phase, the conceptual design, the logical design, the physical design and the graphical user interface (GUI) design are required.

4.2 INTRODUCTORY PREVIEW

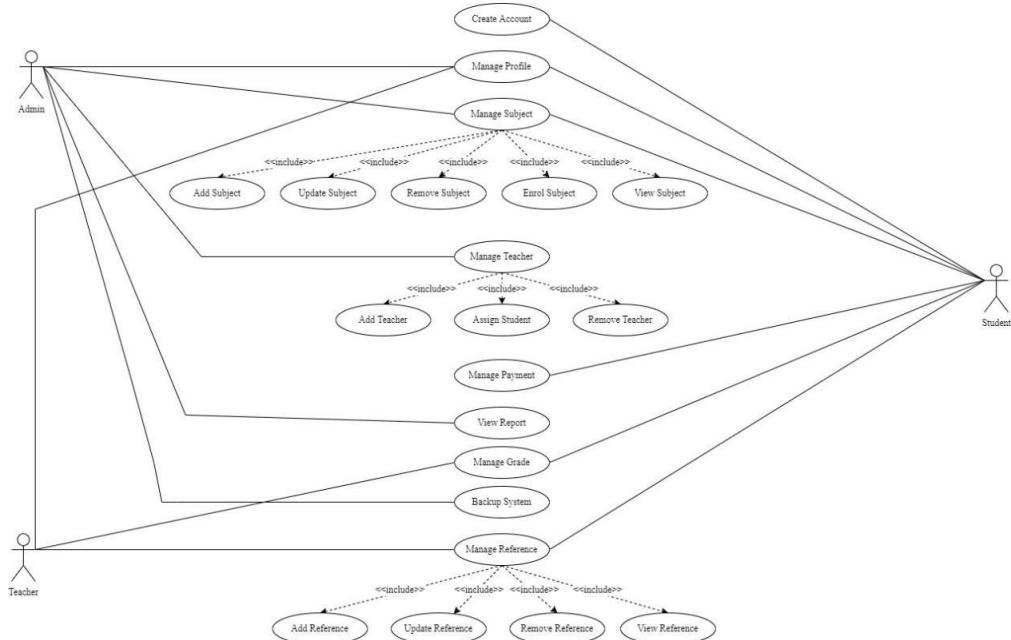


Figure 4.1: Object-Oriented Analysis And Design Diagram

4.3 DATABASE DESIGN

The Admin Module, Teacher Module, and Student Module are the three modules that will be accessible. These modules include Manage Profile, which allows the users to update their personal information in the correct format. Furthermore, if the users forget their password, they can change it by entering the correct email address, phone number, and IC number in the Forget Password box on the Login Page.

ADMIN MODULE

In the Admin Module, there will be three main phases which are the Manage Subject, Manage Teacher and Report. The admin can add new subjects, update existing subjects, and delete unnecessary subjects in the Manage Subject section. Meanwhile, in the Manage Teacher section, the administrator can see a list of teachers, add new teachers, and assign teachers to specific subjects, as well as remove the teachers who are no longer needed. Last but not least, the admin can view the monthly sales report and analyze which subjects have the most students based on the graph.

TEACHER MODULE

In the Teacher Module, there will be two main phases which are the Student Info and Manage Reference. The teacher can add new references, update existing references, and eliminate undesirable references for the students to use as class materials. Aside from that, the teacher can view their students' personal information as well as their examination grades.

STUDENT MODULE

Manage Subject, Manage Grade, Payment, References, and Materials are the four main phases of the Student Module. Under the Manage Subject section, the student can see all of the subjects that are available, enroll in any that are applicable for their age, and view their entire enrollment history. In order for them or their respective teachers to see the improvement based on the subjects that have been enrolled in the system, the student must also add or update the examination grades. Aside from that, the students can pay to enroll in the class and receive the references as class materials.

4.3.1 CONCEPTUAL DESIGN

4.3.1.1 ENTITY RELATIONSHIP DIAGRAM (ERD)

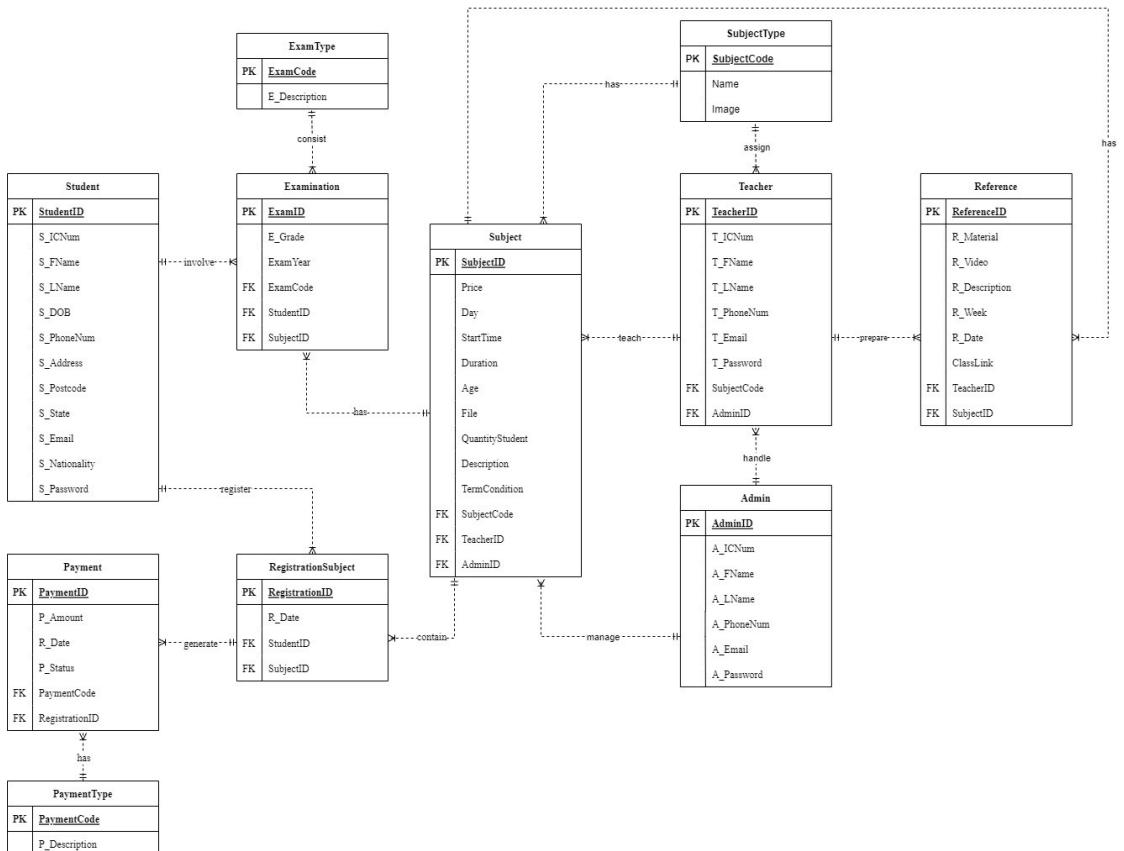


Figure 4.2: Entity Relationship Diagram

4.3.1.2 BUSINESS RULES

SUBJECT - SUBJECTTYPE

Each subjectType has one or many subjects and each subject is under one and only one subjectType.

STUDENT - SUBJECT

Each student can register one or many subjects and each subject can be registered by one or many students. Since it is many-to-many relationship, it produces a bridge table called RegistrationSubject. Hence, each student can register one or many RegistrationSubject and each Subject can contain one or many RegistrationSubject.

ADMIN - SUBJECT

Each admin can manage one or many subjects and each subject can be managed by one and only one admin.

ADMIN - TEACHER

Each admin can handle one or many teachers and each teacher can be managed by one and only one admin.

SUBJECTTYPE - TEACHER

Each subjecttype is assigned to one or many teachers but each teacher is assigned to one and only one subjecttype.

TEACHER - SUBJECT

Each teacher can teach one and or many subjects but each subject can be taught by one and only one teacher.

TEACHER - REFERENCE - SUBJECT

Each teacher can prepare one or many subjects' materials and each subject can have one or many materials. Since it is many-to-many relationship, it produces a bridge table called Reference. Hence, each teacher can prepare one or many Reference and each subject has one or many Reference.

REGISTRATIONSUBJECT - PAYMENT

Each RegistrationSubject generate one or many payment but each payment generate one and only one RegistrationSubject.

PAYMENT - PAYMENTTYPE

Each payment has one and only one paymentType but each paymentType has one or many payment.

STUDENT - EXAMINATION - SUBJECT

Each student involves in one or many subjects and each subject has one or many students. Since it is many-to-many relationship, it produces a bridge table called Examination. Hence, each student will involve in one or many Examination and each subject has one or many Examination.

EXAMINATION - EXAMTYPE

Each examination has one and only one examType but each examType has one or many examination.

4.3.2 LOGICAL DESIGN

4.3.2.1 DATA DICTIONARY

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
AdminID	Admin's ID	Int (10)	99999		Yes	PK	
A_ICNum	Admin's IC Number	Varchar (14)	Xxxxxxxx		Yes		
A_FName	Admin's First Name	Varchar (50)	Xxxxxxxx				
A_LName	Admin's Last Name	Varchar (50)	Xxxxxxxx				
A_PhoneNum	Admin's Contact Number	Varchar (12)	Xxxxxxxx		Yes		
A_Email	Admin's Email	Varchar (100)	Xxxxxxxx		Yes		
A_Password	Admin's Password	Varchar (50)	Xxxxxxxx				

Table 4.1: Admin

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
SubjectCode	Subject's Code	Int (10)	99999		Yes	PK	
Name	Subject's Name	Varchar (30)	Xxxxxxxx				
Image	Subject's Image	Varchar (255)	Xxxxxxxx				

Table 4.2: SubjectType

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
TeacherID	Teacher's ID	Int (10)	99999		Yes	PK	
T_ICNum	Teacher's IC Number	Varchar (14)	Xxxxxxxx		Yes		
T_FName	Teacher's First Name	Varchar (50)	Xxxxxxxx				
T_LName	Teacher's Last Name	Varchar (50)	Xxxxxxxx				
T_PhoneNum	Teacher's Contact Number	Varchar (12)	Xxxxxxxx		Yes		
T_Email	Teacher's Email	Varchar (100)	Xxxxxxxx		Yes		
T_Password	Teacher's Password	Varchar (50)	Xxxxxxxx				
SubjectCode	Subject's Code	Int(10)	99999	Yes		FK	SubjectType
AdminID	Admin's ID	Int(10)	99999	Yes		FK	Admin

Table 4.3: Teacher

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
SubjectID	Subject's ID	Int (10)	99999		Yes	PK	
Price	Subject's Price	Int (10)	99999				
Day	Subject's Day	Varchar (10)	Xxxxxxxx				
StartTime	Subject's Time	Varchar (10)	Xxxxxxxx				
Duration	Subject's Duration (Hour)	Varchar (10)	Xxxxxxxx				
Age	Recommended Age	Int (2)	99999				
File	Subject's Timetable	Longblob	-				
QuantityStudent	Subject's Quantity Intake	Int (2)	99999				
Description	Subject's Description	Varchar (255)	Xxxxxxxx				
TermCondition	Terms & Condition	Varchar (255)	Xxxxxxxx				
TeacherID	Teacher's ID	Int (10)	99999	Yes		FK	Teacher
SubjectCode	Subject's Code	Int (10)	99999	Yes		FK	SubjectType
AdminID	Admin's ID	Int (10)	99999	Yes		FK	Admin

Table 4.4: Subject

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
StudentID	Student's ID	Int (10)	99999		Yes	PK	
S_ICNum	Student's IC Number	Varchar (14)	Xxxxxxxx		Yes		
S_FName	Student's First Name	Varchar (50)	Xxxxxxxx				
S_LName	Student's Last Name	Varchar (50)	Xxxxxxxx				
S_DOB	Student's Date-Of-Birth	Date	yyyy-mm-dd				
S_PhoneNum	Student's Contact Number	Varchar (12)	Xxxxxxxx		Yes		
S_Address	Student's Address	Varchar(255)	Xxxxxxxx				
S_Postcode	Student's Postcode	Int(5)	99999				
S_State	Student's State	Varchar (30)	Xxxxxxxx				
S_Email	Student's Email	Varchar (100)	Xxxxxxxx		Yes		
S_Nationality	Student's Nationality	Varchar (30)	Xxxxxxxx				
S_Password	Student's Password	Varchar (50)	Xxxxxxxx				

Table 4.5: Student

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
RegistrationID	Registration's ID	Int (10)	99999		Yes	PK	
R_Date	Registration's Date	timestamp	-				
StudentID	Student's ID	Int (10)	99999			FK	Student
SubjectID	Subject's ID	Int (10)	99999			FK	Subject

Table 4.6: RegistrationSubject

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
PaymentCode	Payment's Code	Varchar(10)	Xxxxxxxx		Yes	PK	
P_Description	Payment's Description	Varchar(255)	Xxxxxxxx				

Table 4.7: PaymentType

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
PaymentID	Payment's ID	Int (10)	99999		Yes	PK	
P_Amount	Payment's Amount	Varchar(255)	Xxxxxxxx				
R_Date	Payment's Date	Varchar(255)	Xxxxxxxx				
P_Status	Status (Paid)	Varchar(255)	Xxxxxxxx				
PaymentCode	Payment's Code	Varchar(10)	Xxxxxxxx			FK	PaymentType
RegistrationID	Registration's ID	Int (10)	99999			FK	RegistrationSubject

Table 4.8: Payment

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
ExamCode	Examination's Code	Varchar(10)	Xxxxxxxx		Yes	PK	
E_Description	Examination's Description	Varchar(255)	Xxxxxxxx				

Table 4.9: ExamType

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
ExamID	Examination's ID	Int (10)	99999		Yes	PK	
E_Grade	Examination's Grade	Varchar(5)	Xxxxxxx				
ExamCode	Examination's Code	Varchar(10)	Xxxxxxx			FK	ExamType
ExamYear	Examination's Year	Varchar(4)	Xxxxxxx				
StudentID	Student's ID	Int(10)	99999			FK	Student
SubjectID	Subject's ID	Int (10)	99999			FK	Subject

Table 4.10: Examination

Attribute Name	Content	Datatype (Size)	Format	Null	Unique	PK/ FK	Reference Table
ReferenceID	Reference's ID	Int (10)	99999		Yes	PK	
R_Material	Reference's Material	Varchar(255)	Xxxxxxxx				
R_Description	Reference's Description	Varchar(255)	Xxxxxxxx	Yes			
R_Video	Reference's Video	Varchar(255)	Xxxxxxxx	Yes			
R_Week	Reference's Week	Varchar(10)	Xxxxxxxx				
R_Date	Reference's Date	Varchar(255)	Xxxxxxxx				
ClassLink	Class Link	Varchar(255)	Xxxxxxxx				
SubjectID	Subject's ID	Int (10)	99999			FK	Subject
TeacherID	Teacher's ID	Int(10)	99999			FK	Teacher

Table 4.11: Reference

4.3.2.2 QUERY DESIGN

EXAMPLE JOIN QUERIES - INNER JOIN

Inner Join is used to join tables, and in this case, six tables are joined using Inner Join to display the student's information.

```
<?php  
    $aid=$_SESSION['id'];  
    $ret = "SELECT * FROM teacher h  
        inner join subject j on h.TeacherID=j.TeacherID  
        inner join subjecttype t on t.subjectcode=j.subjectcode  
        inner join registrationsubject r on j.subjectid=r.subjectid  
        inner join student s on s.StudentID=r.StudentID  
        inner join payment p on p.registrationid=r.registrationid  
        WHERE h.TeacherID=$aid  
        group by s.StudentID";  
  
    $stmt= $mysqli->prepare($ret) ;  
    $stmt->execute() ;  
    $res=$stmt->get_result();  
    $cnt=1;  
    while($row=$res->fetch_object())  
    {  
        ?>  
        <tr>  
            <td><?php echo $cnt;;?></td>  
            <td><?php echo $row->S_ICNum;?></td>  
            <td><?php echo $row->S_FName;?>  
            <?php echo $row->S_LName;?></td>  
            <td><?php echo $row->S_PhoneNum;?></td>  
            <td><?php echo $row->S_Email;?></td>  
            <td><?php echo $row->Age;?> Years Old -  
            <?php echo $row->Name;?></td>
```

```
<td><?php echo $row->Day;?>
<?php echo $row->StartTime;?></td>
</td>
</tr>

<?php
$cnt=$cnt+1;

?

?>
```

EXAMPLE AGGREGATE QUERIES - COUNT

In order to avoid duplication, count is used to calculate data from the database, and if the data has already been counted or exists in the database, no insertion query is required. Additionally, count is used to calculate the total amount that is not an integer.

```
if(isset($_POST['submit']))
{
    $aid=$_GET['RegistrationID'];
    $p_type_code=$_POST['pm'];
    $p_status='Paid';
    $month=$_POST['month'];
    foreach($_GET['RegistrationID'] as $check)
    {
        $query="SELECT * FROM registrationsubject r
                Inner join subject l ON r.SubjectID = l.SubjectID inner
                join subjecttype t on t.subjectcode=l.subjectcode WHERE
                r.RegistrationID=? ";
        $stmt = $mysqli->prepare($query);
        $stmt->bind_param('i',$check);
        $stmt->execute();
        $res=$stmt->get_result();
        while($row=$res->fetch_object())
        {
            ?>
            <?php
                $sname= $row->Name;
                $subjectid= $row->SubjectID;
                $scode= $row->SubjectCode;
                $sday= $row->Day;
                $stime= $row->StartTime;
            ?>
            <?php
```

```

}

$result ="SELECT count(*) FROM Payment WHERE R_Date=? &&
        RegistrationID=?;

$stmt = $mysqli->prepare($result);
$stmt->bind_param('si',$month,$check);
$stmt->execute();
$stmt->bind_result($count);
$stmt->fetch();
$stmt->close();

if($count>0)
{
    echo "<script>alert('Payment for " . $sname. " in " . $month. " already
made.');//</script>";
    header('Refresh:0.1; url=student-pay.php');
}
else
{
    $query="SELECT count(r.StudentID) as a, (l.QuantityStudent -
        count(r.StudentID)) as b, l.QuantityStudent, l.Price,
        r.RegistrationID, s.Name FROM registrationsubject r
        inner join student d on r.studentid=d.studentid
        inner join subject l on r.SubjectID = l.SubjectID
        inner join subjecttype s on s.subjectcode=l.subjectcode
        inner join payment p on p.registrationid=r.registrationid
        WHERE l.SubjectID ='$subjectid' && p.R_Date LIKE
        '$month%';

$stmt = $mysqli->prepare($query);
$stmt->execute();
$res=$stmt->get_result();
while($row=$res->fetch_object())
{
    ?>
<?php
    $totalall = 0.00;
}

```

```

        $LPrice= $row->Price;
        $newPrice= 1.06 * $LPrice;
        $totalall += $newPrice;
        $p_registerID= $row->RegistrationID;
        $sname= $row->Name;
        $qty= $row->a;
        $qtystudent= $row->b;
    ?>
<?php
}
if($qtystudent>0)
{
    $query="INSERT INTO PAYMENT
(P_Amount,R_Date,P_Status,PaymentCode,RegistrationID)
values(?, ?, ?, ?, ?)";
    $stmt = $mysqli->prepare($query);
    $rc=$stmt-> bind_param
    ('ssssi',$totalall,$month,$p_status,$p_type_code,$check);
    $stmt->execute();

    echo"<script>alert('Payment for " . $sname. " in " . $month. "
has been received successfully.');//</script>";
    header('Refresh:0.1; url=student-pay.php');
}
else
{
    echo"<script>alert('Insufficient seat. We do not accept any
student admission for " . $sname. " in " . $month. ".');//</script>";
    header('Refresh:0.1; url=student-pay.php');
}
}
}

```

4.3.3 PHYSICAL DESIGN

4.3.3.1 SELECTION OF DBMS

A database management system (DBMS) is software that captures and analyses data by interacting with the user, other applications, and the database itself. The general purpose of a database management system (DBMS) is to design and allow the creation, querying, updating, and administration of databases. MySQL is being used as the DBMS in this Brilliance Online Tuition System since it is simple to use.

The MySQL also has a high level of data security, which is important for this system because there will be financial transactions that require a high level of security. The MySQL database server also includes a unique storage-engine framework that allows system administrators to configure the MySQL database server for optimal performance.

4.3.3.2 DATABASE OBJECTS

Any defined object in a database that is used to store or reference data is referred to as a database object. It has the ability to store and manipulate data. There will be a few sections in this Brilliance Online Tuition System that will use the database objects to hold and manipulate data. In the Payment section, for example, the database object is used to hold data and pass it to another page before transferring it to the database.

4.3.3.3 SECURITY MECHANISM

Homepage

The homepage includes a list of subjects, fees, and timetables, as well as frequently asked questions (FAQs) and the admin's contact information in case of any questions. Since the data is publicly accessible and no personal data is presented, there is no security used.

ADMIN MODULE

Only the registered admin can access the admin module by entering the correct IC number or email address and password. The admin can use the module if all of the required information has been entered correctly. The admin has the privilege to add, update, or delete data, such as the information of a subject. The admin also has the privilege to view the teacher's and the student's information except for their passwords.

TEACHER MODULE

The teacher module can only be accessed by the registered teacher by entering the correct IC number or email address and password. If all of the required information has been entered correctly, the module can be used by the teacher. The teacher has the privilege to add, update, or delete data, such as class materials information. The teacher also has the ability to view only the information of the students they teach, with the exception of their passwords.

STUDENT MODULE

By entering the correct IC number or email address and password, only the registered student has access to the student module. The module can be used by the student once all of the required information has been entered correctly. The student has the option of enrolling the desired subjects. The student can also make a payment by selecting the subjects and the month they want to pay for, and viewing the price. The student can also view only the information of the references for the month they have paid for, as well as the teachers who teach the subjects they have enrolled in.

PASSWORD

Hashed passwords will be used as a security mechanism in all modules, including the Admin, Teacher, and Student modules. The system will automatically encrypted the password once the user enters or updates it.

4.3.3.4 DATABASE CONTIGENCY (BACKUP MECHANISM)

The Brilliance Online Tuition System use AWS Management Console as a platform to back up the data. The administrator can back up all of the data on the system by performing a full recovery backup. The backup data will be stored locally on the computer as well as in a cloud database. The data backup that admin will receive here is completely secure because it is extracted from the local database. To perform a backup, the administrator simply clicks the "Backup & Restore" button that appears after successfully logging in the system.

LOCAL BACKUP

When an administrator clicks the "Backup & Restore" button, a mysqldump.sql file is created in the local computer files. It will provide date of the backup.

Name	Date modified	Type	Size
mysqldump-20220612-0733	12/6/2022 1:33 PM	SQL File	16 KB
mysqldump-20220612-0741	12/6/2022 1:41 PM	SQL File	16 KB

Figure 4.3: Mysqldump.sql File

The contents of the mysqldump.sql file are shown in the figure below:

```
-- MariaDB dump 10.19 Distrib 10.4.19-MariaDB, for Win64 (AMD64)
--
-- Host: localhost      Database: tuition
-- -----
-- Server version 10.4.19-MariaDB

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!40101 SET NAMES utf8mb4 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
-- Table structure for table `admin`
--

DROP TABLE IF EXISTS `admin`;
/*!40101 SET @saved_cs_client      = @@character_set_client */;
/*!40101 SET character_set_client = utf8 */;
CREATE TABLE `admin` (
  `AdminID` int(10) NOT NULL AUTO_INCREMENT,
  `A_ICNum` varchar(14) NOT NULL,
  `A_FName` varchar(50) NOT NULL,
  `A_LName` varchar(50) NOT NULL,
  `A_PhoneNum` varchar(12) NOT NULL,
  `A_Email` varchar(100) NOT NULL,
  `A_Password` varchar(50) NOT NULL,
```

Figure 4.4: Contents Mysqldump.sql File

CLOUD BACKUP

The buckets designed to store Brilliance Online Tuition System data files are shown in the figure below. The access level has been set to not public, allowing only this account's users access.

Buckets (1) [Info](#)

Buckets are containers for data stored in S3. [Learn more](#)

[C](#) [Copy ARN](#) [Empty](#) [Delete](#) [Create bucket](#)

Find buckets by name

Name	AWS Region	Access	Creation date
mytuition	Asia Pacific (Singapore) ap-southeast-1	Bucket and objects not public	June 12, 2022, 13:23:31 (UTC+08:00)

After clicking the "Backup & Restore" button, the folder and all mysqldump.sql files are stored in the cloud. By looking at the last modified part, the administrator can determine when the backup was made.

