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UNIVERSITI TEKNOLOGI MALAYSIA

FACULTY OF COMPUTING
UTM Johor Bahru

SESSION 2023/2024 SEMESTER II

SECD2613: SYSTEM ANALYSIS AND DESIGN

SECTION 08

Project

Phase 1: Project Proposal and Planning (12%)

[DolphinLearn Hub]

GROUP 7

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1.0 Introduction

Dolphin Tuition Centre has long been a cornerstone of educational support within our community, offering quality tutoring and academic assistance to students seeking to excel in their studies. Founded by Mr. Lim, Dolphin Tuition Centre has served as a trusted resource for students and parents alike, providing personalized guidance and support to help students reach their academic goals.

However, as the educational landscape continues to evolve, so must Dolphin Tuition Centre's approach to supporting student learning. The current system in place at Dolphin Tuition Centre, while effective in many regards, is facing challenges that hinder its ability to meet the diverse and dynamic needs of today's students and parents.

The existing system relies heavily on manual processes for administrative tasks, student monitoring, and communication. While these processes have served the Centre well in the past, they are increasingly proving to be inefficient and inadequate in meeting the demands of a modern educational environment.

Moreover, Dolphin Tuition Centre's traditional teaching methods and limited online presence pose barriers to reaching a broader audience and providing students with the flexibility and resources they need to succeed. As such, there is a pressing need to develop and implement improvements to the current system to ensure that Dolphin Tuition Centre remains a leading provider of educational support in our community.

In this proposal, we will outline a plan for the development and improvement of Dolphin Tuition Centre's system, with a focus on addressing key challenges and enhancing the overall learning experience for students. By embracing technology, modernizing our approach to teaching and learning, and fostering greater collaboration and engagement, we aim to position Dolphin Tuition Centre for continued success and impact in the years to come.

2.0 Background Study

Dolphin Tuition Centre, owned and operated by Mr. Lim, faces several challenges that hinder its effectiveness and impede student progress. Despite being a local educational resource, the current manual operations at Dolphin Tuition Centre fall short in meeting the evolving needs of students and parents, limiting the center's ability to attract and retain students.

One significant challenge Dolphin Tuition Centre faces is the difficulty in monitoring students' learning progress effectively. With manual operations, tracking individual student performance and engagement becomes cumbersome and time-consuming, leading to gaps in understanding and support. This limitation hampers Mr. Lim's ability to provide personalized guidance and tailor teaching methods to address students' unique learning needs.

Moreover, Dolphin Tuition Centre's reliance on traditional teaching methods limits its reach beyond the local community. The absence of an online presence and digital infrastructure prevents the center from tapping into a broader market of potential students nationwide. As a result, Dolphin Tuition Centre misses out on opportunities to attract students from different regions and backgrounds who may benefit from its services.

Additionally, Mr. Lim faces challenges in engaging students outside of class hours and providing supplementary resources and support. Without a robust communication and collaboration platform, students may feel disconnected from the learning process, leading to decreased motivation and participation.

Furthermore, the lack of real-time feedback mechanisms inhibits Mr. Lim's ability to assess student understanding and provide timely intervention when needed. This gap in communication and feedback prevents students from receiving the support they require to excel academically, impacting their overall learning outcomes.

In summary, Dolphin Tuition Centre's experience navigating the challenges of manual operations sheds light on the need for enhancements to the center's operations. By addressing issues related to student monitoring, outreach, engagement, and feedback, the proposed improvements aim to create a more effective and inclusive learning environment for students at Dolphin Tuition Centre.

Interview part

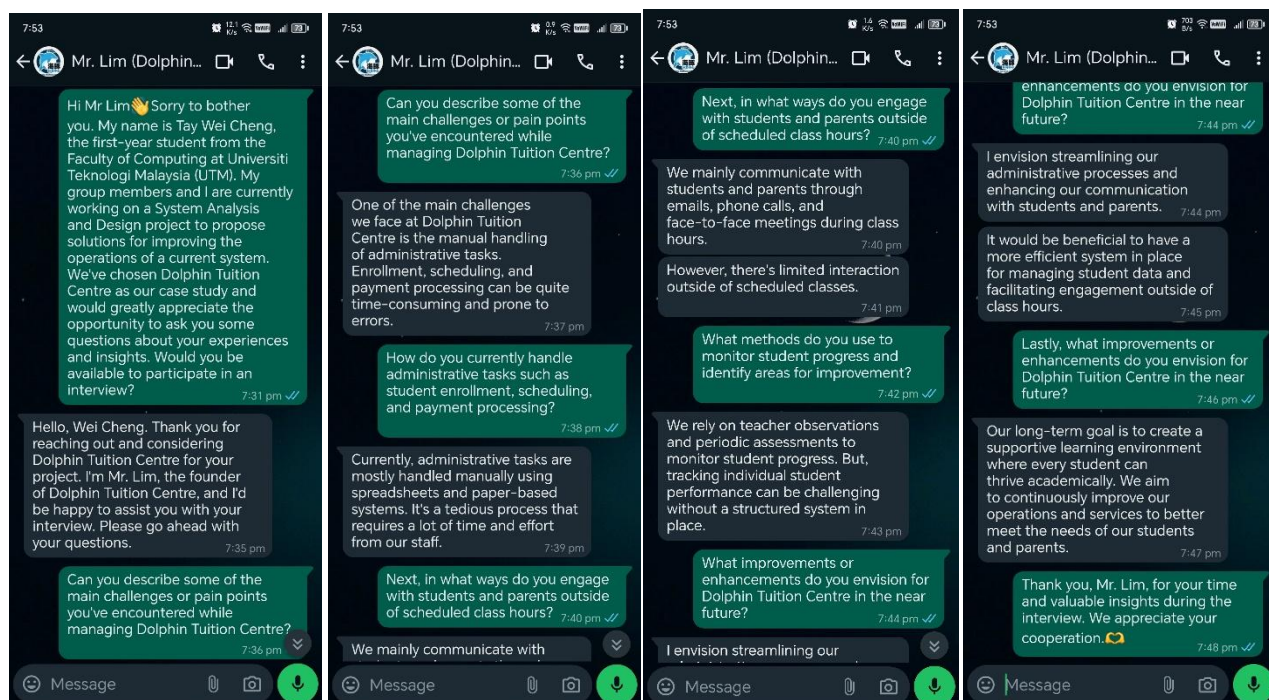
Mr. Lim, the founder of Dolphin Tuition Centre and a key stakeholder in the project, shared valuable insights during an interview conducted by us. The interview provided a deeper understanding of the challenges faced by the tuition centre and its vision for improvement:

Interview Questions	Answers from Mr. Lim
1. Can