Objects (1)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

[C](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#)

[Create folder](#) [Upload](#)

Find objects by prefix

Name	Type	Last modified	Size	Storage class
mytuition/	Folder	-	-	-

Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

[C](#) [Copy S3 URI](#) [Copy URL](#) [Download](#) [Open](#) [Delete](#) [Actions](#)

[Create folder](#) [Upload](#)

Find objects by prefix

Name	Type	Last modified	Size	Storage class
mysqldump-20220612-0733.sql	sql	June 12, 2022, 13:33:51 (UTC+08:00)	15.0 KB	Standard
mysqldump-20220612-0741.sql	sql	June 12, 2022, 13:41:13 (UTC+08:00)	15.0 KB	Standard

Figure 4.5: Bucket Page

DATABASE INTEGRATION

The integration process between the local database, cloud database, and system just requires one file, `phpbu.xml`. This file will create a new file (`mysqldump.sql`) in the project's backup folder and in the cloud database using data from the local database. As a result, any data from the local backup will be synchronised with the cloud backup. The coding of `phpbu.xml` is shown as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<phpbu xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:noNamespaceSchemaLocation="http://schema.phpbu.de/6.0/phpbu.xsd">
    <backups>
        <backup name="bots">
            <!-- backup source -->
            <source type="mysqldump">
                <option name="databases" value="tuition"/> Database name
                <option name="user" value="root"/>
                <option name="pathToMysqldump" value="C:\xampp\mysql\bin"/>
                <option name="password" value="" />
            </source>
            <!-- where should the backup be stored --> Location of where the backup to be store in local computer.
            <target dirname="C:\xampp\htdocs\bots\admin\backup"
                  filename="mysqldump-%Y%m%d-%H%i.sql"/>
            <!-- sync amazons3 -->
            <sync type="amazons3">
                <option name="key" value="AKIAQAXNB3YCICH7UHPU"/>
                <option name="secret"
                      value="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"/>
                <option name="bucket" value="mytuition"/>
                <option name="region" value="ap-southeast-1"/>
                <option name="path" value="mytuition"/>
            </sync>
        </backup></backups></phpbu>
```

The configuration of cloud database which is AWS Amazon S3.

4.4 GRAPHICAL USER INTERFACE (GUI) DESIGN

4.4.1 HOMEPAGE

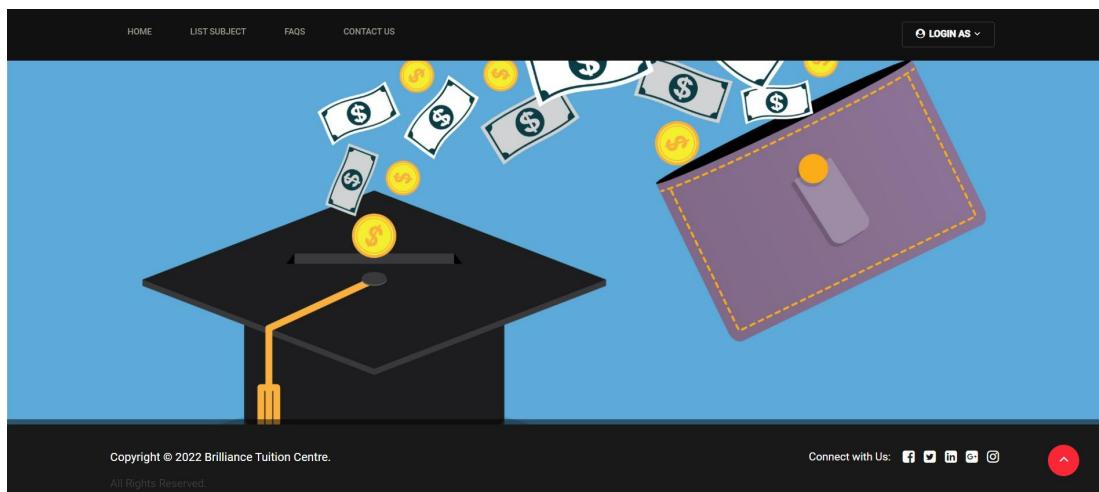


Figure 4.6: Homepage

When the user clicks the List Subject button, the following page will appear. It shows the list of subjects available in the system, as well as the price of each subject, the timetable, the recommended age, and so on.

ALL SUBJECT DETAILS						
Show 10 entries	Search:					
NO.	SUBJECT	DAY	TIME	FEE	DESCRIPTION	T&C
1	ADDITIONAL MATHEMATICS	Monday	8pm-10pm	RM35	None	None
	16 Years Old Additional Mathematics					
2	MATHEMATICS	Tuesday	8pm-10pm	RM25	Calculation can be done in a few simple steps.	None
	12 Years Old Mathematics					
3	CHEMISTRY	Monday	8pm-10pm	RM45	As simple as ABC, enhance your lab experiment step-by-step memory.	Has completed or watched a lab experiment, but it's not compulsory to do so.

Figure 4.7: List Of Subjects

When the user clicks the FAQs button, the following page will appear. It answers frequently asked questions and provides a Contact Us link if the user needs to contact the administrator for more information.

FAQs

Home > FAQs

How can I pay for my subject?

You can pay for your subject enrollment by using debit card, credit card, online banking or e-wallet.

This is a short list of our most frequently asked questions. For more information or if you need support, please [Contact Us](#).

Figure 4.8: Frequently Asked Questions (FAQs)

When the user clicks the Contact Us button, the following page will appear. It displays a list of administrators' contact information, such as email and phone number, to make it easier for the user to contact them if they have any questions.

NAME	CONTACT NO.	EMAIL
Adam Ismail	07-7762524	adam.ismail@brilliance.edu.my
Sara Ameena Tajudeen	07-7735511	saraameena@brilliance.edu.my

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Connect with Us:

Figure 4.9: Administrators' Contact Details

4.4.2 ADMIN MODULE

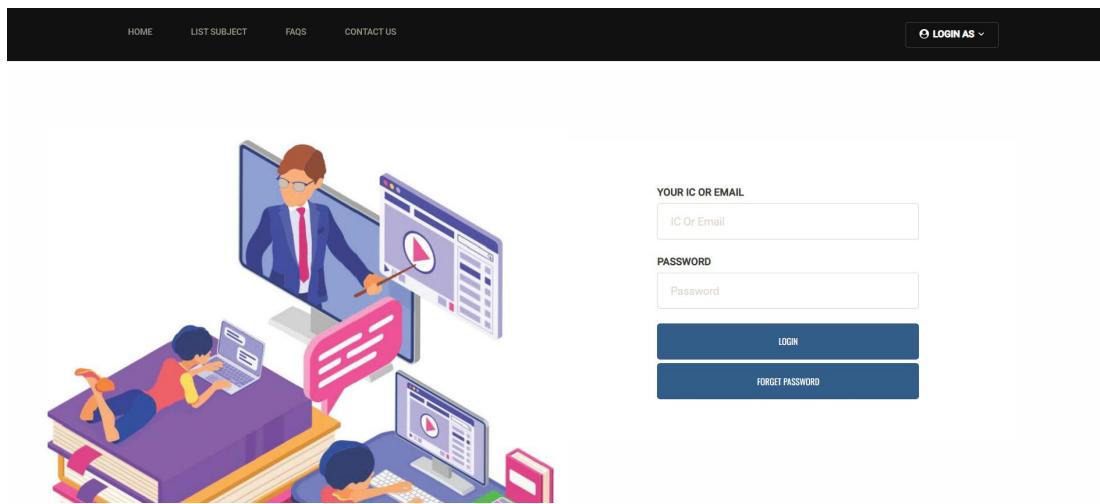


Figure 4.10: Admin Homepage

When the user clicks the Login button but the required details (IC number or email address and password) are not entered correctly, the following error message will appear.

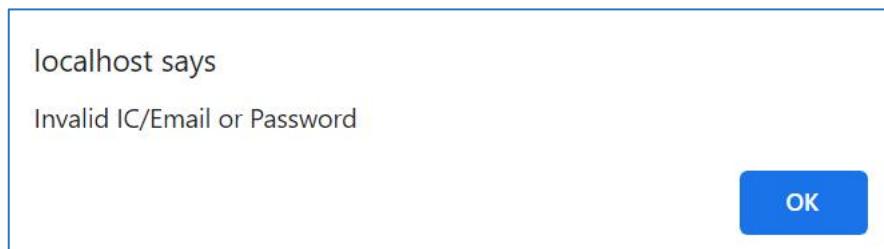


Figure 4.11: Error Message

When the user clicks the Forget Password button, it will be redirected to this page.



Figure 4.12: Forget Password Page

When the user clicks the Forget Password button but the required details (IC number, email address, phone number and new or confirm password) are not entered correctly, the following error message will appear.

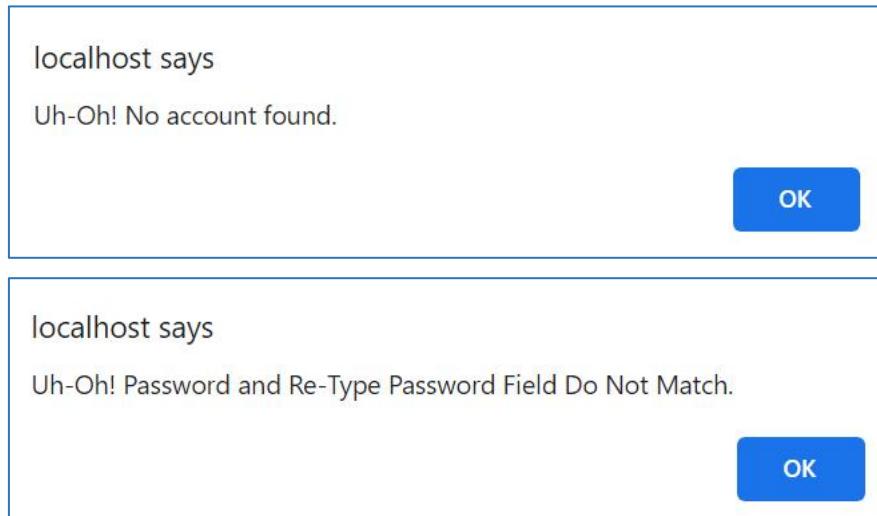


Figure 4.13: Error Message

When the user clicks the Forget Password button and the required details (IC number, email address, phone number and new or confirm password) are entered correctly, the following message will appear and the users need to log in first using the new password.

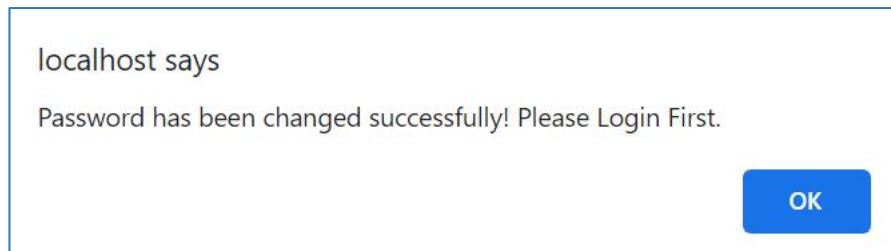


Figure 4.14: Success Message

The user will be redirected to this page once they have successfully logged in. There will be a graph that shows the report of how many students have already enrolled in certain subjects, total registered students with their information, total students enrolled in any subjects with their information, and total teachers with their information.



Figure 4.15: Report Page

The user will be redirected to the following page after clicking the Registered Students Full Details button on the Report Page. It will show the students' information.

No.	IC No.	Name	Phone No.	Email
1	080509016486	Adzreena Mohd Basir	0127235624	adzreena@gmail.com
2	070203011174	Aleesya Sofea Kamarul	0126252627	aleesya@gmail.com
3	000203011052	Fatimah Fattah	0127238292	fatimah@gmail.com
4	000303011253	Luqman Nizam	0127265283	luqman@gmail.com
5	220303011122	Nur Ameena Ameen	0127251719	ameena.ameen@gmail.com
6	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com

Figure 4.16: Registered Students' Details

The user will be redirected to the following page after clicking the Students Enrollment Full Details button on the Report Page. It will display the information about the students as well as the subjects they enrolled in.

No.	IC No.	Name	Phone No.	Email	Subject Enrolled	Month Enrolled	Fee
1	070203011174	Aleesya Sofea Kamarul	0126252627	aleesya@gmail.com	Additional Mathematics	2022 September	RM37.1
2	070203011174	Aleesya Sofea Kamarul	0126252627	aleesya@gmail.com	English	2022 September	RM26.5
3	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Additional Mathematics	2022 September	RM26.5
4	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Additional Mathematics	2022 August	RM37.1
5	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Physics	2022 September	RM47.7

Total Sales: RM174.9
Total Sales For 2022 August: RM37.1
Total Sales For 2022 September: RM137.8

Figure 4.17: Students' Enrollment Details

The user will be redirected to the following page after clicking the Teachers Full Details button on the Report Page. It will show the teachers' information.

No.	IC No.	Name	Phone No.	Email	Subject Taught
1	990201016614	Izara Afeera Izudin	0127289263	izaraafeera@brilliance.edu.my	16 Years Old - Additional Mathematics Monday (8pm-10pm)
2	990201016678	Nur Laili Ahmad Zaihan	0187263527	laili@brilliance.edu.my	12 Years Old - Mathematics Tuesday (8pm-10pm)
3	731002018873	Muhammad Amirul Sofian	0137826277	amirul@brilliance.edu.my	17 Years Old - Chemistry Monday (8pm-10pm)
4	790509016426	Raihana Balqis Sofian	0127236258	raihana@brilliance.edu.my	17 Years Old - English Saturday (8pm-10pm)
5	790509016426	Raihana Balqis Sofian	0127236258	raihana@brilliance.edu.my	15 Years Old - English Sunday (10am-12pm)
6	731002017721	Muhammad Amirul Haikal Hanafi	0126789162	haikal@brilliance.edu.my	16 Years Old - Physics Saturday (8am-10am)
7	990201016614	Izara Afeera Izudin	0127289263	izaraafeera@brilliance.edu.my	17 Years Old - Additional Mathematics Wednesday (8pm-10pm)

Figure 4.18: Teachers' Details

After clicking the Add Subject button in the Manage Subject section, the user will be redirected to the following page. The administrator can add new subjects here.

Subject Name:

Image: Choose File No file chosen
Must be in .jpg, .jpeg or .png

Figure 4.19: Add New Subject Page

After clicking the Add Subject Details button in the Manage Subject section, the user will be redirected to the following page. The administrator can add new subjects' details here.

The screenshot shows the 'ADD SUBJECT' form in the Brilliance Tuition Centre application. The left sidebar has a dark theme with white text and icons. It includes sections for 'MAIN', 'Manage Subject' (selected), 'Add Subject', 'Add Subject Details' (selected), 'Update Subject', 'Remove Subject', 'Manage Teacher', 'Report', and 'Backup & Restore'. The main content area is titled 'ADD SUBJECT' and contains the following fields:

- Select Subject:** A dropdown menu labeled 'Select Subject'.
- Fee (RM):** An input field for entering fees.
- Day:** A group of radio buttons for days of the week: Sunday, Monday, Tuesday, Wednesday, Thursday, Friday, Saturday.
- Time:** A group of radio buttons for time intervals: 8am-10am, 10am-12pm, 2pm-4pm, 4pm-6pm, 8pm-10pm.
- Duration (Hours):** An input field for duration.
- Recommended Age:** An input field for age.
- Maximum student quantity:** An input field for maximum student count.
- Terms & Condition:** A large input field for terms and conditions.
- Description:** A large input field for a detailed description.
- Schedule:** A file input field with the placeholder 'Choose File | No file chosen'. Below it is a note: 'Must be in .zip, .pdf or .docx'.
- Buttons:** Two buttons at the bottom: a green 'Insert' button and a red 'Cancel' button.

Figure 4.20: Add New Subject Details Page

After clicking the Update Subject button in the Manage Subject section, the user will be redirected to the following page.

The screenshot shows a table titled 'ALL SUBJECT DETAILS' with three rows of data. The columns are: No., Image, Timetable, Day, Time, Subject, Fee, Quantity admission, Description, and T&C. The data is as follows:

No.	Image	Timetable	Day	Time	Subject	Fee	Quantity admission	Description	T&C
1			Monday	8pm-10pm	16 Years Old - Additional Mathematics	RM35	23	None	None
2			Tuesday	8pm-10pm	12 Years Old - Mathematics	RM25	30	Calculation can be done in a few simple steps.	None
3			Monday	8pm-10pm	17 Years Old - Chemistry	RM45	25	As simple as ABC, enhance your lab experiment step-by-step memory.	Has completed or watched a lab experiment, but it's not compulsory to do so.

Figure 4.21: Manage Subject Page

After clicking the Edit button at the top left of each respective column, the admin can also update the image, timetable, day, time, age, fee, quantity admission, description or even terms and condition for each subject.

The first screenshot shows the 'UPDATE IMAGE' form. It has a file input field labeled 'Choose File' with 'English.jpg' selected, and a 'Update Image' button below it.

The second screenshot shows the 'UPDATE TIMETABLE' form. It has a file input field labeled 'Choose File' with 'Timetable Form 3.pdf' selected, and a 'Update Timetable' button below it.

Brilliance Tuition Centre

Account

MAIN

- Manage Subject
- Add Subject
- Update Subject
- Remove Subject
- Manage Teacher
- Report
- Backup & Restore

UPDATE DAY

Day

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

Update Day

Brilliance Tuition Centre

Account

MAIN

- Manage Subject
- Add Subject
- Update Subject
- Remove Subject
- Manage Teacher
- Report
- Backup & Restore

UPDATE TIME

Time

- 8am-10am
- 10am-12pm
- 2pm-4pm
- 4pm-6pm
- 8pm-10pm

Duration

2

Update Time

Brilliance Tuition Centre

Account

MAIN

- Add Subject
- Add Subject Details
- Update Subject
- Remove Subject
- Manage Teacher
- Report
- Backup & Restore

UPDATE AGE

Name

Additional Mathematics

Recommended Age

16

Update Age

Brilliance Tuition Centre

Account

MAIN

- Add Subject
- Add Subject Details
- Update Subject
- Remove Subject
- Manage Teacher
- Report
- Backup & Restore

UPDATE PRICE

Price

35

Update Price

Brilliance Tuition Centre

Account

MAIN

- Add Subject
- Add Subject Details
- Update Subject
- Remove Subject
- Manage Teacher
- Report
- Backup & Restore

UPDATE QUANTITY

Maximum Quantity

23

Update Quantity

The figure consists of two vertically stacked screenshots of a software application titled "Brilliance Tuition Centre".

Screenshot 1: Update Description

- Left Sidebar:** Shows a navigation menu under "MAIN" with "Manage Subject" expanded, containing options: Add Subject, Add Subject Details, Update Subject, Remove Subject, Manage Teacher, Report, and Backup & Restore.
- Central Content:** A form titled "UPDATE DESCRIPTION" with a single input field labeled "Description" containing "None" and a blue "Update Description" button below it.

Screenshot 2: Update Terms & Condition

- Left Sidebar:** Same as Screenshot 1.
- Central Content:** A form titled "UPDATE TERMS & CONDITION" with a single input field labeled "Terms & Condition" containing "None" and a blue "Update T&C" button below it.

Figure 4.22: Update Subject Details Page

After clicking the Remove Subject button in the Manage Subject section, the user will be redirected to the following page. The admin can remove the subjects here.

The screenshot shows the "ALL SUBJECT DETAILS" page of the Brilliance Tuition Centre software.

Left Sidebar: Same as in Figure 4.22.

Central Content: A table titled "ALL SUBJECT DETAILS" with the following data:

No.	Image	Timetable	DayTime	Subject	Fee	Description	T&C	Action
1			Monday : 8pm-10pm (2 Hours)	16 Years Old - Additional Mathematics	RM35	None	None	
2			Tuesday : 8pm-10pm (2 Hours)	12 Years Old - Mathematics	RM25	Calculation can be done in a few simple steps.	None	
3			Monday : 8pm-10pm (2 Hours)	17 Years Old - Chemistry	RM45	As simple as ABC, enhance your lab experiment step-by-step memory.	Has completed or watched a lab experiment, but it's not compulsory to do so.	
4			Saturday : 8pm-10pm (2 Hours)	17 Years Old - English	RM45	Let's improve your English vocabulary and grammar.	None	

When the administrator clicks the 'X' button in the Action section, the following message will appear.

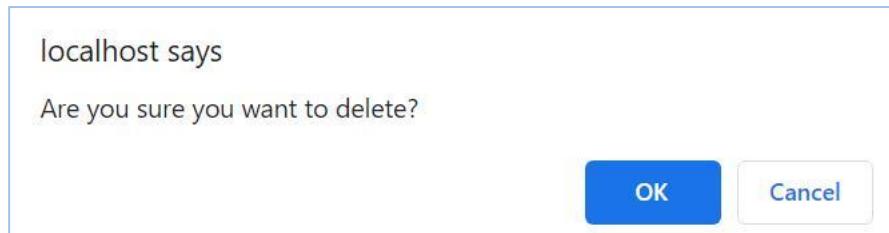


Figure 4.23: Remove Subject Page

After clicking the List of Teacher button in the Manage Teacher section, the user will be redirected to the following page.



Figure 4.24: Total Teacher Page

The user will be redirected to the following page after clicking the Teachers Full Details button on the Total Teacher Page. It will show the teachers' information.

No.	IC No.	Name	Phone No.	Email
1	731002017727	Ahmad Latif	0127775262	ahmad@brilliance.edu.my
2	990102041228	Fatin Afeefah Hanif	0135262728	fatin@brilliance.edu.my
3	790509021716	Rahimah Mansor	0127262524	rahimah@brilliance.edu.my
4	731002017721	Muhammad Amirul Haikal Hanafi	0126789162	haikal@brilliance.edu.my
5	731002031144	Siti Hawa Uzair	0197181726	sithawa@brilliance.edu.my
6	731002018873	Muhammad Amirul Sofian	0137826277	amirul@brilliance.edu.my
7	731002032241	Aqeef Haziq Amran	0192726161	aqeefhaziq@brilliance.edu.my
8	790509016426	Raihana Balqis Sofian	0127236258	raihana@brilliance.edu.my
9	990201016678	Nur Laili Ahmad Zaihan	0187263527	laili@brilliance.edu.my
10	990201016614	Izara Aferra Izudin	0127289263	izaraaferra@brilliance.edu.my

Figure 4.25: List of Teachers Page

The user will be redirected to the following page after clicking the Add Teacher button in the Manage Teacher section. The administrator can create new teachers and assign them to specific subjects, based on the details required, otherwise, an error will be displayed.

localhost says

New teacher has been added successfully

OK

Figure 4.26: Add New Teacher Page

The user will be redirected to the following page after clicking the Assign Subject button in the Manage Teacher section. By clicking on the Action button, the administrator can assign teachers to specific subjects based on the teacher's subject code. The administrator must select the specific teacher before clicking on the Assign Subject button, or an error will be displayed.

No.	Subject	Day	Teacher Assigned	Action
1	16 Years Old - Additional Mathematics	Monday: 8pm-10pm	Izara Afeera Izudin	
2	12 Years Old - Mathematics	Tuesday: 8pm-10pm	Nur Laili Ahmad Zaihan	
3	17 Years Old - Chemistry	Monday: 8pm-10pm	Muhammad Amirul Sofian	
4	17 Years Old - English	Saturday: 8pm-10pm	Raihana Balqis Sofian	
5	15 Years Old - English	Sunday: 10am-12pm	Raihana Balqis Sofian	
6	16 Years Old - Physics	Saturday: 8am-10am	Muhammad Amirul Haikal Hanafi	
7	17 Years Old - Additional Mathematics	Wednesday: 8pm-10pm	Izara Afeera Izudin	
8	16 Years Old - Science	Sunday: 10am-12pm		
9	12 Years Old - Bahasa Melayu	Friday: 8am-10am		

localhost says

Student has been assigned successfully

OK

Figure 4.27: Assign Teacher To Specific Subject Page

After clicking the Remove Teacher button in the Manage Teacher section, the user will be redirected to the following page. The admin can remove the teachers here.

No.	IC No.	Name	Phone No.	Email	Action
1	731002017727	Ahmad Latif	0127775262	ahmad@brilliance.edu.my	X
2	990102041228	Fatin Afeefah Hanif	0135262728	fatin@brilliance.edu.my	X
3	790509021716	Rahimah Mansor	0127262524	rahimah@brilliance.edu.my	X
4	731002017721	Muhammad Amirul Haikal Hanafi	0126789162	haikal@brilliance.edu.my	X
5	731002031144	Siti Hawa Uzair	0197181726	sitihawa@brilliance.edu.my	X
6	731002018873	Muhammad Amirul Sofian	0137826277	amirul@brilliance.edu.my	X
7	731002032241	Aqeef Haziq Amran	0192726161	aqeefhaziq@brilliance.edu.my	X
8	790509016426	Raihana Balqis Sofian	0127236258	raihana@brilliance.edu.my	X
9	990201016678	Nur Laili Ahmad Zaihan	0187263527	laili@brilliance.edu.my	X
10	990201016614	Izara Afeera Izudin	0127289263	izaraafeera@brilliance.edu.my	X

Showing 1 to 10 of 10 entries

PREVIOUS 1 NEXT

When the administrator clicks the 'X' button in the Action section, the following message will appear.

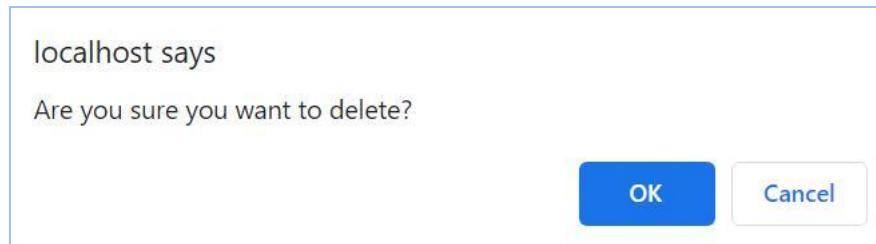


Figure 4.28: Remove Teacher Page

The user will be redirected to the following page after clicking the Subject Intake Report button in the Report section. The administrator must select the desired subject, month and year before clicking on the Review button, or an error will be displayed.

The image consists of three vertically stacked screenshots of a software application window titled "Brilliance Tuition Centre". The left sidebar contains navigation links: MAIN, Manage Subject, Manage Teacher, Report (which is expanded to show All Report, Subject Intake Report, Monthly Report, Yearly Report, and Backup & Restore), and a user account icon.

Screenshot 1: The "Subject Intake Report" section is active. It has dropdown menus for "Select Subject" (set to "Additional Mathematics"), "Select Month" (set to "Select Month"), and "Select Year" (set to "Select Year"). A blue "Review" button is visible. A yellow warning box says "Please select an item in the list." Below the dropdowns is a table header with columns: No., Subject, Time, Teacher In-Charge, Total Intake, Available intake, and Occupied. The table body below says "No data available in table". At the bottom, it says "Showing 0 to 0 of 0 entries".

Screenshot 2: The "Select Month" dropdown is now set to "August". The "Select Year" dropdown is still "Select Year". The "Review" button is now greyed out. The yellow warning box remains.

Screenshot 3: Both the "Select Month" and "Select Year" dropdowns are now set to "Select Month" and "Select Year" respectively. The "Review" button is now blue and enabled. The yellow warning box remains.

Brilliance Tuition Centre	
	 Account
MAIN	
 Manage Subject	
 Manage Teacher	
 Report	
 All Report	
 Subject Intake Report	
 Monthly Report	
 Yearly Report	
 Backup & Restore	

Figure 4.29: Subject Intake Report Page

The user will be redirected to the following page after clicking the Monthly Report button in the Report section. The administrator must select the desired subject, month and year before clicking on the Review button, or an error will be displayed.

Brilliance Tuition Centre	
	 Account
MAIN	
 Manage Subject	
 Manage Teacher	
 Report	
 All Report	
 Subject Intake Report	
 Monthly Report	
 Yearly Report	
 Backup & Restore	

Figure 4.30: Monthly Report Page

The user will be redirected to the following page after clicking the Yearly Report button in the Report section. The administrator must select the desired year before clicking on the Review button, or an error will be displayed.

No.	IC No.	Name	Phone No.	Email	Subject Enrolled	Month Enrolled	Fee
1	070203011174	Aleesya Sofea Kamarul	0126252627	aleesya@gmail.com	Additional Mathematics	2022 September	RM37.1
2	070203011174	Aleesya Sofea Kamarul	0126252627	aleesya@gmail.com	English	2022 September	RM26.5
3	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Additional Mathematics	2022 September	RM26.5
4	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Additional Mathematics	2022 August	RM37.1
5	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	Physics	2022 September	RM47.7

Figure 4.31: Yearly Report Page

After clicking the Backup & Restore button, the user will be redirected to the following page. The admin can backup the data by clicking on the Backup button.



Figure 4.32: Backup Data Page

After clicking the My Account button in the Account section, the user will be redirected to the following page. Any personal information, including the password, can be updated by the administrator. To change the password, the administrator must first enter the correct old password and ensure that the new and confirm passwords are the same and in the correct format as requested, or an error will be displayed.

Brilliance Tuition Centre

MAIN

- Manage Subject
- Manage Teacher
- Report
- Backup & Restore**

ADMIN PROFILE DETAILS

IC	790509016486
IC can't be changed.	
Name	Sara Ameena Tajudeen
Name can't be changed.	
Phone No	07-7235624
Email	saraameena@brilliance.edu.my

CHANGE PASSWORD

Old Password	Password do not matched.
New Password	Must contain at least: - One number - One uppercase and one lowercase letter - 8 or more characters	
Confirm Password		

Cancel **Change Password**

Brilliance Tuition Centre

MAIN

- Manage Subject
- Manage Teacher
- Report
- Backup & Restore

ADMIN PROFILE DETAILS

IC	790509016486
IC can't be changed.	
Name	Sara Ameena Tajudeen
Name can't be changed.	
Phone No	07-7235624
Email	saraameena@brilliance.edu.my

CHANGE PASSWORD

Old Password	Password matched.
New Password	Must contain at least: - One number - One uppercase and one lowercase letter - 8 or more characters	
Confirm Password		

Cancel **Change Password**

72

Brilliance Tuition Centre

MAIN

- Manage Subject
- Manage Teacher
- Report
- Backup & Restore

ADMIN PROFILE DETAILS

IC	790509016486
IC can't be changed.	
Name	Sara Ameena Tajudeen
Name can't be changed.	
Phone No	07-7235624
Email	saraameena@brilliance.edu.my

CHANGE PASSWORD

Old Password
Password matched.	
New Password	...
Must contain at least:	
- One number	
- One uppercase and one lowercase letter	
- 8 or more characters	
Confirm Password

Cancel **Change Password**

localhost says
New Password and Confirm Password do not match!

OK

Brilliance Tuition Centre

MAIN

- Manage Subject
- Manage Teacher
- Report
- Backup & Restore

ADMIN PROFILE DETAILS

IC	790509016486
IC can't be changed.	
Name	Sara Ameena Tajudeen
Name can't be changed.	
Phone No	07-7235624
Email	saraameena@brilliance.edu.my

CHANGE PASSWORD

Old Password	
Password has been changed successfully!	
New Password	
Must contain at least:	
- One number	
- One uppercase and one lowercase letter	
- 8 or more characters	
Confirm Password	

Cancel **Change Password**

Figure 4.33: Update Personal Details Page

4.4.3 TEACHER MODULE

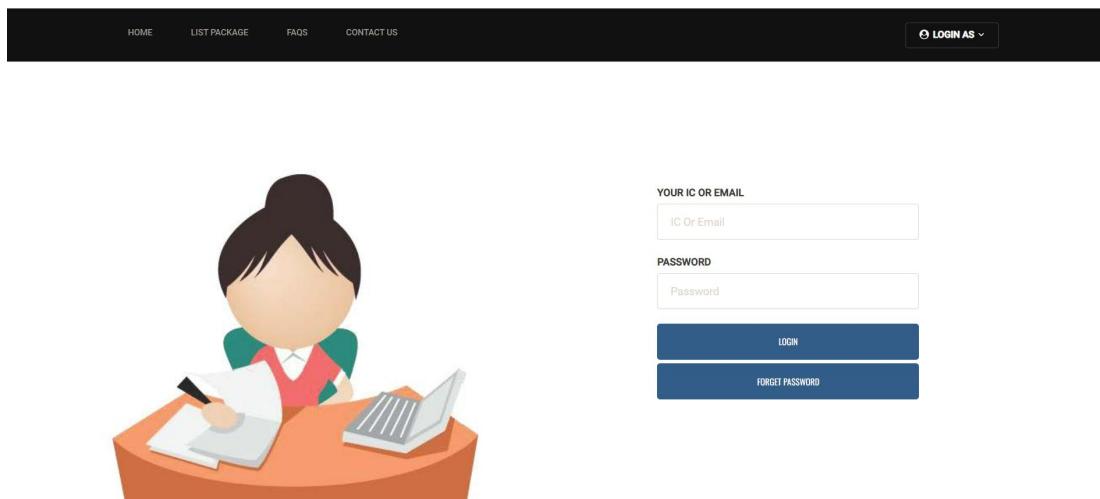


Figure 4.34: Teacher Homepage

When the user clicks the Login button but the required details (IC number or email address and password) are not entered correctly, the following error message will appear.

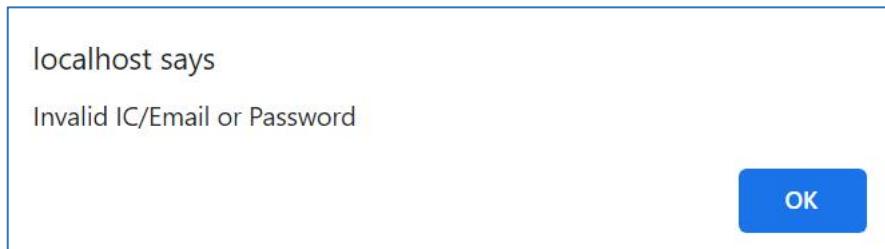


Figure 4.35: Error Message

When the user clicks the Forget Password button, it will be redirected to the following page.

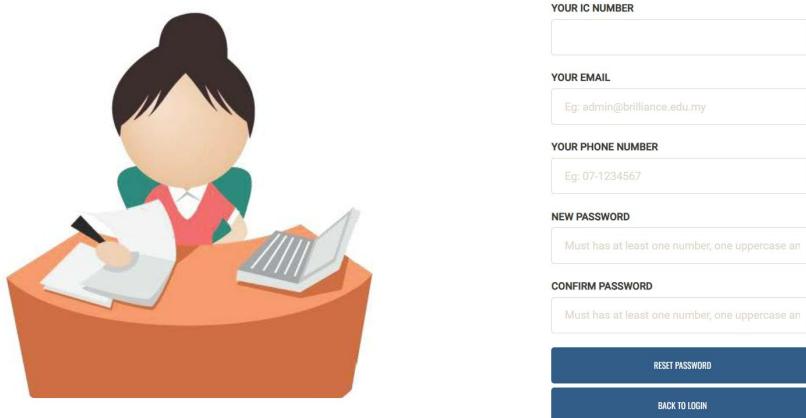


Figure 4.36: Forget Password Page

When the user clicks the Reset Password button but the required details (IC number, email address, phone number, new or confirm password) are not entered correctly, the following error message will appear.

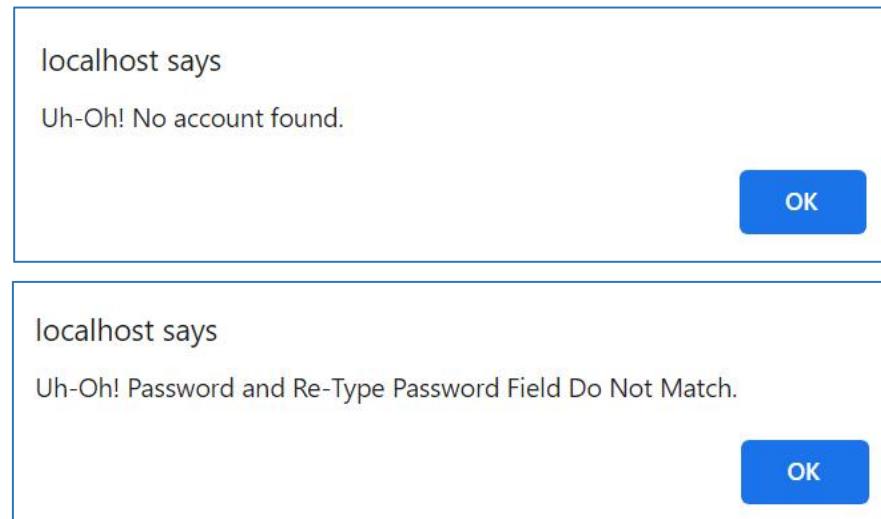


Figure 4.37: Error Message

When the user clicks the Forget Password button and the required details (IC number, email address, phone number, new or confirm password) are entered correctly, the following message will appear and user need to log in first using the new password.



Figure 4.38: Success Message

The user will be redirected to the following page once they have successfully logged in. There will be a total of all students enrolled in the subject taught by the logged-in teacher, along with their information.

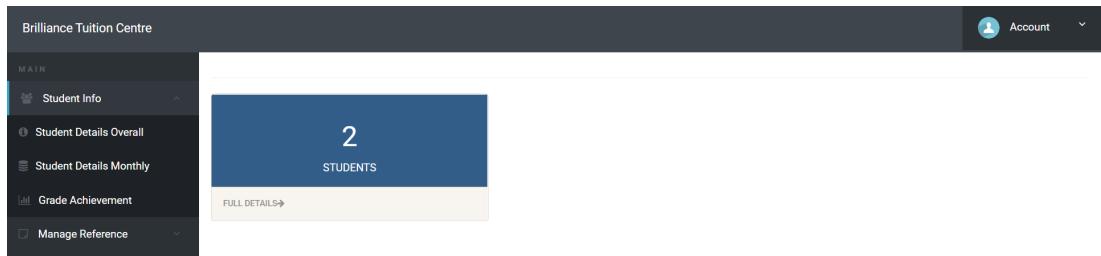


Figure 4.39: Student Details Overall Page

The user will be redirected to the following page after clicking the Students Full Details button on the Student Details Overall Page. It will show the students' information.

ALL STUDENT DETAILS						
Show <select>10</select> entries <input type="text" value="Search:"/>						
No.	IC No.	Name	Phone No.	Email	Subject Enrolled	Day
1	070203011050	Nurul Amirah Abu Bakar	01111482769	mira@gmail.com	16 Years Old - Additional Mathematics	Monday: 8pm-10pm
2	070203011174	Aleesya Sofea Kamalul	0126252627	aleesya@gmail.com	16 Years Old - Additional Mathematics	Monday: 8pm-10pm

Showing 1 to 2 of 2 entries PREVIOUS 1 NEXT

Figure 4.40: Students Information Page

The user will be redirected to the following page after clicking the Students Details Monthly button on the Student Info section. The teacher must select the desired month and year before clicking on the Review button, or an error will be displayed. It will show the students' information based on the chosen month and year.

The figure consists of three vertically stacked screenshots of a software application titled "Brilliance Tuition Centre".

- Screenshot 1:** Shows the "Student Info" menu item selected in the sidebar. The main panel displays a table header for "ALL STUDENT DETAILS" with columns: No., IC No., Name, Phone No., Email, Subject Enrolled, Day, and Month Enrolled. A message box says "Please select an item in the list." and a search bar is present.
- Screenshot 2:** Shows the "Select Month" dropdown set to "August" and the "Select Year" dropdown. The message box now says "Please select an item in the list." again, indicating an error.
- Screenshot 3:** Shows the "Select Month" dropdown set to "August" and the "Select Year" dropdown set to "2022". The message box is gone, and the table now shows one student entry: Nurul Amirah Abu Bakar with ID 070203011050, enrolled in 16 Years Old - Additional Mathematics, with a review for Monday: 8pm-10pm in August 2022.

Figure 4.41: Student Details Monthly Page

After clicking the Grade Achievement button in the Student Info section, the user will be redirected to the following page. The teacher can see their students' grades in each examination and determine whether or not they have improved since starting tuition.

The screenshot shows a table titled 'ALL STUDENT ACHIEVEMENTS' with the following data:

No.	IC No.	Name	Subject	Examination	Grade
1	070203011050	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	Peperiksaan Penggal 1 2022	B
2	070203011050	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	Peperiksaan Pertengahan Tahun 2022	A
3	070203011050	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	Peperiksaan Penggal 2 2021	A

Showing 1 to 3 of 3 entries

Figure 4.42: Students' Grades Page

After clicking the Add Reference button in the Manage Reference section, the user will be redirected to the following page. The teacher can add new references for class materials by filling out the required information in the proper format, otherwise, an error message will appear.

The screenshot shows the 'ADD REFERENCE' form with the following fields:

- Subject:** Select Subject (dropdown menu)
- Month:** Select Month (dropdown menu) - An error message 'Please select an item in the list.' is displayed next to it.
- Week:** Week 1, Week 2, Week 3, Week 4 (radio buttons)
- Lesson Material:** Choose File (button) - 'No file chosen' and 'Must be in .zip, .pdf or .docx'
- Description:** Text input field
- Video Material:** Choose File (button) - 'No file chosen' and 'Must be in .mp4 or .mov'
- Class Link:** Text input field

Buttons at the bottom: Insert (green), Cancel (red)

localhost says

Your file extension must be .zip, .pdf or .docx

OK

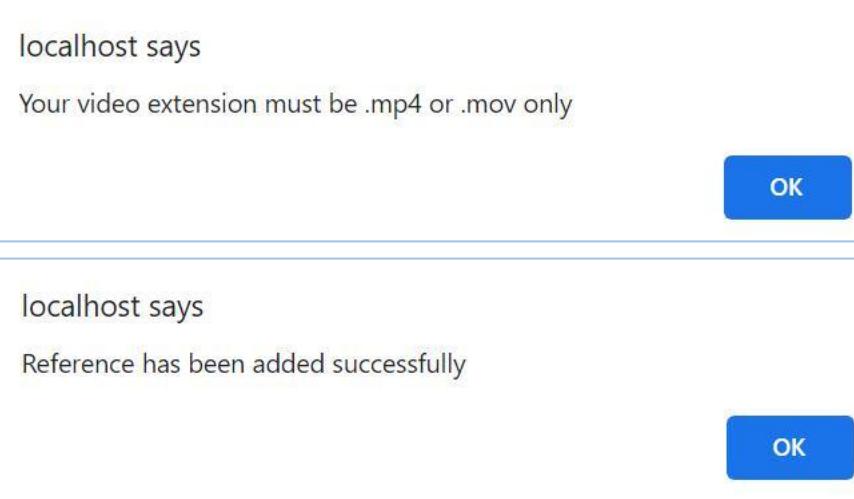


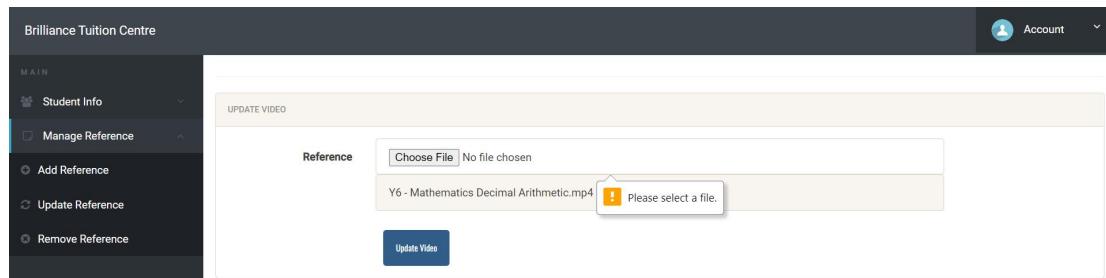
Figure 4.43: Add New Reference Page

After clicking the Update Reference button in the Manage Reference section, the user will be redirected to the following page.

No.	Reference	Materials	Description	Date	Class Link
1	26.4 + 8.31		16 Years Old - Additional Mathematics Addition	Week 1, 2022 August	
2	9 ÷ 4		17 Years Old - Additional Mathematics Division	Week 2, 2022 August	

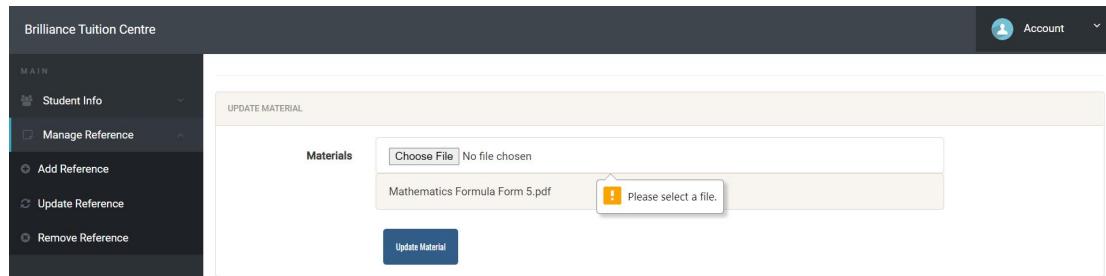
Figure 4.44: Manage Reference

After clicking the Edit button at the top left of each respective column, the teacher can also update the video reference, the materials, the description, the date or even the class link for each references based on the required format, otherwise an error will appear.



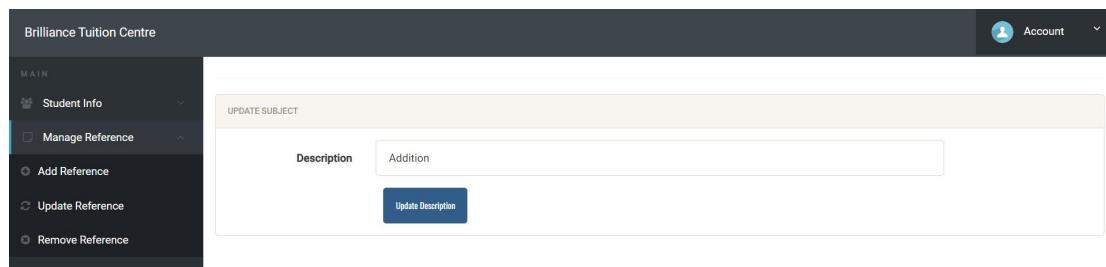
localhost says
Video has been updated successfully

OK



localhost says
Material has been updated successfully

OK



UPDATE DATE

Month: Select Month

Week:

- Week 1
- Week 2
- Week 3
- Week 4

Please select an item in the list.

UPDATE CLASS LINK

Class Link: https://www.youtube.com/watch?v=v53ofP9M&index=27

Please fill out this field.

localhost says

Class link has been updated successfully

OK

Figure 4.45: Update Reference

After clicking the Remove Reference button in the Manage Reference section, the user will be redirected to the following page. Any no longer applicable references can be removed by the teacher here.

ALL SUBJECT DETAILS

No.	Materials	Description	Reference	Date	Action
1		Addition		Week 1, 2022 August	
2		Division		Week 2, 2022 August	

Showing 1 to 2 of 2 entries

PREVIOUS 1 NEXT

When the teacher clicks the 'X' button in the Action section, the following message will appear.

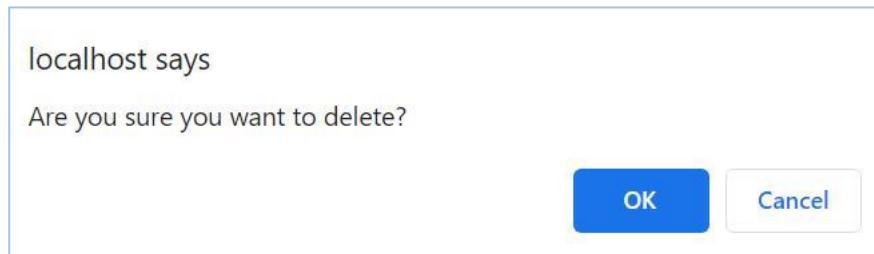


Figure 4.46: Remove Reference

After clicking the My Account button in the Account section, the user will be redirected to the following page. Any personal information, including the password, can be updated by the teacher. To change the password, the teacher must first enter the correct old password and ensure that the new and confirm passwords are the same and in the correct format as requested, or an error will be displayed.

Brilliance Tuition Centre

MAIN

- Student Info
- Student Details
- Grade Achievement
- Manage Reference
- Add Reference
- Update Reference
- Remove Reference

TEACHER PROFILE DETAILS

IC	731002017727
Name can't be changed.	
First Name	Ahmad
Name can't be changed.	
Last Name	Latif
Name can't be changed.	
Phone No	01277752627
Email	ahmad@edu.my

CHANGE PASSWORD

Old Password	...
Password do not matched.	
New Password	 Must contain at least: - One number - One uppercase and one lowercase letter - 8 or more characters
Confirm Password	

Cancel Change Password

Brilliance Tuition Centre

MAIN

- Student Info**
- Student Details
- Grade Achievement
- Manage Reference**
- Add Reference
- Update Reference
- Remove Reference

TEACHER PROFILE DETAILS

IC	731002017727
IC can't be changed.	
First Name	Ahmad
Name can't be changed.	
Last Name	Latif
Name can't be changed.	
Phone No	01277752627
Email	ahmad@edu.my

Cancel **Update Profile**

CHANGE PASSWORD

Old Password
Password matched.	
New Password	...
Must contain at least:	
- One ! Please match the requested format.	
- One uppercase and one lowercase letter	
- 8 or more characters	
Confirm Password	

Cancel **Change Password**

localhost says
New Password and Confirm Password do not match!

OK

Brilliance Tuition Centre

MAIN

- Student Info**
- Student Details
- Grade Achievement
- Manage Reference**
- Add Reference
- Update Reference
- Remove Reference

TEACHER PROFILE DETAILS

IC	731002017727
IC can't be changed.	
First Name	Ahmad
Name can't be changed.	
Last Name	Latif
Name can't be changed.	
Phone No	01277752627
Email	ahmad@edu.my

Cancel **Update Profile**

CHANGE PASSWORD

Password has been changed successfully!	
Old Password	
New Password	
Must contain at least:	
- One number	
- One uppercase and one lowercase letter	
- 8 or more characters	
Confirm Password	

Cancel **Change Password**

Figure 4.47: Update Personal Details Page

4.4.4 STUDENT MODULE

The user will be redirected to the following page after clicking the Student Registration button. To log into the system, the user must first create an account, which requires the user, who is essentially the student, to fill out the required information in the correct format, or else an error will appear. The user cannot use the same IC number or phone number that has previously been used in the system.

Brilliance Tuition Centre

MAIN

- Main Page
- Student Registration
- Student Login

FILL IN ALL INFO

IC No. : Eg: 990104075555

First Name :

Last Name :

Date-Of-Birth :

Nationality Citizen Foreigner

Phone No. : Eg: 01111482769

Address :

Postcode :

State :

Email : Eg: brilliance@edu.my

Password: Must has at least one number, one uppercase and lowercase letter, and 8 or more characters

Confirm Password : Must has at least one number, one uppercase and lowercase letter, and 8 or more characters

RESET REGISTER

IC No. : 050303011122
IC number already exist. Use other IC number.

First Name : Nur Ameena

Last Name : Ameen

The figure consists of three parts: a sign-up form, a 'New Password and Confirm Password do not match!' error message, and a successful registration confirmation message.

Sign Up Form Fields:

- Phone No :** 01111482769
Error: Phone number already exist. Please use other than that.
- Address :** 2, Jalan Conlay
- Postcode :** 50450
- State :** Kuala Lumpur
- Email :** ameena
Error: You did not enter a valid email.
- Password:** Must has at least one number, one uppercase and lowercase letter, and 8 or more characters
- Confirm Password :** Must has at least one number, one uppercase and lowercase letter, and 8 or more characters

Error Message:
localhost says
New Password and Confirm Password do not match!
OK

Success Message:
localhost says
Student has been registered successfully! Please Login First.
OK

Figure 4.48: Sign Up Page

The user will be redirected to the following page after clicking the Student Login button.

The student login page features a dark sidebar with navigation links: Main Page, Student Registration, and Student Login. The main content area contains fields for Email/IC Number and Password, along with a large blue 'LOGIN' button and a smaller 'FORGET PASSWORD' link.

Figure 4.49: Student Login Page

When the user clicks the Login button but the required details (IC number or email address and password) are not entered correctly, the following error message will appear.

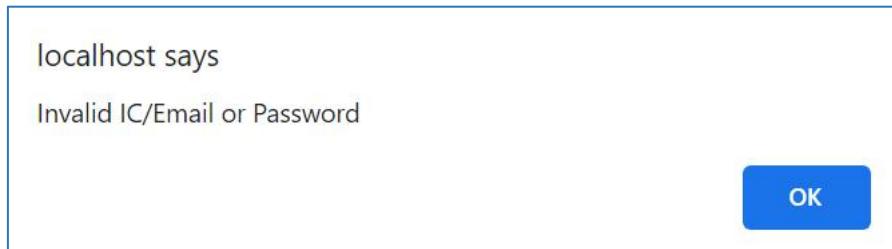


Figure 4.50: Error Message

When the user clicks the Forget Password, it will be redirected to the following page.

A screenshot of a web page titled "Brilliance Tuition Centre". On the left, there is a sidebar with a dark background and white text, containing links for "Main Page", "Student Registration", and "Student Login". The main content area has a light gray background. It features four input fields: "YOUR IC NUMBER", "YOUR EMAIL" (with placeholder "Eg: admin@brilliance.edu.my"), "YOUR PHONE NUMBER" (with placeholder "Eg: 07-1234567"), and "NEW PASSWORD" (with placeholder "Must has at least one number, one uppercase a"). Below these fields are two buttons: a blue "RESET PASSWORD" button and a darker blue "BACK TO LOGIN" button.

Figure 4.51: Forget Password Page

When the user clicks the Forget Password button but the required details (IC number, email address, phone number and new or confirm password) are not entered correctly, the following error message will appear.

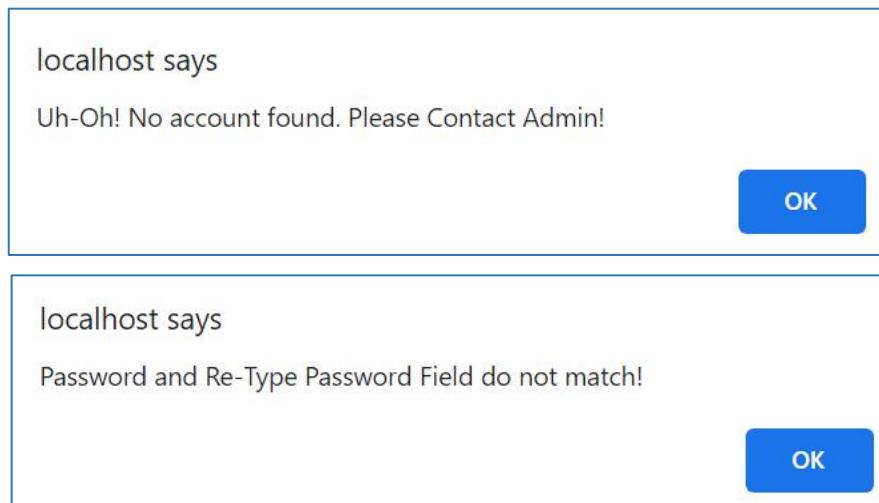


Figure 4.52: Error Message

When the user clicks the Forget Password button and the required details (IC number, email address, phone number and new or confirm password) are entered correctly, the following message will appear and user need to log in first using the new password.



Figure 4.53: Success Message

The user will be redirected to the following page once they have successfully logged in. A list of subjects will be presented, along with their fees and schedules.

ALL SUBJECT DETAILS								
No.	Image	Timetable	Day & Time	Subject	Fee	Teacher In-Charge	Description	T&C
1			Monday 8pm-10pm	16 Years Old - Additional Mathematics	RM35	Izara Aferra Izudin	None	None
2			Tuesday 8pm-10pm	12 Years Old - Mathematics	RM25	Nur Laili Ahmad Zaihan	Calculation can be done in a few simple steps.	None
3			Monday 8pm-10pm	17 Years Old - Chemistry	RM45	Muhammad Amirul Sofian	As simple as ABC, enhance your lab experiment step-by-step memory.	Has completed or watched a lab experiment, but it's not compulsory to do so.
4			Saturday 8pm-10pm	17 Years Old - English	RM45	Raihana Balqis Sofian	Let's improve your English vocabulary and grammar.	None

Figure 4.54: Subject Info Page

After clicking the Subject Availability button in the Manage Subject section, the user will be redirected to the following page. The user must select the desired month before clicking on the Review button, or an error will be displayed. It will show the subject's availability based on the selected month.

Subject	Time	Teacher In-Charge	Fee	SST 6%	Total Fee	Available intake
No data available in table						

Subject	Time	Teacher In-Charge	Fee	SST 6%	Total Fee	Available Intake
15 Years Old - English	Sunday: 10am-12pm	Raihana Balqis	RM25	RM1.5	RM26.5	0
16 Years Old - Additional Mathematics	Monday: 8pm-10pm	Izara Afeera	RM35	RM2.1	RM37.1	21
16 Years Old - Physics	Saturday: 8am-10am	Muhammad Amirul Haikal	RM45	RM2.7	RM47.7	24

After clicking the Enrol Subject button in the Manage Subject section, the user will be redirected to the following page. The user must select the desired subjects before clicking on the Proceed To Enrollment button, or an error will be displayed.

Tick	Subject	Time	Teacher In-Charge	Fee	SST 6%	Total Fee
<input type="checkbox"/>	16 Years Old - Additional Mathematics	Monday: 8pm-10pm	Izara Afeera Izudin	RM35	RM2.1	RM37.1
<input type="checkbox"/>	16 Years Old - Physics	Sunday: 10am-12pm	Raihana Balqis Sofian	RM25	RM1.5	RM26.5
<input type="checkbox"/>		Saturday: 8am-10am	Muhammad Amirul Haikal Hanafi	RM45	RM2.7	RM47.7

After clicking the Proceed To Enrollment button, the user will be redirected to the following page. The user must click the Enrol button to confirm the enrollment.

The screenshot shows a web application interface for 'Brilliance Tuition Centre'. On the left, a dark sidebar menu titled 'MAIN' includes 'Manage Subject' (selected), 'Subject Info', 'Subject Availability', 'Enrol Subject' (highlighted in blue), 'Enrollment History', 'Manage Grade', 'Payment', and 'References & Materials'. The main content area is titled 'SUBJECT ENROLLMENT'. It displays a student's information: 'Nurul Amirah Abu Bakar' (Student), '15 Years' (Age), and two subject options: '15 Years Old - English' and '16 Years Old - Physics'. A blue 'Enrol' button is at the bottom.

The following error message will appear if the student has already enrolled in the subject.

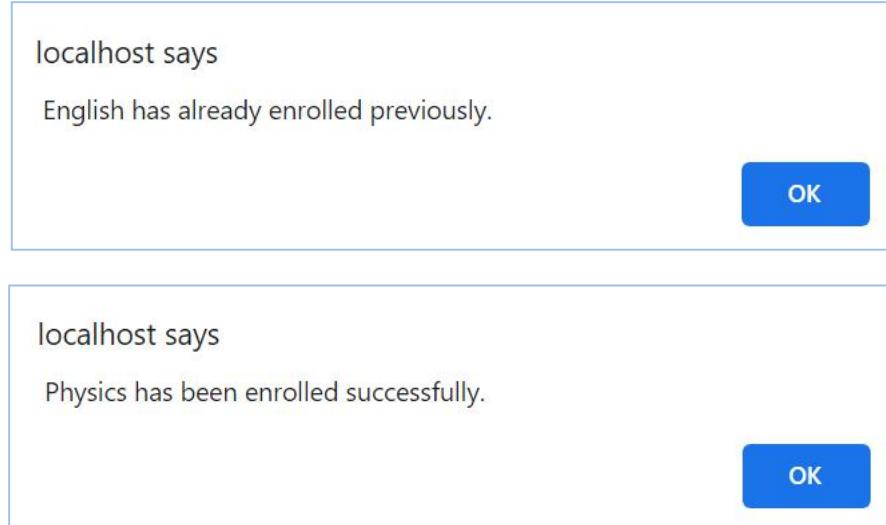


Figure 4.55: Subject Enrollment Page

After clicking the Enrollment History button in the Manage Subject section, the user will be redirected to the following page. If desired, the student can also print the enrollment history.

The screenshot shows a web application interface for 'Brilliance Tuition Centre'. The left sidebar has a dark theme with white text and icons. It includes sections for 'Manage Subject' (with 'Subject Info', 'Subject Availability', 'Enrol Subject', and 'Enrollment History' options), 'Manage Grade' (with 'Payment' and 'References & Materials' options), and 'Grade Achievement'. The main content area is titled 'REGISTRATION DETAILS' and contains a table with the following data:

REGISTRATION DETAILS			
Full Name:	Nurul Amirah Abu Bakar	Age:	15 Years Old
IC Number:	070203011050	Contact:	01111482769
Email:	mira@gmail.com	Nationality:	Citizen
Address:	SU3-3-4, Pangsapuri Sri Utama, Ayer Keroh		
Postcode:	86000	State:	Melaka
Registration Date:	2022-08-14 15:36:06		
Subject:	Additional Mathematics	Fee:	RM35
Duration:	2 Hours		
Registration Date:	2022-08-22 13:27:44		
Subject:	English	Fee:	RM25
Duration:	2 Hours		

Figure 4.56: Enrollment History Page

After clicking the Upgrade Grade button in the Manage Grade section, the user will be redirected to the following page. The student can add or update grades for the subjects in which they have enrolled in order to see if their achievement has improved or not. Before pressing the Update button, the student must double check that all of the required details have been entered, otherwise, an error will appear.

The screenshot shows a web application interface for 'Brilliance Tuition Centre'. The left sidebar has a dark theme with white text and icons. It includes sections for 'Manage Subject' (with 'Subject Info', 'Subject Availability', 'Enrol Subject', and 'Enrollment History' options), 'Manage Grade' (with 'Update Grade', 'Grade Achievement', 'Payment' and 'References & Materials' options), and 'Grade Achievement'. The main content area is titled 'UPDATE GRADE' and contains a form with the following fields:

Subject	Select Subject
Examination	Select Examination ! Please select an item in the list.
Exam Year	Select Year
Grade	Select Grade

Below the form is a blue button labeled 'Update'. A modal window at the bottom left displays the message 'localhost says' and 'Grade has been added successfully.' with an 'OK' button.

Figure 4.57: Update Grade Page

After clicking the Grade Achievement button in the Manage Grade section, the user will be redirected to the following page. The student can review all of his or her grades to see if there has been any improvement.

The screenshot shows the 'Grade Achievement' page of the Brilliance Tuition Centre website. The left sidebar has a 'MAIN' menu with 'Manage Subject', 'Manage Grade' (selected), 'Update Grade', 'Grade Achievement' (selected), 'Payment', and 'References & Materials'. The main content area is titled 'GRADE ACHIEVEMENT' and contains a table with three entries. The columns are 'No.', 'Name', 'Subject', 'Examination', and 'Grade'. The entries are:

No.	Name	Subject	Examination	Grade
1	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	2022 - Peperiksaan Penggal 1	B
2	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	2022 - Peperiksaan Pertengahan Tahun	A
3	Nurul Amirah Abu Bakar	Additional Mathematics - 16 Years Old	2021 - Peperiksaan Penggal 2	A

Below the table, it says 'Showing 1 to 3 of 3 entries' and has 'PREVIOUS' and 'NEXT' buttons. The top right corner shows an account icon.

Figure 4.58: Grade Achievement Page

After clicking the Payment Details button in the Payment section, the user will be redirected to the following page. By checking the checkbox and clicking the Proceed To Payment button, the student can perform the payment. An error will appear if the student fails to check any of the checkboxes.

The screenshot shows the 'PAYMENT DETAILS | PLEASE TICK (/) THE SUBJECT YOU WANT TO PAY' page. The left sidebar has a 'MAIN' menu with 'Manage Subject', 'Manage Grade', 'Payment' (selected), 'Payment Details' (selected), 'Payment Record', and 'References & Materials'. The main content area contains a table with three entries. The columns are 'Tick', 'Subject', 'Time', 'Teacher In-Charge', 'Fee', 'SST 6%', 'Total Fee', and 'Receipt'. The entries are:

Tick	Subject	Time	Teacher In-Charge	Fee	SST 6%	Total Fee	Receipt
<input type="checkbox"/>	16 Years Old - Additional Mathematics	Monday: 8pm-10pm	Izara Afeera Izudin	RM35	RM2.1	RM37.1	<input type="checkbox"/>
<input type="checkbox"/>	16 Years Old - English	Sunday: 10am-12pm	Raihana Balqis Sofian	RM25	RM1.5	RM26.5	<input type="checkbox"/>
<input type="checkbox"/>	16 Years Old - Physics	Saturday: 8am-10am	Muhammad Amirul Haikal Hanafi	RM45	RM2.7	RM47.7	<input type="checkbox"/>

Below the table, it says 'Showing 1 to 3 of 3 entries' and has 'PREVIOUS' and 'NEXT' buttons. A red warning message 'Please check this box if you want to proceed.' with an exclamation mark is displayed next to the first row. At the bottom is a blue 'PROCEED TO PAYMENT' button.

Figure 4.59: Payment Details Page

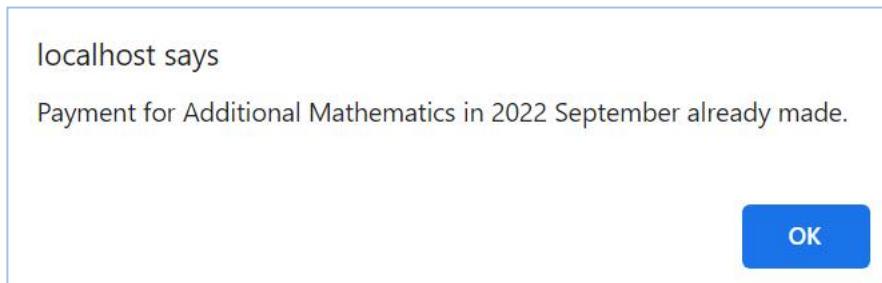
The user will be redirected to the following page after checking the checkboxes for the desired subjects and clicking the Proceed To Payment button. The student must select the month for which they wish to pay as well as the method of payment. Otherwise, an error will appear.

The screenshot shows a web-based payment system for Brilliance Tuition Centre. On the left, a sidebar lists 'MAIN' categories: Manage Subject, Manage Grade, Payment (which is selected), Payment Details, Payment Records, References & Materials. The main area is titled 'PAYMENT'. It displays the following fields:

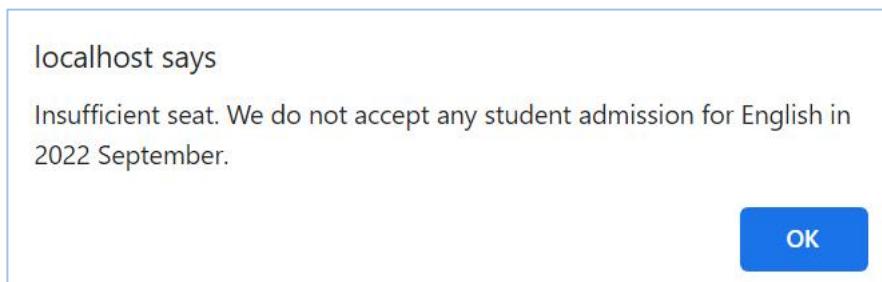
- Student:** Nurul Amirah Abu Bakar
- Month:** Select Month (dropdown menu, currently empty)
- Payment Method:** Select Payment Method (dropdown menu, currently empty, with an error message: 'Please select an item in the list.')
- Subject Price:** English : RM26.5 includes 6% sst
Physics : RM47.7 includes 6% sst
- Total Fee:** RM74.2 includes 6% sst

A blue 'Pay' button is at the bottom.

This following error message will appear if the student selects the month for which they have already paid.



This following error message will appear if the desired subject admission for the selected month is zero.



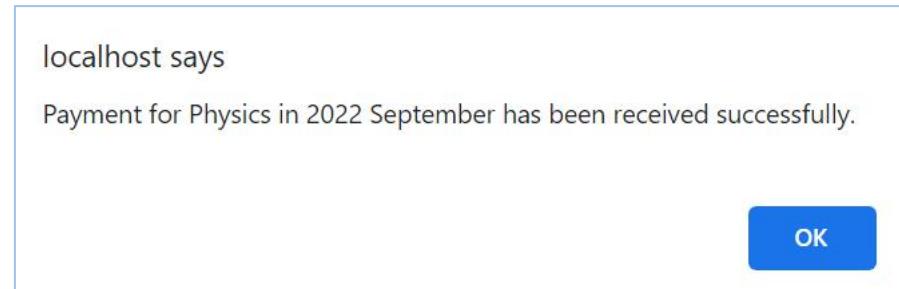


Figure 4.60: Payment Page

After clicking the Payment Records button in the Payment section, the user will be redirected to the following page. If desired, the student can also print the payment records.

PAYMENT RECEIPT					
<input type="button" value="Print"/>	Full Name:	Nurul Amirah Abu Bakar	Email:	mira@gmail.com	Contact:
	Address:	SU3-3-4, Pangaspuri Sri Utama, Ayer Keroh 86000 Melaka			
	Registration Date:	2022-08-14 15:36:06	Subject:	Additional Mathematics	Fee:
	Total (Inc 6% sst) :	RM37.1			
Payment Details					
	Payment For :	2022 September	Status :	Paid	Payment Method :
	Amount Paid :	RM26.5			
	Payment For :	2022 August	Status :	Paid	Payment Method :
	Amount Paid :	RM37.1			

PAYMENT RECEIPT					
<input type="button" value="Print"/>	Full Name:	Nurul Amirah Abu Bakar	Email:	mira@gmail.com	Contact:
	Address:	SU3-3-4, Pangaspuri Sri Utama, Ayer Keroh 86000 Melaka			
	Payment Details				
	Payment For :	2022 September	Status :	Paid	Payment Method :
	Amount Paid :	Additional Mathematics (16 Years Old) - RM26.5			
	Payment For :	2022 August	Status :	Paid	Payment Method :
	Amount Paid :	Additional Mathematics (16 Years Old) - RM37.1			

Figure 4.61: Payment Records Page

After clicking the References & Materials, the user will be redirected to the following page. All of the references for the month that has already been paid can be viewed and downloaded by the student.

The image consists of two vertically stacked screenshots of a web application interface for 'Brilliance Tuition Centre'. Both screenshots show a sidebar on the left with the following menu items:

- MAIN
- Manage Subject
- Manage Grade
- Payment
- References & Materials

The main content area displays a table titled 'ALL SUBJECT DETAILS' or 'ALL SUBJECT REFERENCES' (depending on the screenshot). The table has columns for No., Subject, Teacher, Timetable, and References & Materials (or Materials).

Screenshot 1 (Top): ALL SUBJECT DETAILS

No.	Subject	Teacher	Timetable	References & Materials
1	ADDITIONAL MATHEMATICS Additional Mathematics 16 years old Monday: 8pm-10pm	Izara Afeera Izudin Email: izaraafeera@brilliance.edu.my		

Showing 1 to 1 of 1 entries

Screenshot 2 (Bottom): ALL SUBJECT REFERENCES

No.	References	Materials	Class Link
1	Addition Week 1, 2022 August		 Monday (8pm-10pm)

Showing 1 to 1 of 1 entries

Figure 4.62: References Page

After clicking the My Account button in the Account section, the user will be redirected to the following page. Any personal information, including the password, can be updated by the student. To change the password, the student must first enter the correct old password and ensure that the new and confirm passwords are the same and in the correct format as requested, or an error will be displayed.

Brilliance Tuition Centre

MAIN

- Manage Subject
- Manage Grade
- Payment
- References & Materials

STUDENT PROFILE DETAILS

IC	070203011050
IC can't be changed.	
Name	Nurul Amirah Abu Bakar
Name can't be changed.	
DOB	2007-02-03
Date-Of-Birth can't be changed.	
Phone No	01111482769
Address	SU3-3-4, Pangsapuri Sri Utama, Ayer Keroh
Postcode	86000

CHANGE PASSWORD

Old Password
Password do not matched.	
New Password	Must contain at least: - One number - One uppercase and one lowercase letter - 8 or more characters
Confirm Password	

localhost says

New Password and Confirm Password do not match!

Figure 4.63: Update Personal Details Page

4.5 CONCLUSION

The design interface, data query, and error handlings had all been demonstrated for each module. All of the functions used by the Admin, Teacher, and Student are displayed on the developed interfaces. The programme code must be very specific and detailed in order for the system to work correctly and produce the desired result.

The next chapter will go over the system implementation phase in greater depth. This also applies to the software development environment setup and database implementation.

CHAPTER V

IMPLEMENTATION

5.1 INTRODUCTION

This chapter's discussion will concentrate on the system's implementation, which also includes setting up the software development environment and the database. The process of setting up the software development environment includes the creation of the database and the description of its objects. The database implementation phase will cover the DDL and the data loading process. A thorough overview of database design and implementation is given in this chapter. The primary goal of this chapter is to provide a comprehensive knowledge of how the database itself is implemented.

5.2 SOFTWARE DEVELOPMENT ENVIRONMENT SETUP

5.2.1 DATABASE ENVIRONMENT SETUP

The local database in this project is created using phpMyAdmin MySQL, and the cloud database is created using Amazon S3 Management Console.

5.2.1.1 INSTALLATION STEP FOR LOCAL DATABASE

The phpMyAdmin MySQL installation will necessitate the installation of XAMPP, which is an application that allows programmers to write or test code based on MySQL databases on a local webserver using the host's system. Windows, Linux, and Mac are the three platforms on which XAMPP can be installed. Since this project will be completed on a Windows laptop, XAMPP for Windows has been chosen. Figure 5.1 depicts the location from which XAMPP can be downloaded:

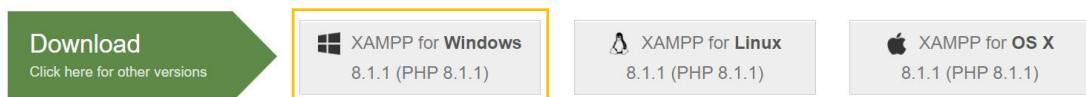


Figure 5.1: XAMPP for Windows

There are two buttons that must be started in order to connect to the MySQL database which are Apache and MySQL. The name of the instances that have been successfully started or running will be highlighted in green. The admin button must be clicked to connect to the database administration or DBA, and the MySQL admin side will appear. Figure 5.2 represents the administrative access procedure:

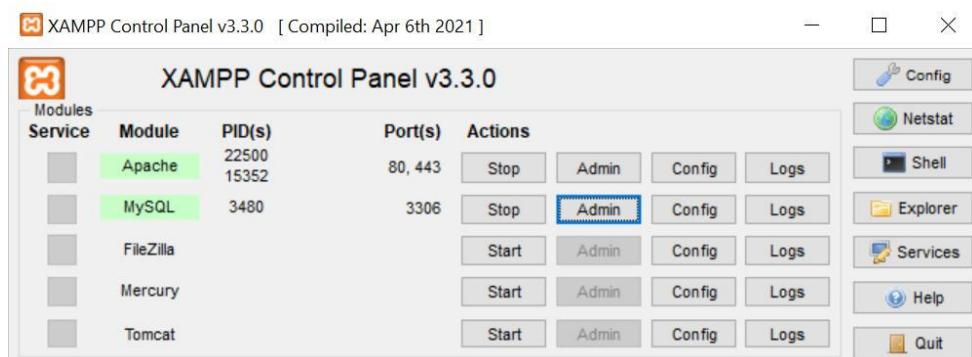
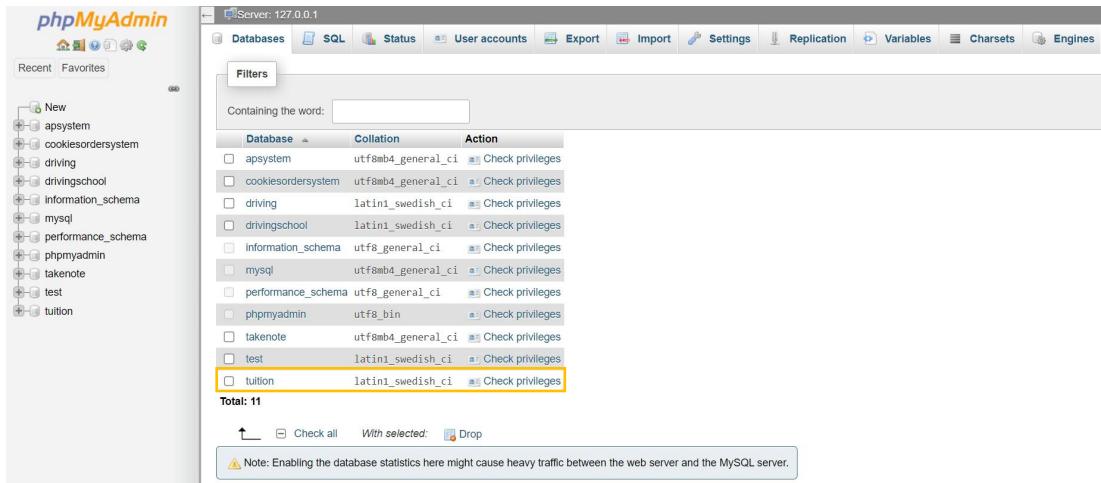


Figure 5.2: XAMPP Control Panel

The phpMyAdmin MySQL Administrator is successfully connected, as shown in the Figure 5.3:



The screenshot shows the phpMyAdmin interface with the following details:

- Server:** 127.0.0.1
- Databases:** A list of 11 databases is displayed, each with a checkbox, Collation, and Action (Check privileges). The databases are: apsystem, cookiesordersystem, driving, drivingschool, information_schema, mysql, performance_schema, phpmyadmin, takenote, test, and tuition. The "tuition" database is highlighted with a yellow border.
- Total:** 11
- Action Buttons:** Check all, With selected: Drop
- Note:** Enabling the database statistics here might cause heavy traffic between the web server and the MySQL server.

Figure 5.3: phpMyAdmin server

The system's local database is configured as follows:

```
<?php  
$dbuser="root";  
$dbpass="";  
$host="localhost";  
$db="tuition";  
$mysqli =new mysqli($host,$dbuser, $dbpass, $db);  
?>
```

5.2.1.2 INSTALLATION STEP FOR CLOUD DATABASE

The Amazon S3 Management Console installation process will require the users to register and connect to the AWS Management Console on the website. Amazon S3 is compatible with all major operating systems, including Windows, Linux, and Mac. Figure 5.4 depicts an example of a functional registered account:

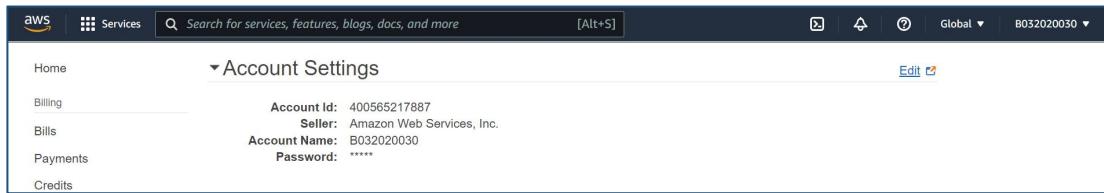


Figure 5.4: AWS Account

Figure 5.5 depicts the process of using the cloud service, which requires searching for S3, which is a cloud database service:

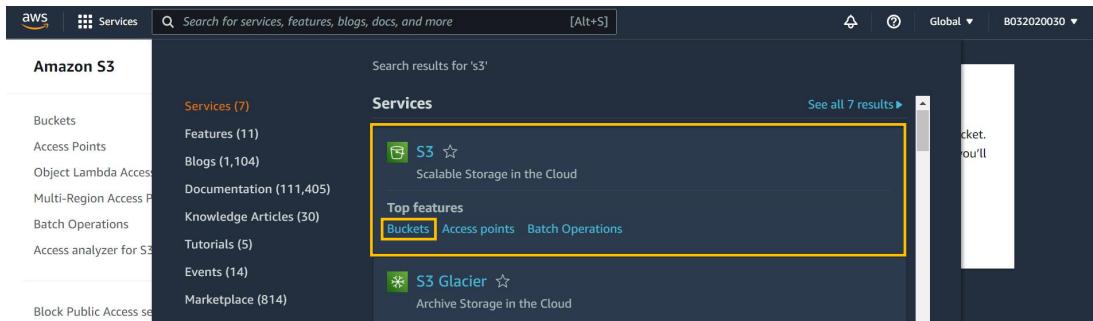


Figure 5.5: Cloud Database Service

Figure 5.6 demonstrates how to create buckets by clicking the "Create Bucket" button and then simply following the required steps:

The figure consists of two screenshots of the AWS S3 console. The top screenshot shows the 'Buckets' page with a blue banner at the top reading 'Learn how to effectively use the S3 Storage Classes.' Below it, there's an 'Account snapshot' section and a table for managing buckets. A prominent orange 'Create bucket' button is located at the top right of the table area. The bottom screenshot shows the 'Create bucket' wizard, specifically the 'General configuration' step. It has fields for 'Bucket name' (containing 'tutionomy') and 'AWS Region' (set to 'Asia Pacific (Singapore) ap-southeast-1'). A 'Choose bucket' button is also visible. Both screenshots include standard AWS navigation elements like the search bar, service menu, and footer.

Figure 5.6: Create Bucket Steps

Figure 5.7 depicts the created buckets, which act as storage spaces for information to be kept in the S3 cloud database and to hold the Brilliance Online Tuition System cloud backups.

This screenshot shows the 'Buckets' page after a bucket has been created. The 'Buckets' table now lists one item: 'tutionomy'. The table includes columns for Name, AWS Region, Access, and Creation date. The 'tutionomy' row is highlighted with a yellow border. The rest of the interface is consistent with Figure 5.6, including the sidebar with various S3 features and the top navigation bar.

Figure 5.7: Created Bucket

5.2.2 DATABASE CREATION AND DATABASE OBJECT CREATION

Figure 5.8 depicts the successful creation of 11 tables on the MySQL database:

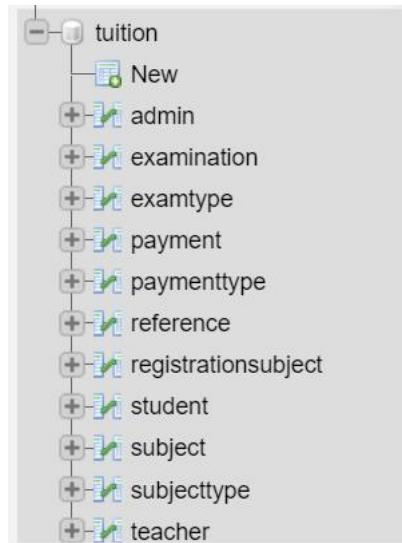


Figure 5.8: Creation of tables

ADMIN

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	AdminID	int(10)	latin1_swedish_ci		No	None	AUTO_INCREMENT		Change Drop More
2	A_ICNum	varchar(14)	latin1_swedish_ci		No	None			Change Drop More
3	A_FName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
4	A_LName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
5	A_PhoneNum	varchar(12)	latin1_swedish_ci		No	None			Change Drop More
6	A_Email	varchar(100)	latin1_swedish_ci		No	None			Change Drop More
7	A_Password	varchar(50)	latin1_swedish_ci		No	None			Change Drop More

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
	Rename	Drop	PRIMARY	BTREE	Yes	No	AdminID	2	A No
	Rename	Drop	A_ICNum	BTREE	Yes	No	A_ICNum	2	A No
	Rename	Drop	A_PhoneNum	BTREE	Yes	No	A_PhoneNum	2	A No
	Rename	Drop	A_Email	BTREE	Yes	No	A_Email	2	A No

Figure 5.9: Admin Table

SUBJECTTYPE

Table structure for table `subjecttype`:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	SubjectCode	int(10)	latin1_swedish_ci		No	None		AUTO_INCREMENT	Change Drop More
2	Name	varchar(30)	latin1_swedish_ci		No	None			Change Drop More
3	Image	varchar(255)	latin1_swedish_ci		No	None			Change Drop More

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
	PRIMARY	BTREE	Yes	No	SubjectCode	7	A	No	

Create an index on: 1 columns Go

Figure 5.10: SubjectType Table

SUBJECT

Table structure for table `subject`:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	SubjectID	int(10)	latin1_swedish_ci		No	None		AUTO_INCREMENT	Change Drop More
2	Price	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
3	Day	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
4	StartTime	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
5	Duration	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
6	Age	int(2)			No	None			Change Drop More
7	File	longblob			No	None			Change Drop More
8	QuantityStudent	int(2)		Yes	NULL				Change Drop More
9	Description	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
10	TermCondition	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
11	TeacherID	int(10)		Yes	NULL				Change Drop More
12	SubjectCode	int(10)		Yes	NULL				Change Drop More
13	AdminID	int(10)		Yes	NULL				Change Drop More

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
	PRIMARY	BTREE	Yes	No	SubjectID	7	A	No	
	AdminID	BTREE	No	No	AdminID	7	A	Yes	
	SubjectCode	BTREE	No	No	SubjectCode	7	A	Yes	
	TeacherID	BTREE	No	No	TeacherID	7	A	Yes	

Create an index on: 1 columns Go

Figure 5.11: Subject Table

TEACHER

The screenshot shows the MySQL Workbench interface with the Teacher table selected. The top navigation bar includes options like Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, Operations, and Triggers. The main area displays the table structure with 9 columns:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	TeacherID	int(10)	latin1_swedish_ci		No	None	AUTO_INCREMENT		Change Drop More
2	T_ICNum	varchar(14)	latin1_swedish_ci		No	None			Change Drop More
3	T_FName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
4	T_LName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
5	T_PhoneNum	varchar(12)	latin1_swedish_ci		No	None			Change Drop More
6	T_Email	varchar(100)	latin1_swedish_ci		No	None			Change Drop More
7	T_Password	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
8	SubjectCode	int(10)			Yes	NULL			Change Drop More
9	AdminID	int(11)			Yes	NULL			Change Drop More

Below the table, there are buttons for Print, Propose table structure, Move columns, Normalize, Add, and Go. The Indexes tab is selected, showing the current indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	TeacherID	10	A	No	
Edit Rename Drop	T_ICNum	BTREE	Yes	No	T_ICNum	10	A	No	
Edit Rename Drop	T_PhoneNum	BTREE	Yes	No	T_PhoneNum	10	A	No	
Edit Rename Drop	T_Email	BTREE	Yes	No	T_Email	10	A	No	
Edit Rename Drop	SubjectCode	BTREE	No	No	SubjectCode	10	A	Yes	
Edit Rename Drop	AdminID	BTREE	No	No	AdminID	2	A	Yes	

At the bottom, there is a button to Create an index on 1 columns.

Figure 5.12: Teacher Table

STUDENT

The screenshot shows the MySQL Workbench interface with the Student table selected. The top navigation bar includes options like Browse, Structure, SQL, Search, Insert, Export, Import, Privileges, Operations, and Triggers. The main area displays the table structure with 12 columns:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	StudentID	int(10)	latin1_swedish_ci		No	None	AUTO_INCREMENT		Change Drop More
2	S_ICNum	varchar(14)	latin1_swedish_ci		No	None			Change Drop More
3	S_FName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
4	S_LName	varchar(50)	latin1_swedish_ci		No	None			Change Drop More
5	S_DOB	date			No	None			Change Drop More
6	S_PhoneNum	varchar(12)	latin1_swedish_ci		No	None			Change Drop More
7	S_Address	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
8	S_Postcode	int(5)			No	None			Change Drop More
9	S_State	varchar(30)	latin1_swedish_ci		No	None			Change Drop More
10	S_Email	varchar(100)	latin1_swedish_ci		No	None			Change Drop More
11	S_Nationality	varchar(30)	latin1_swedish_ci		No	None			Change Drop More
12	S_Password	varchar(50)	latin1_swedish_ci		No	None			Change Drop More

Below the table, there are buttons for Print, Propose table structure, Move columns, Normalize, Add, and Go. The Indexes tab is selected, showing the current indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	StudentID	6	A	No	
Edit Rename Drop	S_ICNum	BTREE	Yes	No	S_ICNum	6	A	No	
Edit Rename Drop	S_Email	BTREE	Yes	No	S_Email	6	A	No	
Edit Rename Drop	S_PhoneNum	BTREE	Yes	No	S_PhoneNum	6	A	No	

At the bottom, there is a button to Create an index on 1 columns.

Figure 5.13: Student Table

REGISTRATIONSUBJECT

The screenshot shows the 'registrationsubject' table structure in MySQL Workbench. The table has four columns: RegistrationID, R_Date, StudentID, and SubjectID. Primary key constraints are defined on RegistrationID and StudentID. A unique constraint is defined on SubjectID.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	RegistrationID	int(10)			No	None		AUTO_INCREMENT	Change Drop More
2	R_Date	timestamp			No	current_timestamp()		ON UPDATE CURRENT_TIMESTAMP()	Change Drop More
3	StudentID	int(10)			No	None		Change Drop More	
4	SubjectID	int(10)			No	None		Change Drop More	

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit	Rename	Drop	PRIMARY	BTREE	Yes	No	RegistrationID	2	A No
Edit	Rename	Drop	StudentID	BTREE	No	No	StudentID	2	A No
Edit	Rename	Drop	SubjectID	BTREE	No	No	SubjectID	2	A No

Create an index on columns Go

Figure 5.14: RegistrationSubject Table

PAYMENTTYPE

The screenshot shows the 'paymenttype' table structure in MySQL Workbench. The table has two columns: PaymentCode and P_Description. A primary key constraint is defined on PaymentCode.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	PaymentCode	varchar(10)	latin1_swedish_ci		No	None		Change Drop More	
2	P_Description	varchar(255)	latin1_swedish_ci		No	None		Change Drop More	

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit	Rename	Drop	PRIMARY	BTREE	Yes	No	PaymentCode	4	A No

Create an index on columns Go

Figure 5.15: PaymentType Table

PAYMENT

The screenshot shows the 'payment' table structure in MySQL Workbench. The table has six columns: PaymentID, P_Amount, R_Date, P_Status, PaymentCode, and RegistrationID. Primary key constraints are defined on PaymentID and PaymentCode. A unique constraint is defined on RegistrationID.

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	PaymentID	int(10)			No	None		AUTO_INCREMENT	Change Drop More
2	P_Amount	varchar(255)	latin1_swedish_ci		No	None		Change Drop More	
3	R_Date	varchar(255)	latin1_swedish_ci		No	None		Change Drop More	
4	P_Status	varchar(255)	latin1_swedish_ci		No	None		Change Drop More	
5	PaymentCode	varchar(10)	latin1_swedish_ci		No	None		Change Drop More	
6	RegistrationID	int(10)			No	None		Change Drop More	

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit	Rename	Drop	PRIMARY	BTREE	Yes	No	PaymentID	5	A No
Edit	Rename	Drop	PaymentCode	BTREE	No	No	PaymentCode	5	A No
Edit	Rename	Drop	RegistrationID	BTREE	No	No	RegistrationID	5	A No

Figure 5.16: Payment Table

EXAMTYPE

The screenshot shows the MySQL Workbench interface with the following details:

- Server:** 127.0.0.1
 - Database:** tution
 - Table:** examtype
- Structure Tab:** Shows the columns of the ExamType table:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ExamCode	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
2	E_Description	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
- Indexes Tab:** Shows the primary key index for the ExamCode column:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	ExamCode	4	A	No	
- Buttons:** Print, Propose table structure, Move columns, Normalize, Add, Go.

Figure 5.17: ExamType Table

EXAMINATION

The screenshot shows the MySQL Workbench interface with the following details:

- Server:** 127.0.0.1
 - Database:** tution
 - Table:** examination
- Structure Tab:** Shows the columns of the examination table:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ExamID	int(10)			No	None	AUTO_INCREMENT		Change Drop More
2	E_Grade	varchar(5)	latin1_swedish_ci		No	None			Change Drop More
3	ExamCode	varchar(10)	latin1_swedish_ci		No	None			Change Drop More
4	ExamYear	varchar(4)	latin1_swedish_ci		No	None			Change Drop More
5	StudentID	int(10)			No	None			Change Drop More
6	SubjectID	int(10)			No	None			Change Drop More
- Indexes Tab:** Shows three indexes: StudentID, SubjectID, and ExamCode:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit Rename Drop	PRIMARY	BTREE	Yes	No	ExamID	2	A	No	
Edit Rename Drop	StudentID	BTREE	No	No	StudentID	2	A	No	
Edit Rename Drop	SubjectID	BTREE	No	No	SubjectID	2	A	No	
Edit Rename Drop	ExamCode	BTREE	No	No	ExamCode	2	A	No	
- Buttons:** Print, Propose table structure, Move columns, Normalize, Add, Go.

Figure 5.18: Examination Table

REFERENCE

The screenshot shows the MySQL Workbench interface for the 'reference' table. The top navigation bar includes 'Server 127.0.0.1', 'Database: tution', and 'Table: reference'. Below the navigation is a toolbar with 'Browse', 'Structure', 'SQL', 'Search', 'Insert', 'Export', 'Import', 'Privileges', 'Operations', and 'Triggers'.

Table Structure:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	ReferenceID	int(10)	latin1_swedish_ci		No	None		AUTO_INCREMENT	Change Drop More
2	R_Material	varchar(255)	latin1_swedish_ci		No	None			Change Drop More
3	R_Description	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
4	R_Video	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
5	R_Week	varchar(10)	latin1_swedish_ci		Yes	NULL			Change Drop More
6	R_Date	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
7	ClassLink	varchar(255)	latin1_swedish_ci		Yes	NULL			Change Drop More
8	TeacherID	int(10)	latin1_swedish_ci		Yes	NULL			Change Drop More
9	SubjectID	int(10)	latin1_swedish_ci		Yes	NULL			Change Drop More

Indexes:

Action	Keyname	Type	Unique	Packed	Column	Cardinality	Collation	Null	Comment
Edit	Drop	PRIMARY	BTREE	Yes	ReferenceID	2	A	No	
Edit	Drop	TeacherID	BTREE	No	TeacherID	2	A	Yes	
Edit	Drop	SubjectID	BTREE	No	SubjectID	2	A	Yes	

Figure 5.19: Reference Table

5.3 DATABASE IMPLEMENTATION

5.3.1 DDL/DCL STATEMENTS

ADMIN TABLE

```
CREATE TABLE `admin` (
  `AdminID` int(10) NOT NULL,
  `A_ICNum` varchar(14) NOT NULL,
  `A_FName` varchar(50) NOT NULL,
  `A_LName` varchar(50) NOT NULL,
  `A_PhoneNum` varchar(12) NOT NULL,
  `A_Email` varchar(100) NOT NULL,
  `A_Password` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

SUBJECTTYPE TABLE

```
CREATE TABLE `subjecttype` (
  `SubjectCode` int(10) NOT NULL,
  `Name` varchar(30) NOT NULL,
  `Image` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

SUBJECT TABLE

```
CREATE TABLE `subject` (
  `SubjectID` int(10) NOT NULL,
  `Price` varchar(10) NOT NULL,
  `Day` varchar(10) NOT NULL,
  `StartTime` varchar(10) NOT NULL,
  `Duration` varchar(10) NOT NULL,
  `Age` int(2) NOT NULL,
  `File` longblob NOT NULL,
  `QuantityStudent` int(2) DEFAULT NULL,
  `Description` varchar(255) NOT NULL,
  `TermCondition` varchar(255) NOT NULL,
  `TeacherID` int(10) DEFAULT NULL,
  `SubjectCode` int(10) DEFAULT NULL,
  `AdminID` int(10) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

TEACHER TABLE

```
CREATE TABLE `teacher` (
  `TeacherID` int(10) NOT NULL,
  `T_ICNum` varchar(14) NOT NULL,
  `T_FName` varchar(50) NOT NULL,
  `T_LName` varchar(50) NOT NULL,
  `T_PhoneNum` varchar(12) NOT NULL,
  `T_Email` varchar(100) NOT NULL,
  `T_Password` varchar(50) NOT NULL,
  `SubjectCode` int(10) DEFAULT NULL,
  `AdminID` int(11) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

STUDENT TABLE

```
CREATE TABLE `student` (
  `StudentID` int(10) NOT NULL,
  `S_ICNum` varchar(14) NOT NULL,
  `S_FName` varchar(50) NOT NULL,
  `S_LName` varchar(50) NOT NULL,
  `S_DOB` date NOT NULL,
  `S_PhoneNum` varchar(12) NOT NULL,
  `S_Address` varchar(255) NOT NULL,
  `S_Postcode` int(5) NOT NULL,
  `S_State` varchar(30) NOT NULL,
  `S_Email` varchar(100) NOT NULL,
  `S_Nationality` varchar(30) NOT NULL,
  `S_Password` varchar(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

REGISTRATIONSUBJECT TABLE

```
CREATE TABLE `registrationsubject` (
  `RegistrationID` int(10) NOT NULL,
  `R_Date` timestamp NOT NULL DEFAULT current_timestamp()
    ON UPDATE current_timestamp(),
  `StudentID` int(10) NOT NULL,
  `SubjectID` int(10) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

PAYMENTTYPE TABLE

```
CREATE TABLE `paymenttype` (
  `PaymentCode` varchar(10) NOT NULL,
  `P_Description` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

PAYMENT TABLE

```
CREATE TABLE `payment` (
  `PaymentID` int(10) NOT NULL,
  `P_Amount` varchar(255) NOT NULL,
  `R_Date` varchar(255) NOT NULL,
  `P_Status` varchar(255) NOT NULL,
  `PaymentCode` varchar(10) NOT NULL,
  `RegistrationID` int(10) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

EXAMTYPE TABLE

```
CREATE TABLE `examtype` (
  `ExamCode` varchar(10) NOT NULL,
  `E_Description` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

EXAMINATION TABLE

```
CREATE TABLE `examination` (
  `ExamID` int(10) NOT NULL,
  `E_Grade` varchar(5) NOT NULL,
  `ExamCode` varchar(10) NOT NULL,
  `ExamYear` varchar(4) NOT NULL,
  `StudentID` int(10) NOT NULL,
  `SubjectID` int(10) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

REFERENCE TABLE

```
CREATE TABLE `reference` (
  `ReferenceID` int(10) NOT NULL,
  `R_Material` varchar(255) NOT NULL,
  `R_Description` varchar(255) DEFAULT NULL,
  `R_Video` varchar(255) DEFAULT NULL,
  `R_Week` varchar(10) DEFAULT NULL,
  `R_Date` varchar(255) DEFAULT NULL,
  `ClassLink` varchar(255) DEFAULT NULL,
  `TeacherID` int(10) DEFAULT NULL,
  `SubjectID` int(10) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;
```

5.3.2 DATA LOADING PROCESS

5.3.2.1 EXPORT

Once a database has been built, it can be exported together with all of its database objects using the phpMyAdmin export function. The database script can then be applied to any computer or operating system. Figure 5.20 shows the DBMS's export feature:

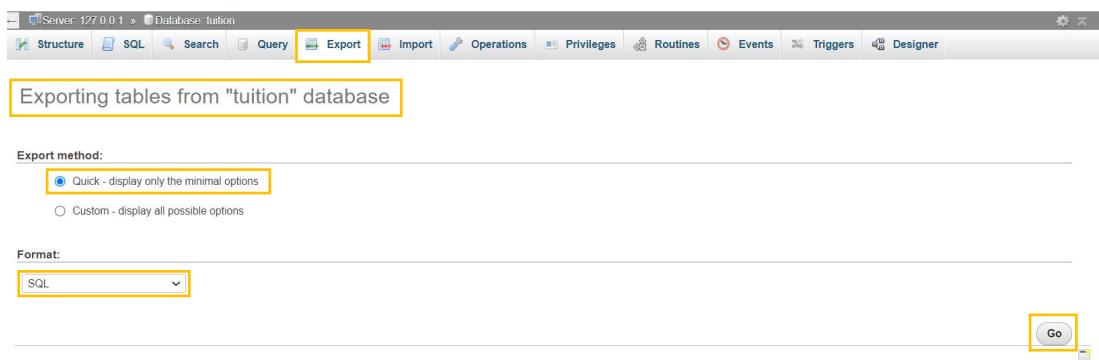


Figure 5.20: Export process

First, click the Export button, and then verify the database that needs to be exported. Then, to use a quick and simple export method, select the Quick radio button and make sure the format is SQL. Click the Go button to obtain the database's SQL script, which is required in order to use the database on other computers.

5.3.2.2 IMPORT

It is possible to load an entire database and all of its objects into phpMyAdmin using the phpMyAdmin import function. This method can be used to access the database on any computer, regardless of its operating system. Figure 5.21 depicts the import function of the DBMS:

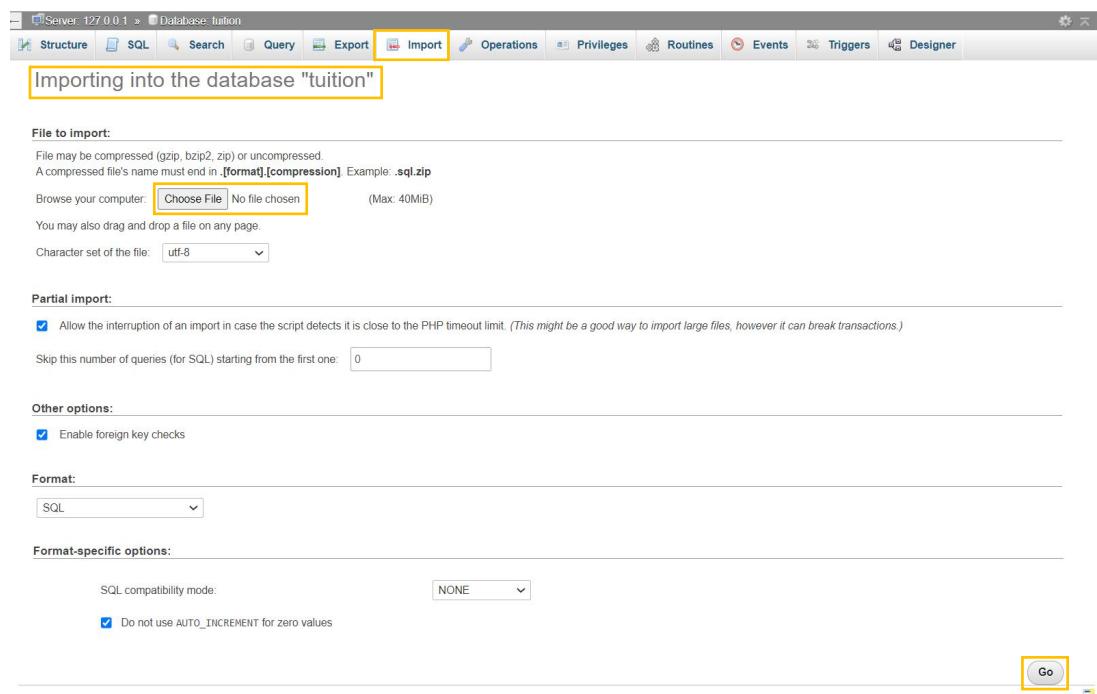


Figure 5.21: Import process

To start using the import function, the database must first be created. Then, click the Import button and check that the database into which you want to import the database script is accurate. Then, from the computer, select the SQL file to load it. To run the SQL file in the DBMS, press the Go button.

5.4 CONCLUSION

To sum up, this chapter demonstrates about the system's implementation, which also includes setting up the software development environment and the database. It also explains how to set up and implement the local and the cloud database on the system using various servers. It is important for a system to have several backups, including local and cloud backups. This will prevent data loss, which might be disastrous for the project.

Further details on the system testing phase will be presented in the following chapter. This also applies to the test planning process, which includes the organization, the environment in which the testing process will take place, the type of hardware to be used, and the preparations and training prior to the testing. The testing strategy, design, test results, and analysis will also be explained in more details in the next chapter.

CHAPTER VI

TESTING

6.1 INTRODUCTION

The testing phase is crucial since it involves assessing a software application's functionality to identify any flaws. In order to provide a high-quality result, it determines whether the generated software complied with the criteria and locates any errors in the software. In addition to this, the people participating in the testing process will be addressed in this chapter. Basically, a small number of individuals will be requested to conduct the tests. Additionally, the environment in which the testing will take place will be specified, together with the hardware setups, training requirements, and preparation steps. The descriptions, procedures, and expected outcomes for each test case will be listed. To discover which test requirement corresponds to each test case, a traceability matrix is also provided. T1 in this context stands for the ‘Test Administrator’, T2 for the ‘Test Teacher’, and T3 for the ‘Test Student’. The identification of the test case, the tester, the success or failure of the test case, and the thorough documentation of the failed test case will all be indicated. Additionally, the system's overall satisfaction ratings from the targeted users will be reported.

6.2 TEST PLAN

6.2.1 TEST ORGANIZATION

21 testers will be involved in the testing process for three days. The admin module is operated by three testers (one tester per day), the student module by nine testers (three testers per day), and the teacher module by the remaining nine testers (three testers each day). The testers who test the admin module will be particularly skilled at administrative tasks like entering data, while those who test the teacher module will primarily have a foundation in teaching any subject and experience in providing materials for the students to use. The public will test the student module since it will be publicly accessible for anybody to use.

6.2.2 TEST ENVIRONMENT

6.2.2.1 ENVIRONMENT OF TESTING TO BE CARRIED OUT

Since it is difficult to locate a venue and to gather everyone at a specific time, the testing is done online through Microsoft Teams. Additionally, there are significant financial savings because there is no location rental fees. Microsoft Teams was chosen because it is simple to use, free and accessible to all users. It also contains a feature called "share screen" that makes it easier for users to operate the system and let others see how it works.

6.2.2.2 HARDWARE, PREPARATIONS AND TRAINING PRIOR TO TESTING

The hardware that is required to conduct this testing phase is basically a laptop or computer and any device that can connect to internet (Wi-Fi). The testers only have to download the Microsoft Teams and ensure they have a reliable connection before starting the testing. Then, on a specific date, all of the testers will join in the online meeting and receive some briefings on how the system will function. The Xampp server must be installed on each tester's laptop or computer, and the sql file must be imported into phpMyAdmin. In addition to this, the testers are required to share their screens during testing in case any mistakes are discovered.

6.2.3 TEST SCHEDULE

Brilliance Online Tuition System						
Test ID	Module Name	Duration (Day)	Start Date	End Date		
Brilliance Online Tuition System - Testing Phase		3	23/08/2022	25/08/2022	9.00AM - 10.00AM 11.00AM - 12.00PM 2.00PM - 3.00PM 4.00PM - 5.00PM 5.00PM - 6.00PM	
T1.001	Admin Login	3	23/08/2022	25/08/2022		
T1.002	Admin Forget Password	1	23/08/2022	23/08/2022		
T1.003	Add Subject	3	23/08/2022	25/08/2022		
T1.004	Add Subject Details	3	23/08/2022	25/08/2022		
T1.005	Update Subject Image	3	23/08/2022	25/08/2022		
T1.006	Update Subject Timetable	3	23/08/2022	25/08/2022		
T1.007	Update Subject Day	3	23/08/2022	25/08/2022		
T1.008	Update Subject Time	3	23/08/2022	25/08/2022		
T1.009	Update Subject Age	3	23/08/2022	25/08/2022		
T1.010	Update Subject Price	3	23/08/2022	25/08/2022		
T1.011	Update Subject Quantity	3	23/08/2022	25/08/2022		
T1.012	Update Subject Description	3	23/08/2022	25/08/2022		
T1.013	Update Subject Terms & Condition	3	23/08/2022	25/08/2022		
T1.014	Remove Subject	3	23/08/2022	25/08/2022		
T1.015	Add Teacher	3	23/08/2022	25/08/2022		
T1.016	Assign Subject	3	23/08/2022	25/08/2022		
T1.017	Remove Teacher	3	23/08/2022	25/08/2022		
T1.018	Subject Intake Report	1	25/08/2022	25/08/2022		
T1.019	Monthly Report	1	25/08/2022	25/08/2022		
T1.020	Yearly Report	1	25/08/2022	25/08/2022		
T1.021	Update Profile Details	1	23/08/2022	23/08/2022		
T1.022	Change Password	1	23/08/2022	23/08/2022		
T2.023	Teacher Login	3	23/08/2022	25/08/2022		
T2.024	Teacher Forget Password	1	23/08/2022	23/08/2022		
T2.025	Add Reference	3	23/08/2022	25/08/2022		
T2.026	Update Reference Video	3	23/08/2022	25/08/2022		
T2.027	Update Material	3	23/08/2022	25/08/2022		
T2.028	Update Reference Description	3	23/08/2022	25/08/2022		
T2.029	Update Reference Month Week	3	23/08/2022	25/08/2022		
T2.030	Update Class Link	3	23/08/2022	25/08/2022		
T2.031	Remove Reference	3	23/08/2022	25/08/2022		
T2.032	Update Profile Details	1	23/08/2022	23/08/2022		
T2.033	Change Password	1	23/08/2022	23/08/2022		
T3.034	Sign Up Account	1	23/08/2022	23/08/2022		
T3.035	Student Login	3	23/08/2022	25/08/2022		
T3.036	Student Forget Password	1	23/08/2022	23/08/2022		
T3.037	Enrol Subject	3	23/08/2022	25/08/2022		
T3.038	Subject Payment	3	23/08/2022	25/08/2022		
T3.039	Update Grade	3	23/08/2022	25/08/2022		
T3.040	Update Profile Details	1	23/08/2022	23/08/2022		
T3.041	Change Password	1	23/08/2022	23/08/2022		

6.3 TEST STRATEGY

The top-down approach is a strategy in which decisions are made at the highest level and then discussed with the rest of the team. The top-down approach is used for this Brilliance Online Tuition System since it can be modified to meet the needs of the specific client. It reduces risk, eliminates confusion, and keeps the project organized. The top-down method is helpful because it is consistent from project to project, allowing for the establishment of a well-practiced system that becomes more efficient over time. The top-down approach is more regimented and strict. It has improved communication and made it a lot easier to discover problems. As a result, faster implementation is probable.

Black Box testing is the preferred strategy since its main goals are to find errors and validate software. By employing this test technique, the tester will only be aware of the formal inputs and expected results, but not how the code generates those outputs. Moreover, it is effective because it is carried out by independent software testers. Since the tester and developer are independent of one another, the testing process is fair and unbiased. Additionally, the testers are not necessarily need to have programming knowledge and might be a non-technical background person. The tester does not need to be an expert in the system's functioning details as well.

6.3.1 CLASSES OF TESTS

No.	Test ID	Class Of Test
1.	T1.001	Security test
2.	T1.002	Security test
3.	T1.003	Functionality test
4.	T1.004	Functionality test
5.	T1.005	Functionality test
6.	T1.006	Functionality test
7.	T1.007	Functionality test
8.	T1.008	Functionality test
9.	T1.009	Functionality test
10.	T1.010	Functionality test
11.	T1.011	Functionality test
12.	T1.012	Functionality test
13.	T1.013	Functionality test
14.	T1.014	Functionality test
15.	T1.015	Functionality test
16.	T1.016	Functionality test
17.	T1.017	Functionality test
18.	T1.018	Output correctness
19.	T1.019	Output correctness
20.	T1.020	Output correctness
21.	T1.021	Functionality test

22.	T1.022	Security test
23.	T2.023	Security test
24.	T2.024	Security test
25.	T2.025	Functionality test
26.	T2.026	Functionality test
27.	T2.027	Functionality test
28.	T2.028	Functionality test
29.	T2.029	Functionality test
30.	T2.030	Functionality test
31.	T2.031	Functionality test
32.	T2.032	Functionality test
33.	T2.033	Security test
34.	T3.034	Functionality test
35.	T3.035	Security test
36.	T3.036	Security test
37.	T3.037	Functionality test
38.	T3.038	Functionality test
39.	T3.039	Functionality test
40.	T3.040	Functionality test
41.	T3.041	Security Test

Table 6.1: Classes of tests

6.4 TEST DESIGN

6.4.1 TEST DESCRIPTION

Test ID	T1.001		
Module Name	Admin Login		
Test Description	To access the administration main page.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC1.001	Test the login process with a registered IC or email address and a valid password.	The admin clicks the Login button after entering the valid IC or email address and password.	Redirect to administration main page (Report Page).
TC1.002	Test the login process with a registered IC or email address and an invalid password.	The admin clicks the Login button after entering the valid IC or email address but the password is incorrect.	Display “Invalid IC/Email or Password”.
TC1.003	Test the login process with an unregistered IC or email address and a valid password.	The admin clicks the Login button after entering the invalid	Display “Invalid IC/Email or Password”.

		IC or email address but the password is correct.	
TC1.004	Test the login process with an unregistered IC or email address and an invalid password.	The admin clicks the Login button after entering the invalid IC or email address and password.	Display “Invalid IC/Email or Password”.

Table 6.2: Admin Login Test Case

Test ID	T1.002		
Module Name	Admin Forget Password		
Test Description	To reset admin's password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC2.001	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is the same and follow the required rules.	The admin clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Password has been changed successfully! Please Login First.”

TC2.002	Test the reset password process with an unregistered IC number, valid email address and phone number, new and confirm password is the same and follow the required rules.	The admin clicks the Reset Password button after entering the invalid IC, valid email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”
TC2.003	Test the reset password process with a registered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The admin clicks the Reset Password button after entering the valid IC, invalid email address and phone number and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”
TC2.004	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The admin clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is the same and follow the required	Display “Uh-Oh! No account found.”

		rules.	
TC2.005	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is not the same and not follow the required rules.	The admin clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is not the same and not follow the required rules.	Display “Please match the requested format.”
TC2.006	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is not the same and follow the required rules.	The admin clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the not same and follow the required rules.	Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”

Table 6.3: Admin Forget Password Test Case

Test ID	T1.003		
Module Name	Add Subject		
Test Description	To add the subject name and image.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC3.001	Test the add subject process with all necessary information entered correctly for the insertion of the name and photo.	The admin clicks the Insert button after filling out the Subject Name textbox and inserting the image with the correct format.	Display “Subject has been added successfully”.
TC3.002	Test the add subject process using the same subject name as in the database and a valid photo format.	The admin clicks the Insert button after entering a subject name that already exists in the database in the Subject Name textbox and inserting the image with the correct format.	Display “Subject already exist. Please use other than that.”
TC3.003	Test the add subject process using the same subject name as in the database and an	The admin clicks the Insert button after entering a subject	Display “Your image extension must be .jpg, .jpeg or .png”

	invalid photo format.	name that already exists in the database in the Subject Name textbox and inserting the image with the incorrect format.	
TC3.004	Test the add subject process using the different subject name as in the database and an invalid photo format.	The admin clicks the Insert button after filling out the Subject Name textbox and inserting the image with the incorrect format.	Display “Your image extension must be .jpg, .jpeg or .png”

Table 6.4: Add Subject Test Case

Test ID	T1.004		
Module Name	Add Subject Details		
Test Description	To add the subject details.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC4.001	Test the add subject details process with all necessary information entered and in the correct format.	The admin clicks the Insert button after selecting subject, day and time options, filling out all textboxes and inserting the	Display “Subject has been added successfully”.

		schedule with the correct format.	
TC4.002	Test the add subject details process with all necessary information entered but the schedule section's format is incorrect.	The admin clicks the Insert button after selecting subject, day and time options, filling out all textboxes and inserting the schedule with the incorrect format.	Display “Your file extension must be .zip, .pdf or .docx”.
TC4.003	Test the add subject details process with the subject, day and time same as existed in the database.	The admin clicks the Insert button after selecting subject, day and time options that already exists in the database, filling out all textboxes and inserting the schedule with the correct format.	Display “Subject is ineligible for the same day and time.”
TC4.004	Test the add subject details process with the day, time and age same as existed in the database.	The admin clicks the Insert button after selecting subject option, but day, time and age already exists in the database, filling out all textboxes and	Display “Subject is ineligible for the identical day and time for the identical age.”

		inserting the schedule with the correct format.	
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Table 6.5: Add Subject Details Test Case

Test ID	T1.005		
Module Name	Update Subject Image		
Test Description	To update the subject image.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC5.001	Test the update subject image process with the correct format for image insertion.	The admin clicks the Update Image button after inserting the image with the correct format.	Display “Image has been updated successfully”.
TC5.002	Test the update subject image process with no image insertion.	The admin clicks the Update Image button without inserting any image.	Display “Please select a file”.

Table 6.6: Update Subject Image Test Case

Test ID	T1.006		
Module Name	Update Subject Timetable		
Test Description	To update the subject timetable.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC6.001	Test the update subject timetable process with the correct format for timetable insertion.	The admin clicks the Update Timetable button after inserting the timetable with the correct format.	Display “Timetable has been updated successfully”.
TC6.002	Test the update subject timetable process with no timetable insertion.	The admin clicks the Update Timetable button without inserting any timetable.	Display “Please select a file”.

Table 6.7: Update Subject Timetable Test Case

Test ID	T1.007		
Module Name	Update Subject Day		
Test Description	To update the subject day.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC7.001	Test the update subject day process with the radio button is selected.	The admin clicks the Update Day button after selecting the day.	Display “Day has been updated successfully”.
TC7.002	Test the update subject day process with the radio button is not selected.	The admin clicks the Update Day button without selecting the day.	Display “Please select one of these options”.

Table 6.8: Update Subject Day Test Case

Test ID	T1.008		
Module Name	Update Subject Time		
Test Description	To update the subject time.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC8.001	Test the update subject day process with the radio button is selected.	The admin clicks the Update Time button after selecting the time.	Display “Time has been updated successfully”.
TC8.002	Test the update subject day process with the radio button is not selected.	The admin clicks the Update Time button without selecting the time.	Display “Please select one of these options”.

Table 6.9: Update Subject Time Test Case

Test ID	T1.009		
Module Name	Update Subject Age		
Test Description	To update the subject age requirement.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC9.001	Test the subject age requirement update process by changing the textbox value.	The admin clicks the Update Age button after changing the textbox value.	Display “Age has been updated successfully”.

Table 6.10: Update Subject Age Test Case

Test ID	T1.010		
Module Name	Update Subject Price		
Test Description	To update the subject price.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC10.001	Test the subject price update process by changing the textbox value.	The admin clicks the Update Price button after changing the textbox value.	Display “Price has been updated successfully”.

Table 6.11: Update Subject Price Test Case

Test ID	T1.011		
Module Name	Update Subject Quantity		
Test Description	To update the subject quantity.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC11.001	Test the subject quantity update process by changing the textbox value.	The admin clicks the Update Quantity button after changing the textbox value.	Display “Quantity has been updated successfully”.

Table 6.12: Update Subject Quantity Test Case

Test ID	T1.012		
Module Name	Update Subject Description		
Test Description	To update the subject description.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC12.001	Test the subject description update process by changing the textbox sentence.	The admin clicks the Update Description button after changing the textbox value.	Display “Description has been updated successfully”.

Table 6.13: Update Subject Description Test Case

Test ID	T1.013		
Module Name	Update Subject Terms & Condition		
Test Description	To update the subject terms and condition.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC13.001	Test the subject terms and condition update process by changing the textbox sentence.	The admin clicks the Update T&C button after changing the textbox value.	Display “Terms & Condition has been updated successfully”.

Table 6.14: Update Subject Terms & Condition Test Case

Test ID	T1.014		
Module Name	Remove Subject		
Test Description	To remove the unwanted subject.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC14.001	Test the subject removal process by clicking the remove button.	The admin clicks the Remove button at the Action section.	Display “Are you sure you want to delete? (OK/Cancel) ”.
TC14.002	Test the subject removal process by clicking the “OK” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	The admin clicks the OK button.	Display “Subject has been removed successfully.”
TC14.003	Test the subject removal process by clicking the “Cancel” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	The admin clicks the Cancel button.	Display the same page with no changes.

Table 6.15: Remove Subject Test Case

Test ID	T1.015		
Module Name	Add Teacher		
Test Description	To add new teacher details.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC15.001	Test the add new teacher details process with all necessary information entered, data that does not yet exist in the database, email address is in the correct format and password length follows the required rules.	The admin clicks the Add Teacher button after selecting subject option, filling out all textboxes and inserting the email address with the correct format and password length follows the required rules.	Display “New teacher has been added successfully”.
TC15.002	Test the add new teacher details process with all necessary information entered, data that already exist in the database, email address is in the correct format and password length follows the required rules.	The admin clicks the Add Teacher button after selecting subject option, filling out all textboxes but the data already exists in the database and inserting the email address with the correct format and password	Display “IC/Phone number or email already registered.”

		length follows the required rules.	
TC15.003	Test the add new teacher details process with all necessary information entered, data that does not yet exist in the database, email address is in the correct format but password length does not follow the required rules.	The admin clicks the Add Teacher button after selecting subject option, filling out all textboxes and inserting the email address with the correct format and password length does not follow the required rules.	Display “Please match the requested format.”
TC15.004	Test the add new teacher details process with email address is not in the correct format.	The admin inserts the email address with the incorrect format.	Display “Error : You did not enter a valid email.”
TC15.005	Test the add new teacher details process with IC that already exists in the database.	The admin inserts the IC number that already exists in the database.	Display “IC already exist. Please use other than that.”
TC15.006	Test the add new teacher details process with phone number that already exists in the database.	The admin inserts the phone number that already exists in the database.	Display “Phone number already exist. Please use other than that.”

TC15.007	Test the add new teacher details process with email address that already exists in the database.	The admin inserts the email address that already exists in the database.	Display “Email already exist. Please use other than that.”
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Table 6.16: Add Teacher Test Case

Test ID	T1.016		
Module Name	Assign Subject		
Test Description	To subject details to specific teacher.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC16.001	Test the assign subject process by selecting the teacher who has been assigned to teach another subject on the same day and time.	The admin clicks the Assign Subject button after selecting the teacher who is already teaching another subject at the same time and on the same day.	Display “Teacher cannot teach in the same day and time.”
TC16.002	Test the assign subject process by selecting the teacher who has not been assigned to teach any subject.	The admin clicks the Assign Subject button after selecting the teacher.	Display “Teacher has been assigned successfully.”
TC16.003	Test the assign subject process by selecting	The admin clicks the Assign	Display “Teacher has been

	the teacher who has been assigned to teach another subject but not on the same day and time.	Subject button after selecting the teacher who is not teaching any subject at the same time and on the same day.	assigned successfully.”
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Table 6.17: Assign Subject Test Case

Test ID	T1.017		
Module Name	Remove Teacher		
Test Description	To remove the unwanted teacher.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC17.001	Test the teacher removal process by clicking the remove button.	The admin clicks the Remove button at the Action section.	Display “Are you sure you want to delete? (OK/Cancel) ”.
TC17.002	Test the teacher removal process by clicking the “OK” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	The admin clicks the OK button.	Display “Teacher data has been deleted successfully.”
TC17.003	Test the teacher removal process by clicking the “Cancel” button after the message “Are	The admin clicks the Cancel button.	Display the same page with no changes.

	you sure you want to delete? (OK/Cancel)” appeared.		
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Table 6.18: Remove Teacher Test Case

Test ID	T1.018		
Module Name	Subject Intake Report		
Test Description	To view the subject intake report by choosing the desired subject, month and year.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC18.001	Test the subject intake report process by choosing the desired subject, month and year.	The admin clicks the Review button after selecting the desired subject, month and year.	Display “Review For: (Subject) : (Month), (Year)” and display all of the data that has been found during the search.

Table 6.19: Subject Intake Report Test Case

Test ID	T1.019		
Module Name	Monthly Report		
Test Description	To view the monthly subject report.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC19.001	Test the monthly subject report process by choosing the desired subject, month and year.	The admin clicks the Review button after selecting the desired subject, month and year.	Display all of the data discovered during the search, including total students and sales for the selected month.

Table 6.20: Monthly Report Test Case

Test ID	T1.020		
Module Name	Yearly Report		
Test Description	To view the yearly subject report.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC20.001	Test the yearly subject report process by choosing the desired year.	The admin clicks the Review button after selecting the	Display all of the data discovered during the search, including total sales for the

		desired year.	selected year and the total sales for each month of that year.
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Table 6.21: Yearly Report Test Case

Test ID	T1.021		
Module Name	Update Profile Details		
Test Description	To update profile details.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC21.001	Test the update profile details process with all necessary information entered, data that does not yet exist in the database and email address is in the correct format.	The admin clicks the Update Profile button after entering phone number and email address that have not yet been recorded in the database and email address is in the correct format.	Display “Email has been updated successfully!”. “Phone number has been updated successfully!”.

TC21.002	Test the update profile details process with all necessary information entered, phone number and email address already exist in the database and email address is in the correct format.	The admin clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the correct format.	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”
TC21.003	Test the update profile details process with all necessary information entered, data already exist in the database and email address is not in the correct format.	The admin clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the incorrect format.	Display “Error : You did not enter a valid email.”

Table 6.22: Update Profile Details Test Case

Test ID	T1.022		
Module Name	Change Password		
Test Description	To change password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC22.001	Test the password change process with the old password matching the current password, new and confirm password is the same.	The admin clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same.	Display “Password has been changed successfully!”.
TC22.002	Test the password change process with the old password not matching the current password, new and confirm password is the same.	The admin clicks the Change Password button after entering old password that does not matches with the current password, new and confirm password is the same.	Display “Uh-oh! Old password not match.”
TC22.003	Test the password change process with the old password not matching the current	The admin clicks the Change Password button after entering	Display “New Password and Confirm Password do not

	password, new and confirm password is not the same.	old password that does not matches with the current password, new and confirm password is not the same.	match!”
TC22.004	Test the password change process with the old password matching the current password, new and confirm password is the same but not follow the requested format.	The admin clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same but not follow the requested format.	Display “Please match the requested format.”

Table 6.23: Change Password Test Case

Test ID	T2.023		
Module Name	Teacher Login		
Test Description	To access the teacher main page.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC23.001	Test the login process with a registered IC or email address and a valid password.	The teacher clicks the Login button after entering the valid IC or email address and password.	Redirect to teacher main page (Student Report Page).
TC23.002	Test the login process with a registered IC or email address and an invalid password.	The teacher clicks the Login button after entering the valid IC or email address but the password is incorrect.	Display “Invalid IC/Email or Password”.
TC23.003	Test the login process with an unregistered IC or email address and a valid password.	The teacher clicks the Login button after entering the invalid IC or email address but the password is correct.	Display “Invalid IC/Email or Password”.

TC23.004	Test the login process with an unregistered IC or email address and an invalid password.	The teacher clicks the Login button after entering the invalid IC or email address and password.	Display “Invalid IC/Email or Password”.
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Table 6.24: Teacher Login Test Case

Test ID	T2.024		
Module Name	Teacher Forget Password		
Test Description	To reset teacher's password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC24.001	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is the same and follow the required rules.	The teacher clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Password has been changed successfully! Please Login First.”
TC24.002	Test the reset password process with an unregistered IC number, valid email address	The teacher clicks the Reset Password button after entering	Display “Uh-Oh! No account found.”

	and phone number, new and confirm password is the same and follow the required rules.	the invalid IC, valid email address and phone number, and new and confirm password is the same and follow the required rules.	
TC24.003	Test the reset password process with a registered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The teacher clicks the Reset Password button after entering the valid IC, invalid email address and phone number and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”
TC24.004	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The teacher clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”

TC24.005	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is not the same and not follow the required rules.	The teacher clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is not the same and not follow the required rules.	Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”
TC24.006	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is not the same and follow the required rules.	The teacher clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the not same and follow the required rules.	Display “Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”

Table 6.25: Teacher Forget Password Test Case

Test ID	T2.025		
Module Name	Add Reference		
Test Description	To add the subject references and materials.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC25.001	Test the add reference process with all necessary information entered and in the correct format.	The teacher clicks the Insert button after selecting subject, month and week options, filling out all textboxes and inserting the class link, lesson and video material with the correct format.	Display “Reference has been added successfully”.
TC25.002	Test the add subject details process with all necessary information entered but the lesson material section's format is incorrect.	The teacher clicks the Insert button after selecting subject, month and week options, filling out all textboxes and inserting the class link and video material with the correct format but lesson material section's format is incorrect.	Display “Your file extension must be .zip, .pdf or .docx”.

TC25.003	<p>Test the add subject details process with all necessary information entered but the video material section's format is incorrect.</p>	<p>The teacher clicks the Insert button after selecting subject, month and week options, filling out all textboxes and inserting the class link and lesson material with the correct format but video material section's format is incorrect.</p>	<p>Display “Your video extension must be .mp4 or .mov only”.</p>
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Table 6.26: Add Reference Test Case

Test ID	T2.026		
Module Name	Update Reference Video		
Test Description	To update the reference video.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC26.001	Test the update reference video process with the correct format for video insertion.	The teacher clicks the Update Video button after inserting the video reference with the correct format.	Display “Video has been updated successfully”.
TC26.002	Test the update reference video process with no video insertion.	The teacher clicks the Update Video button without inserting any video reference.	Display “Please select a file”.

Table 6.27: Update Reference Video Test Case

Test ID	T2.027		
Module Name	Update Material		
Test Description	To update the reference materials.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC27.001	Test the update reference materials process with the correct format for materials insertion.	The teacher clicks the Update Material button after inserting the material with the correct format.	Display “Material has been updated successfully”.
TC27.002	Test the update reference materials process with no material insertion.	The teacher clicks the Update Material button without inserting any material.	Display “Please select a file”.

Table 6.28: Update Material Test Case

Test ID	T2.028		
Module Name	Update Reference Description		
Test Description	To update the reference description.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC28.001	Test the reference description update process by changing the textbox sentence.	The teacher clicks the Update Description button after changing the textbox value.	Display the updated sentence.

Table 6.29: Update Reference Description Test Case

Test ID	T2.029		
Module Name	Update Reference Month Week		
Test Description	To update the reference month and week.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC29.001	Test the reference month and week update process by choosing the desired month and week.	The teacher clicks the Update Reference button after choosing the desired month and week.	Display the updated month and week.

Table 6.30: Update Reference Month Week Test Case

Test ID	T2.030		
Module Name	Update Class Link		
Test Description	To update the class link.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC30.001	Test the class link update process by inserting new link to the textbox.	The teacher clicks the Update Link button after changing the textbox value.	Display “Class link has been updated successfully”.

Table 6.31: Update Class Link Test Case

Test ID	T2.031		
Module Name	Remove Reference		
Test Description	To remove the unwanted reference.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC31.001	Test the reference removal process by clicking the remove button.	The teacher clicks the Remove button at the Action section.	Display “Are you sure you want to delete? (OK/Cancel) ”.
TC31.002	Test the reference removal process by	The teacher clicks the OK	Display “Reference has been

	clicking the “OK” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	button.	deleted successfully”
TC31.003	Test the reference removal process by clicking the “Cancel” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	The teacher clicks the Cancel button.	Display the same page with no changes.

Table 6.32: Remove Reference Test Case

Test ID	T2.032		
Module Name	Update Profile Details		
Test Description	To update profile details.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC32.001	Test the update profile details process with all necessary information entered, data that does not yet exist in the database and email address is in the correct format.	The teacher clicks the Update Profile button after entering phone number and email address that have not yet been recorded in the database and email address is in the correct	Display “Email has been updated successfully!”. “Phone number has been updated successfully!”. “Email address has been updated successfully!”.

		format.	
TC32.002	Test the update profile details process with all necessary information entered, phone number and email address already exist in the database and email address is in the correct format.	The teacher clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the correct format.	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”
TC32.003	Test the update profile details process with all necessary information entered, data already exist in the database and email address is not in the correct format.	The teacher clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the incorrect format.	Display “Error : You did not enter a valid email.”

Table 6.33: Update Profile Details Test Case

Test ID	T2.033		
Module Name	Change Password		
Test Description	To change password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC33.001	Test the password change process with the old password matching the current password, new and confirm password is the same.	The teacher clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same.	Display “Password has been changed successfully!”.
TC33.002	Test the password change process with the old password not matching the current password, new and confirm password is the same.	The teacher clicks the Change Password button after entering old password that does not matches with the current password, new and confirm password is the same.	Display “Uh-oh! Old password not match.”
TC33.003	Test the password change process with the old password not matching the current	The teacher clicks the Change Password button after entering	Display “New Password and Confirm Password do not

	password, new and confirm password is not the same.	old password that does not matches with the current password, new and confirm password is not the same.	match!"
TC33.004	Test the password change process with the old password matching the current password, new and confirm password is the same but not follow the requested format.	The teacher clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same but not follow the requested format.	Display "Please match the requested format."

Table 6.34: Change Password Test Case

Test ID	T3.034		
Module Name	Sign Up Account		
Test Description	To register new account.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC34.001	Test the account registration process with all necessary information entered and in the correct format.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with the correct format, password and confirm password is the same and follows the requested format.	Display “Student has been registered successfully! Please Login First.”
TC34.002	Test the account registration process with all necessary information entered and in the correct format but IC number already exists in the database.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with	Display “IC number already exist. Use other IC number.”

		the correct format, password and confirm password is the same and follows the requested format but the IC number already exists in the database.	
TC34.003	Test the account registration process with all necessary information entered and in the correct format but phone number already exists in the database.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with the correct format, password and confirm password is the same and follows the requested format but the phone number already exists in the database.	Display “Phone number already exist. Please use other than that.”
TC34.004	Test the account registration process with all necessary information entered and in the correct format but email address already exists in the database.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with	Display “Email already exist. Use other email.”

		the correct format, password and confirm password is the same and follows the requested format but the email address already exists in the database.	
TC34.005	Test the account registration process with all necessary information entered but email address is not in the correct format.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with the incorrect format, password and confirm password is the same and follows the requested format.	Display “Error: You did not enter a valid email.”
TC34.006	Test the account registration process with the new and confirm password is not the same.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with the correct format, password	Display “Uh-Oh! Password and Re-Type Password do not match.”

		and confirm password is not the same and follows the requested format.	
TC34.007	Test the password change process with the new and confirm password is the same but not follow the requested format.	The student clicks the Register button after selecting date-of-birth, nationality and state options, filling out all textboxes, inserting the email address with the correct format, password and confirm password is the same but no follows the requested format.	Display “Please match the requested format.”

Table 6.35: Sign Up Account Test Case

Test ID	T3.035		
Module Name	Student Login		
Test Description	To access the student main page.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC35.001	Test the login process with a registered IC or email address and a valid password.	The student clicks the Login button after entering the valid IC or email address and password.	Redirect to administration main page (All Subject Details).
TC35.002	Test the login process with a registered IC or email address and an invalid password.	The student clicks the Login button after entering the valid IC or email address but the password is incorrect.	Display “Invalid IC/Email or Password”.
TC35.003	Test the login process with an unregistered IC or email address and a valid password.	The student clicks the Login button after entering the invalid IC or email address but the password is correct.	Display “Invalid IC/Email or Password”.

TC35.004	Test the login process with an unregistered IC or email address and an invalid password.	The student clicks the Login button after entering the invalid IC or email address and password.	Display “Invalid IC/Email or Password”.
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Table 6.36: Student Login Test Case

Test ID	T3.036		
Module Name	Student Forget Password		
Test Description	To reset student's password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC36.001	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is the same and follow the required rules.	The student clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Password has been changed successfully! Please Login First.”
TC36.002	Test the reset password process with an unregistered IC number, valid email address	The student clicks the Reset Password button after entering	Display “Uh-Oh! No account found.”

	and phone number, new and confirm password is the same and follow the required rules.	the invalid IC, valid email address and phone number, and new and confirm password is the same and follow the required rules.	
TC36.003	Test the reset password process with a registered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The student clicks the Reset Password button after entering the valid IC, invalid email address and phone number and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”
TC36.004	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is the same and follow the required rules.	The student clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is the same and follow the required rules.	Display “Uh-Oh! No account found.”

TC36.005	Test the reset password process with an unregistered IC number, invalid email address and phone number, new and confirm password is not the same and not follow the required rules.	The student clicks the Reset Password button after entering the invalid IC, email address and phone number, and new and confirm password is not the same and not follow the required rules.	Display “Please match the requested format.”
TC36.006	Test the reset password process with a registered IC number, valid email address and phone number, new and confirm password is not the same and follow the required rules.	The student clicks the Reset Password button after entering the valid IC, email address and phone number, and new and confirm password is the not same and follow the required rules.	Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”

Table 6.37: Student Forget Password Test Case

Test ID	T3.037		
Module Name	Enrol Subject		
Test Description	To enrol the desired subject.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC37.001	Test the subject enrollment process by checking all desired subjects' checkboxes, then clicking the Proceed To Enrollment button and the Enrol button once it reaches the review page.	The student clicks the Proceed To Enrollment button after checking all desired subjects' checkboxes, and clicks the Enrol button once it reaches the review page.	Display "(Subject) has been enrolled successfully."
TC37.002	Test the subject enrollment process by checking all desired subjects' checkboxes, then clicking the Proceed To Enrollment button and the Enrol button once it reaches the review page but has already enrolled previously.	The student clicks the Proceed To Enrollment button after checking all desired subjects' checkboxes, and clicks the Enrol button once it reaches the review page but the subjects have already been enrolled.	Display "(Subject) has already enrolled previously."

TC37.003	Test the subject enrollment process by unchecking any subjects' checkboxes and then clicking the Proceed To Enrollment button.	The student clicks the Proceed To Enrollment button without checking any desired subjects' checkboxes.	Display "Please check this box if you want to proceed."
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Table 6.38: Enrol Subject Test Case

Test ID	T3.038		
Module Name	Subject Payment		
Test Description	To pay the subject according to the desired month.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC38.001	Test the subject payment process by checking all desired subjects' checkboxes, then clicking the Proceed To Payment button, selecting the desired month and payment method, clicking the Pay button once it reaches the review page and the available intake for that particular subject is more than one.	The student clicks the Proceed To Payment button after checking all desired subjects' checkboxes, and clicks the Pay button once it reaches the review page after selecting the desired month and payment method and the available intake for that particular subject is	Display "Payment for (Subject) in (Month) has been received successfully."

		more than one.	
TC38.002	Test the subject payment process by checking all desired subjects' checkboxes, then clicking the Proceed To Payment button, selecting the desired month and payment method, clicking the Pay button once it reaches the review page and the available intake for that particular subject is zero.	The student clicks the Proceed To Payment button after checking all desired subjects' checkboxes, and clicks the Pay button once it reaches the review page after selecting the desired month and payment method and the available intake for that particular subject is zero.	Display "Insufficient seat. We do not accept any student admission for (Subject) in (Month)."
TC38.003	Test the subject payment process by checking all desired subjects' checkboxes, then clicking the Proceed To Payment button, selecting the desired month and payment method, clicking the Pay button once it reaches the review page and the available intake for that particular subject is more than one but already paid for that chosen month.	The student clicks the Proceed To Payment button after checking all desired subjects' checkboxes, and clicks the Pay button once it reaches the review page after selecting the desired month and payment method and the available intake for that particular subject is	Display "Payment for (Subject) in (Month) already made."

		more than one but already paid for that chosen month.	
TC38.004	Test the subject payment process by unchecking any subjects' checkboxes and then clicking the Proceed To Payment button.	The student clicks the Proceed To Payment button without checking any desired subjects' checkboxes.	Display "Please check this box if you want to proceed."
TC38.005	Test the subject payment process by checking all desired subjects' checkboxes, then clicking the Proceed To Payment button, not selecting any desired month and payment method, clicking the Pay button once it reaches the review page.	The student clicks the Proceed To Payment button after checking all desired subjects' checkboxes, and clicks the Pay button once it reaches the review page but not selecting any desired month and payment method.	Display "Please select an item in the list."

Table 6.39: Subject Payment Test Case

Test ID	T3.039		
Module Name	Update Grade		
Test Description	To update the subject grade for each exam.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC39.001	Test the update grade process with all necessary information selected.	The student clicks the Update Grade button after selecting the subject, examination, exam year and grade options.	Display “Grade has been added successfully.”
TC39.002	Test the update grade process with all necessary information selected but the data already exists in the database.	The student clicks the Update Grade button after selecting the subject, examination, exam year and grade options but the data already exists in the database.	Display “Grade has been updated successfully.”
TC39.003	Test the update grade process without selecting all or any necessary information.	The student clicks the Update Grade button without selecting any subject, examination, exam year and grade options.	Display “Please select an item in the list.”

Table 6.40: Update Grade Test Case

Test ID	T3.040		
Module Name	Update Profile Details		
Test Description	To update profile details.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC40.001	Test the update profile details process with all necessary information entered, data that does not yet exist in the database and email address is in the correct format.	The student clicks the Update Profile button after entering phone number and email address that have not yet been recorded in the database and email address is in the correct format.	Display “Email has been updated successfully!”. “Phone number has been updated successfully!” Address, Postcode & State has been updated successfully!.
TC40.002	Test the update profile details process with all necessary information entered, phone number and email address already exist in the database and email address is in the correct format.	The student clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the correct format.	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”

TC40.003	<p>Test the update profile details process with all necessary information entered, data already exist in the database and email address is not in the correct format.</p>	<p>The student clicks the Update Profile button after entering phone number and email address that already exist in the database and email address is in the incorrect format.</p>	<p>Display “Error : You did not enter a valid email.”</p>
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Table 6.41: Update Profile Details Test Case

Test ID	T3.041		
Module Name	Change Password		
Test Description	To change password.		
Test Case ID	Test Case Description	Procedures	Expected Result
TC41.001	<p>Test the password change process with the old password matching the current password, new and confirm password is the same.</p>	<p>The student clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same.</p>	<p>Display “Password has been changed successfully!”.</p>

TC41.002	Test the password change process with the old password not matching the current password, new and confirm password is the same.	The student clicks the Change Password button after entering old password that does not matches with the current password, new and confirm password is the same.	Display “Uh-oh! Old password not match.”
TC41.003	Test the password change process with the old password not matching the current password, new and confirm password is not the same.	The student clicks the Change Password button after entering old password that does not matches with the current password, new and confirm password is not the same.	Display “New Password and Confirm Password do not match!”
TC41.004	Test the password change process with the old password matching the current password, new and confirm password is the same but not follow the requested format.	The student clicks the Change Password button after entering old password that matches with the current password, new and confirm password is the same but not follow the requested format.	Display “Please match the requested format.”

Table 6.42: Change Password Test Case

6.4.2 TEST DATA

No.	Test ID	Type Of Test Data
1.	T1.001	Real life data
2.	T1.002	Real life data
3.	T1.003	Real life data
4.	T1.004	Real life data
5.	T1.005	Real life data
6.	T1.006	Real life data
7.	T1.007	Real life data
8.	T1.008	Real life data
9.	T1.009	Real life data
10.	T1.010	Real life data
11.	T1.011	Real life data
12.	T1.012	Real life data
13.	T1.013	Real life data
14.	T1.014	Real life data
15.	T1.015	Real life data
16.	T1.016	Real life data
17.	T1.017	Real life data
18.	T1.018	Real life data
19.	T1.019	Real life data
20.	T1.020	Real life data
21.	T1.021	Real life data

22.	T1.022	Real life data
23.	T2.023	Real life data
24.	T2.024	Real life data
25.	T2.025	Real life data
26.	T2.026	Real life data
27.	T2.027	Real life data
28.	T2.028	Real life data
29.	T2.029	Real life data
30.	T2.030	Real life data
31.	T2.031	Real life data
32.	T2.032	Real life data
33.	T2.033	Real life data
34.	T3.034	Real life data
35.	T3.035	Real life data
36.	T3.036	Real life data
37.	T3.037	Real life data
38.	T3.038	Synthetic data
39.	T3.039	Real life data
40.	T3.040	Real life data
41.	T3.041	Real life data

Table 6.43: Test Data

6.5 TEST RESULTS AND ANALYSIS

Test ID	T1.001		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC1.001	IC : 790509016486 Password : saraAmeena79! Or Email : saraameena@brilliance.edu.my Password : saraAmeena79!	Redirect to administration main page (Report Page).	Success
TC1.002	IC : 790509016486 Password : saraAmeena1! Or Email : saraameena@brilliance.edu.my Password : saraAmeena1!	Display “Invalid IC/Email or Password”.	Success

TC1.003	<p>IC : 750509016412 Password : saraAmeena79!</p> <p>Or</p> <p>Email : saraameena@brilliance.edu.com Password : saraAmeena79!</p>	Display “Invalid IC/Email or Password”.	Success
TC1.004	<p>IC : 750509016412 Password : saraAmeena1!</p> <p>Or</p> <p>Email : saraameena@brilliance.edu.com Password : saraAmeena1!</p>	Display “Invalid IC/Email or Password”.	Success

Table 6.44: Admin Login Test Data

Test ID	T1.002		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC2.001	IC : 790509016486 Email : saraameena@brilliance.edu.my Phone number : 07-7735511 New Password : saraAmeenaT86! Confirm Password : saraAmeenaT86!	Display “Password has been changed successfully! Please Login First.”	Success
TC2.002	IC : 750509016412 Email : saraameena@brilliance.edu.my Phone number : 07-7735511 New Password : saraAmeenaT86! Confirm Password : saraAmeenaT86!	Display “Uh-Oh! No account found.”	Success

TC2.003	IC : 790509016486 Email : saraameena@brilliance.edu.com Phone number : 07-7735586 New Password : saraAmeenaT86! Confirm Password : saraAmeenaT86!	Display “Uh-Oh! No account found.”	Success
TC2.004	IC : 750509016412 Email : saraameena@brilliance.edu.com Phone number : 07-7735586 New Password : saraAmeenaT86! Confirm Password : saraAmeenaT86!	Display “Uh-Oh! No account found.”	Success
TC2.005	IC : 750509016412 Email : saraameena@brilliance.edu.com Phone number : 07-7735586 New Password : saraAmeena Confirm Password : saraAmeena1	Display “Please match the requested format.”	Success

TC2.006	IC : 790509016486 Email : saraameena@brilliance.edu.my Phone number : 07-7735511 New Password : saraAmeena123! Confirm Password : saraAmeena157!	Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”	Success
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Table 6.45: Admin Forget Password Test Data

Test ID	T1.003		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC3.001	Subject Name : Science Image : Science.png	Display “Subject has been added successfully”.	Success
TC3.002	Subject Name : English Image : English.png	Display “Subject already exist. Please use other than that.”	Success
TC3.003	Subject Name : English Image : English.pdf	Display “Your image extension must be .jpg, .jpeg or .png”	Success
TC3.004	Subject Name : Mathematics Image : Mathematics.pdf	Display “Your image extension must be .jpg, .jpeg or .png”	Success

Table 6.46: Add Subject Test Data

Test ID	T1.004		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC4.001	Select Subject : Chemistry Fee (RM) : 35 Day : Monday Time : 8pm-10pm Duration (Hours) : 2 Recommended Age : 17 Maximum student quantity : 25 Terms & Condition : None Description : None Schedule : ScheduleF5.pdf	Display “Subject has been added successfully”.	Success
TC4.002	Select Subject : Chemistry Fee (RM) : 35	Display “Your file extension must be .zip, .pdf or .docx”.	Success

	<p>Day : Monday</p> <p>Time : 8pm-10pm</p> <p>Duration (Hours) : 2</p> <p>Recommended Age : 17</p> <p>Maximum student quantity : 25</p> <p>Terms & Condition : None</p> <p>Description : None</p> <p>Schedule : Mathematics.png</p>		
TC4.003	<p>Select Subject : Chemistry</p> <p>Fee (RM) : 35</p> <p>Day : Monday</p> <p>Time : 8pm-10pm</p> <p>Duration (Hours) : 2</p> <p>Recommended Age : 17</p>	Display “Subject is ineligible for the same day and time.”	Success

	Maximum student quantity : 25 Terms & Condition : None Description : None Schedule : ScheduleF5.pdf		
TC4.004	Select Subject : Additional Mathematics Fee (RM) : 35 Day : Monday Time : 8pm-10pm Duration (Hours) : 2 Recommended Age : 17 Maximum student quantity : 25 Terms & Condition : None Description : None Schedule : ScheduleF5.pdf	Display “Subject is ineligible for the identical day and time for the identical age.”	Success

Table 6.47: Add Subject Details Test Data

Test ID	T1.005		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC5.001	Image : Chemistry.png	Display “Image has been updated successfully”.	Success
TC5.002	Image : (null)	Display “Please select a file”.	Success

Table 6.48: Update Subject Image Test Data

Test ID	T1.006		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC6.001	Timetable : ScheduleLatestF5.pdf	Display “Timetable has been updated successfully”.	Success
TC6.002	Timetable : (null)	Display “Please select a file”.	Success

Table 6.49: Update Subject Timetable Test Data

Test ID	T1.007		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC7.001	Day : Monday	Display “Day has been updated successfully”.	Success
TC7.002	Day : (null)	Display “Please select one of these options”.	Success

Table 6.50: Update Subject Day Test Data

Test ID	T1.008		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC8.001	Time : 8pm-10pm Duration : 2	Display “Time has been updated successfully”.	Success
TC8.002	Time : (null) Duration : 2	Display “Please select one of these options”.	Success

Table 6.51: Update Subject Time Test Data

Test ID	T1.009		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC9.001	Name : Chemistry Recommended Age : 16	Display “Age has been updated successfully”.	Success

Table 6.52: Update Subject Age Test Data

Test ID	T1.010		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC10.001	Price : 25	Display “Price has been updated successfully”.	Success

Table 6.53: Update Subject Price Test Data

Test ID	T1.011		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC11.001	Maximum quantity : 20	Display “Quantity has been updated successfully”.	Success

Table 6.54: Update Subject Quantity Test Data

Test ID	T1.012		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC12.001	Description : Scientific study of the properties and behavior of matter.	Display “Description has been updated successfully”.	Success

Table 6.55: Update Subject Description Test Data

Test ID	T1.013		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC13.001	Terms & Condition : Has completed or watched a lab experiment.	Display “Terms & Condition has been updated successfully”.	Success

Table 6.56: Update Subject Terms & Condition Test Data

Test ID	T1.014		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC14.001	Action : (Click Remove Button)	Display “Are you sure you want to delete? (OK/Cancel) ”.	Success
TC14.002	Click the “OK” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	Display “Subject has been removed successfully.”	Success
TC14.003	Click the “Cancel” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	Display the same page with no changes.	Success

Table 6.57: Remove Subject Test Data

Test ID	T1.015		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC15.001	IC No : 790509021722 First Name : Fatin Alia Last Name : Faisal Phone No : 0127262511 Email : alia@brilliance.edu.my Password : fatinaLia2! Select Subject : Physics	Display “New teacher has been added successfully”.	Success
TC15.002	IC No : 731002017727 First Name : Ahmad Last Name : Latif Phone No : 0127775262 Email : ahmad@brilliance.edu.my	Display “IC/Phone number or email already registered.”	Success

	<p>Password : ahmadLatif27!</p> <p>Select Subject : English</p>		
TC15.003	<p>IC No : 731002031183</p> <p>First Name : Muhammad Jamal</p> <p>Last Name : Jamil</p> <p>Phone No : 0197181778</p> <p>Email : jamal@brilliance.edu.my</p> <p>Password : jamal</p> <p>Select Subject : Physics</p>	Display “Please match the requested format.”	Success
TC15.004	<p>IC No : 731002031183</p> <p>First Name : Muhammad Jamal</p> <p>Last Name : Jamil</p> <p>Phone No : 0197181778</p> <p>Email : jamal</p> <p>Password : jamalJamil82!</p> <p>Select Subject : Physics</p>	Display “Error : You did not enter a valid email.”	Success

TC15.005	IC No : 731002017727	Display “IC already exist. Please use other than that.”	Success
TC15.006	Phone No : 0127775262	Display “Phone number already exist. Please use other than that.”	Success
TC15.007	Email : ahmad@brilliance.edu.my	Display “Email already exist. Please use other than that.”	Success

Table 6.58: Add Teacher Test Data

Test ID	T1.016		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC16.001	Subject : 16 Years Old - Additional Mathematics Day : Monday: 8pm-10pm Teacher Assigned : Izara Afeera Izudin Subject : 17 Years Old - Additional Mathematics	Display “Teacher cannot teach in the same day and time.”	Success

	Day : Monday: 8pm-10pm Teacher Assigned : Izara Afeera Izudin		
TC16.002	Subject : 17 Years Old - Physics Day : Saturday: 2pm-4pm Teacher Assigned : Muhammad Amirul Haikal Hanafi	Display “Teacher has been assigned successfully.”	Success
TC16.003	Subject : 15 Years Old - English Day : Wednesday: 8pm-10pm Teacher Assigned : Raihana Balqis Sofian Subject : 17 Years Old - English Day : Saturday: 8pm-10pm Teacher Assigned : Raihana Balqis Sofian	Display “Teacher has been assigned successfully.”	Success

Table 6.59: Assign Subject Test Data

Test ID	T1.017		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC17.001	Action : (Click Remove Button)	Display “Are you sure you want to delete? (OK/Cancel) ”.	Success
TC17.002	Click the “OK” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	Display “Teacher data has been deleted successfully.”	Success
TC17.003	Click the “Cancel” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	Display the same page with no changes.	Success

Table 6.60: Remove Teacher Test Data

Test ID	T1.018		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC18.001	Select Subject : Additional Mathematics Select Month : August Select Year : 2022	Display “Review For: Additional Mathematics : August, 2022” and display all of the data that has been found during the search.	Success

Table 6.61: Subject Intake Report Test Data

Test ID	T1.019		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC19.001	Select Subject : Additional Mathematics Select Month : August Select Year : 2022	Display all of the data discovered during the search, including total students and sales for the selected month.	Success

Table 6.62: Monthly Report Test Data

Test ID	T1.020		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC20.001	Select Year : 2022	Display all of the data discovered during the search, including total sales for the selected year and the total sales for each month of that year.	Success

Table 6.63: Yearly Report Test Data

Test ID	T1.021		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC21.001	Phone number : 07-7735522 Email : saraameena@brilliance.edu.com	Display “Email has been updated successfully!”.“Phone number has been updated successfully!”.	Success
TC21.002	Phone number : 07-7762524 Email : adam.ismail@brilliance.edu.my	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”	Success
TC21.003	Phone number : 07-7762524 Email : adam.ismail	Display “Error : You did not enter a valid email.”	Success

Table 6.64: Update Profile Details Test Data

Test ID	T1.022		
Actor	Admin		
Test Case ID	Test Case Data	Expected Result	Status
TC22.001	Old Password : saraAmeena79! New Password : saraAmeenaT1! Confirm Password : saraAmeenaT1!	Display “Password has been changed successfully!”.	Success
TC22.002	Old Password : saraAmeena1! New Password : saraAmeenaT1! Confirm Password : saraAmeenaT1!	Display “Uh-oh! Old password not match.”	Success
TC22.003	Old Password : saraAmeena1! New Password : saraAmeenaT1! Confirm Password : saraAmenaT1	Display “New Password and Confirm Password do not match!”	Success
TC22.004	Old Password : saraAmeena79! New Password : saraAmeena Confirm Password : saraAmeena	Display “Please match the requested format.”	Success

Table 6.65: Change Password Test Data

Test ID	T2.023		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC23.001	IC : 731002017721 Password : haikalHanaf1! Or Email : haikal@brilliance.edu.my Password : haikalHanaf1!	Redirect to teacher main page (Student Report Page).	Success
TC23.002	IC : 731002017721 Password : haikalHan2! Or Email : haikal@brilliance.edu.my Password : haikalHan2!	Display “Invalid IC/Email or Password”.	Success
TC23.003	IC : 731002017711 Password : haikalHanaf1!	Display “Invalid IC/Email or Password”.	Success

	<p>Or</p> <p>Email : haikal@brilliance.edu.com</p> <p>Password : haikalHanaf1!</p>		
TC23.004	<p>IC : 731002017711</p> <p>Password : haikalHan2!</p> <p>Or</p> <p>Email : haikal@brilliance.edu.com</p> <p>Password : haikalHan2!</p>	<p>Display “Invalid IC/Email or Password”.</p>	Success

Table 6.66: Teacher Login Test Data

Test ID	T2.024		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC24.001	IC : 731002017721 Email : haikal@brilliance.edu.my Phone number : 0126789162 New Password : haiKalhanaf3! Confirm Password : haiKalhanaf3!	Display “Password has been changed successfully! Please Login First.”	Success
TC24.002	IC : 731002017711 Email : haikal@brilliance.edu.my Phone number : 0126789162 New Password : haiKalhanaf3! Confirm Password : haiKalhanaf3!	Display “Uh-Oh! No account found.”	Success
TC24.003	IC : 731002017721 Email : haikal@brilliance.edu.com	Display “Uh-Oh! No account found.”	Success

	Phone number : 0126789121 New Password : haiKalhanaf3! Confirm Password : haiKalhanaf3!		
TC24.004	IC : 731002017711 Email : haikal@brilliance.edu.com Phone number : 0126789121 New Password : haiKalhanaf3! Confirm Password : haiKalhanaf3!	Display “Uh-Oh! No account found.”	Success
TC24.005	IC : 731002017711 Email : haikal@brilliance.edu.com Phone number : 0126789121 New Password : haiKal Confirm Password : haiKalHan	Display “Please match the requested format.”	Success
TC24.006	IC : 731002017721 Email : haikal@brilliance.edu.my Phone number : 0126789162	Display “Uh-Oh! Password and Re-Type Password Field Do Not Match.”	Success

	New Password : haiKalhanaf3! Confirm Password : haiKalhanaf3!919		
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Table 6.67: Teacher Forget Password Test Data

Test ID	T2.025		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC25.001	Subject : 16 Years Old - Physics Month : 2022 September Week : Week 2 Lesson Material : PhysicsC8P2.pdf Description : Chapter 8 - Part 2 Video Material : PhysicsC8P2.mp4 Class Link : https://teams.microsoft.com/l/channel/19%3aDtLwLwd32SmLB9STAG_Emr6nGYU_crjMuv7-dvqLTmg1%40thread.tacv2/General?groupId=1de9e2e5-cc08-4699-b6da-245903e6a5bf&tenantId=677eeb56-f2df-	Display “Reference has been added successfully”.	Success

	4675-9e0c-ccd600a91580		
TC25.002	<p>Subject : 16 Years Old - Physics</p> <p>Month : 2022 September</p> <p>Week : Week 2</p> <p>Lesson Material : Physics.png</p> <p>Description : Chapter 8 - Part 2</p> <p>Video Material : PhysicsC8P2.mp4</p> <p>Class Link :</p> <p>https://teams.microsoft.com/l/channel/19%3aDtLwLwd32SmLB9STAG_Emr6nGYU_crjMuv7-dvqLTmg1%40thread.tacv2/General?groupId=1de9e2e5-cc08-4699-b6da-245903e6a5bf&tenantId=677eeb56-f2df-4675-9e0c-ccd600a91580</p>	<p>Display “Your file extension must be .zip, .pdf or .docx”.</p>	Success
TC25.003	<p>Test the add subject details process with all necessary information entered but the video material section's format is incorrect.</p> <p>Subject : 16 Years Old - Physics</p>	<p>Display “Your video extension must be .mp4 or .mov only”.</p>	Success

	<p>Month : 2022 September</p> <p>Week : Week 2</p> <p>Lesson Material : PhysicsC8P2.pdf</p> <p>Description : Chapter 8 - Part 2</p> <p>Video Material : Physics.png</p> <p>Class Link :</p> <p>https://teams.microsoft.com/l/channel/19%3aDtLwLwd32SmLB9STAG_Emr6nGYU_crjMuv7-dvqLTmg1%40thread.tacv2/General?groupId=1de9e2e5-cc08-4699-b6da-245903e6a5bf&tenantId=677eeb56-f2df-4675-9e0c-ccd600a91580</p>		
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Table 6.68: Add Reference Test Data

Test ID	T2.026		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC26.001	Reference : PhysicsC9P2.mp4	Display “Video has been updated successfully”.	Success
TC26.002	Reference : (null)	Display “Please select a file”.	Success

Table 6.69: Update Reference Video Test Data

Test ID	T2.027		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC27.001	Materials : PhysicsC9P2.pdf	Display “Material has been updated successfully”.	Success
TC27.002	Materials : (null)	Display “Please select a file”.	Success

Table 6.70: Update Material Test Data

Test ID	T2.028		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC28.001	Description : Chapter 9 - Part 2	Display the updated sentence.	Success

Table 6.71: Update Reference Description Test Data

Test ID	T2.029		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC29.001	Month : 2022 September Week : Week 1	Display the updated month and week.	Success

Table 6.72: Update Reference Month Week Test Data

Test ID	T2.030		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC30.001	Class Link : https://teams.microsoft.com/l/channel/19%3a8dcqkbCgx_50Zic784lGTk9uvYJevbidqTZsCc6JaoM1%40thread.tacv2/General?groupId=ec33014b-adc6-49fb-aa94-576b939a6227&tenantId=677eeb56-f2df-4675-9e0ccd600a91580	Display “Class link has been updated successfully”.	Success

Table 6.73: Update Class Link Test Data

Test ID	T2.031		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC31.001	Action : (Click Remove Button)	Display “Are you sure you want to delete? (OK/Cancel) ”.	Success
TC31.002	Click the “OK” button after the message “Are you sure you	Display “Reference has been	Success

	want to delete? (OK/Cancel)” appeared.	deleted successfully”	
TC31.003	Click the “Cancel” button after the message “Are you sure you want to delete? (OK/Cancel)” appeared.	Display the same page with no changes.	Success

Table 6.74: Remove Reference Test Data

Test ID	T2.032		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC32.001	Phone number : 0126789122 Email : haikal@brilliance.edu.com	Display “Email has been updated successfully!”. “Phone number has been updated successfully!”.	Success
TC32.002	Phone number : 0137826277 Email : amirul@brilliance.edu.my	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”	Success
TC32.003	Phone number : 0137826277 Email : amirulhaikal.com	Display “Error : You did not enter a valid email.”	Success

Table 6.75: Update Profile Details Test Data

Test ID	T2.033		
Actor	Teacher		
Test Case ID	Test Case Data	Expected Result	Status
TC33.001	Old Password : haikalHanaf1! New Password : haikalHan2! Confirm Password : haikalHan2!	Display “Password has been changed successfully!”.	Success
TC33.002	Old Password : haikal1! New Password : haikalHan2! Confirm Password : haikalHan2!	Display “Uh-oh! Old password not match.”	Success
TC33.003	Old Password : haikal1! New Password : haikalHan2! Confirm Password : haikalHan234!	Display “New Password and Confirm Password do not match!”	Success
TC33.004	Old Password : haikalHanaf1! New Password : haiHan Confirm Password : haiHan	Display “Please match the requested format.”	Success

Table 6.76: Change Password Test Data

Test ID	T3.035		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC35.001	IC : 070203011050 Password : miraAbu07! Or Email : mira@gmail.com Password : miraAbu07!	Redirect to administration main page (All Subject Details).	Success
TC35.002	IC : 070203011050 Password : miraAbu0750! Or Email : mira@gmail.com Password : miraAbu0750!	Display “Invalid IC/Email or Password”.	Success
TC35.003	IC : 070203011018 Password : miraAbu07!	Display “Invalid IC/Email or Password”.	Success

	Or Email : mira.abu@gmail.com Password : miraAbu07!		
TC35.004	IC : 070203011018 Password : miraAbu0750! Or Email : mira.abu@gmail.com Password : miraAbu0750!	Display “Invalid IC/Email or Password”.	Success

Table 6.77: Student Login Test Data

Test ID	T3.036		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC36.001	IC : 070203011050 Email : mira@gmail.com Phone number : 01111482769 New Password : miraAbu32! Confirm Password : miraAbu32!	Display "Password has been changed successfully! Please Login First."	Success
TC36.002	IC : 070203011018 Email : mira@gmail.com Phone number : 01111482769 New Password : miraAbu32! Confirm Password : miraAbu32!	Display "Uh-Oh! No account found."	Success
TC36.003	IC : 070203011050 Email : mira.abu@gmail.com	Display "Uh-Oh! No account found."	Success

	Phone number : 01111482718 New Password : miraAbu32! Confirm Password : miraAbu32!		
TC36.004	IC : 070203011018 Email : mira.abu@gmail.com Phone number : 01111482718 New Password : miraAbu32! Confirm Password : miraAbu32!	Display "Uh-Oh! No account found."	Success
TC36.005	IC : 070203011018 Email : mira.abu@gmail.com Phone number : 01111482718 New Password : miraAbu Confirm Password : miraAbuBakar	Display "Please match the requested format."	Success
TC36.006	IC : 070203011050 Email : mira@gmail.com Phone number : 01111482769	Display "Uh-Oh! Password and Re-Type Password Field Do Not Match."	Success

	New Password : miraAbu32! Confirm Password : miraAbuBakar32!		
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Table 6.78: Student Forget Password Test Data

Test ID	T3.037		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC37.001	Tick : 16 Years Old - Physics (Saturday: 4pm-6pm)	Display “Physics has been enrolled successfully.”	Success
TC37.002	Tick : 16 Years Old - Additional Mathematics (Friday: 8pm-10pm)	Display “Additional Mathematics has already enrolled previously.”	Success
TC37.003	Tick : (null)	Display “Please check this box if you want to proceed.”	Success

Table 6.79: Enrol Subject Test Data

Test ID	T3.038		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC38.001	Tick : 16 Years Old - Physics (Saturday: 4pm-6pm) Month : 2022 September Payment Method : Online Banking	Available Intake (25) Display "Payment for Physics in 2022 September has been received successfully."	Success
TC38.002	Tick : 16 Years Old - Additional Mathematics (Monday: 8pm-10pm) Month : 2022 September Payment Method : Online Banking	Available Intake (0) Display "Insufficient seat. We do not accept any student admission for Additional Mathematics in 2022 September."	Success
TC38.003	Tick : 16 Years Old - Physics (Saturday: 4pm-6pm) Month : 2022 September Payment Method : E-wallet	Available Intake (24) Display "Payment for Physics in 2022 September already made."	Success
TC38.004	Tick : (null)	Display "Please check this box if	Success

		you want to proceed.”	
TC38.005	Tick : 16 Years Old - Physics (Saturday: 4pm-6pm) Month : (null) Payment Method : (null)	Display “Please select an item in the list.”	Success

Table 6.80: Subject Payment Test Data

Test ID	Test Case Data	Expected Result	Status
Actor	Student (Public)		
TC39.001	Subject : 16 Years Old - Physics Examination : Peperiksaan Penggal 2 Exam Year : 2022 Grade : B	Display “Grade has been added successfully.”	Success
TC39.002	Subject : 16 Years Old - Physics Examination : Peperiksaan Penggal 1	Display “Grade has been updated successfully.”	Success

	Exam Year : 2022 Grade : C		
TC39.003	Subject : (null) Examination : (null) Exam Year : (null) Grade : (null)	Display “Please select an item in the list.”	Success

Table 6.81: Update Grade Test Data

Test ID	T3.040		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC40.001	Phone No : 01111482711 Address : SU3-3-2, Pangsapuri Sri Utama, Ayer Keroh Postcode : 75450 State : Melaka Email : mira.abubakar@gmail.com	Display “Email has been updated successfully!”. “Phone number has been updated successfully!” Address, Postcode & State has been updated successfully!.	Success

TC40.002	Phone No : 0127251719 Address : SU3-3-2, Pangsapuri Sri Utama, Ayer Keroh Postcode : 75450 State : Melaka Email : ameena.ameen@gmail.com	Display “Email already exist. Please use other than that.” “Phone number already exist. Please use other than that.”	Success
TC40.003	Phone No : 0127251719 Address : SU3-3-2, Pangsapuri Sri Utama, Ayer Keroh Postcode : 75450 State : Melaka Email : mira.abubakar	Display “Error : You did not enter a valid email.”	Success

Table 6.82: Update Profile Details Test Data

Test ID	T3.041		
Actor	Student (Public)		
Test Case ID	Test Case Data	Expected Result	Status
TC41.001	Old Password : miraAbu07! New Password : miraAbu32! Confirm Password : miraAbu32!	Display “Password has been changed successfully!”.	Success
TC41.002	Old Password : miraAbu0750! New Password : miraAbu32! Confirm Password : miraAbu32!	Display “Uh-oh! Old password not match.”	Success
TC41.003	Old Password : miraAbu0750! New Password : miraAbu32! Confirm Password : miraAbuBakar32!	Display “New Password and Confirm Password do not match!”	Success
TC41.004	Old Password : miraAbu07! New Password : miraAbu Confirm Password : miraAbu	Display “Please match the requested format.”	Success

Table 6.83: Change Password Test Data

			1 - Strongly Disagree 5 - Strongly Agree
No.	Item	Description	Rate (1 5)
1.	The test cases straightforward to understand and follow.	The test case's list of steps have clear procedures.	1 2 3 4 5
2.	The test cases successfully tested the entire system.	The prepared test cases are sufficient.	1 2 3 4 5
3.	The test case documents include GUI.	Verify that a relevant GUI is attached to each test scenario.	1 2 3 4 5
4.	The test results or examples of test results provided.	Tester should be given test data.	1 2 3 4 5
5.	The system's inputs are all covered by the test cases.	Count the system's inputs and verify that all inputs are covered by the test data used in the test cases.	1 2 3 4 5

Table 6.84: Users' Ratings

6.6 CONCLUSION

To give a brief, testing is crucial since it identifies problems and mistakes made throughout the development phase. It searches for any implementation-related errors. It makes sure that the intended audience trusts the team and that they continue to be satisfied with the application. The software testing prevents financial losses, and contracts occasionally include monetary penalties with regard to the timing and quality of the outcome. This chapter highlights system testing, which includes testing planning, the testing environment, which is conducted online, the hardware, firmware configurations, preparations, and training prior to testing used during the testing phase. Aside from that, the testing schedule shows how many cycles and duration of the test to be run, the strategy, the test description including the expected results, and the users' rating satisfaction analysis are all presented.

More information on the system completion phase will be provided in the following chapter. This also applies to the observations on the overall system's weaknesses and strengths, the suggestions on how the system can be improved further, the project contributions are highlighted as well.

CHAPTER VII

CONCLUSION

7.1 INTRODUCTION

In this project, the current system for setting up online tuition is first examined, and several issues are then acknowledged. These issues led to the development of the Brilliance Online Tuition System and a database to store data. The system's three primary target users are the administrator, the teacher, and the student. The admin is in charge of managing all the subjects, including adding new ones, updating existing ones if needed, or even getting rid of undesired ones. Additionally, the admin will manage the teachers, hire new ones, assign particular subjects for each teacher, and fire any unsuitable ones. The administrator can also access the monthly tuition report and perform system backups to guarantee the security and safety of the data.

Apart from teaching the students, the teachers may also provide all the references or materials for the students to use, and they can also examine the grades that the students have earned so that they can see whether there have been any improvements since the students enrolled in the subjects. In the meantime, students can easily enroll in the subjects they want depending on the months they would like to be enrolled and then pay to acquire the class link and other educational resources.

Overall, the system can benefit the users while also being environmentally friendly because it eliminates the use of paper to record important information like student data. Moreover, it is intended that teachers and students would be more informed about the learning session schedule, and other crucial details.

7.2 OBSERVATION ON WEAKNESSES AND STRENGTHS

7.2.1 WEAKNESSES

One of the project's limitations, particularly for the users who are unable to afford the hardware, is that this system cannot be used on other devices. It is only compatible with computers and laptops. Furthermore, rather than receiving an automatic message reminder, the students must access the system to confirm the day and time of their class if they forget. Other than that, this system must be able to connect to the internet in order to function and it is obviously a hassle for those who live in unstable connection areas. The system, however, is not usable offline, thus those without internet access are unable to use it. In fact, not everyone has a stable internet connection, which could be one of the project's biggest limitations. Aside from that, the students need to insert a lot of personal information, particularly when creating an account. It would be simpler if the students' details are generated automatically and that only works for locals, not for the foreigners.

7.2.2 STRENGTHS

One of the strengths of establishing a Brilliance Online Tuition System is that the tuition may keep running their business online throughout the pandemic while also allowing students to learn more online. Since the tuition center is not located in a particular place, the system can be applied worldwide and raise profits. Due to the fact that it is utilized online, it saves users' time, especially the students as they do not need to go to the tuition physically to enroll any desired subjects. In addition, registration is also done online. As a result, no more paper is used, which can pollute the environment, and all of the students' data is kept safe. Besides that, even though the teachers will most likely be dealing with multiple students at a time, they can easily track the improvement of each student by referring to their grades. The administrator can also monitor the sales report for each subject monthly. Last but not least, by having this system, the students will be more aware of their lecture schedules and can get the class materials to review and refer to. The students will also have the option of paying either online banking, e-Wallet, debit or credit card.

7.3 PROPOSITIONS FOR IMPROVEMENT

It is intended to make the Brilliance Online Tuition System more user-friendly by making it accessible for download on all platforms, especially the mobile phones since they are typically more affordable than other devices and more practical to use. The students should then receive a message reminder if a lesson's period is nearing.

7.4 PROJECT CONTRIBUTION

The project contribution is crucial for people who operate businesses in the educational sector. As can be seen, the Brilliance Online Tuition System has market potential, particularly for those whose businesses are impacted by the pandemic, especially in making the finances more stable as it can be used broadly and not only in a single location. Some parents are still hesitant to take their kids outside often because of the Covid-19 virus that can spread quickly, but they need this kind of tuition for their kids because they can simply stay at home and take the extra class online. This way, their kids will be able to understand certain subjects outside of the school hours. However, there are still a few aspects that need to be addressed. Hence, if the system is to be commercialized, it might be used by a small tuition center that is just starting out in the tuition business.

7.4.1 USER MANUAL

The test case in Chapter 6 and the Graphic User Interface (GUI) design in Chapter 4 can both be used as references to discover the user manual. T1.001 until T1.022 contains the user manual for the admin module, T2.023 until T2.033 for the teacher module, and T3.034 until T3.041 for the student module.

7.5 CONCLUSION

In a nutshell, the system's goals and requirements have all been successfully accomplished. In this case, the administrator only needs to select the desired month and subject in order to make an extensive report that determines the total number of the students based on the subjects chosen and to produce accurate student reports by eliminating data redundancy issues. A successful timetable that allows the students to see the class schedule and the grades of students' progress so that the teachers may monitor any improvements after enrolling in the topics has also been developed. Finally, no data loss occurred as a result of using cloud backup, which was successfully implemented to protect the security of essential and important data. To summarized, the creation of this system is successful in satisfying the requirements of its users.

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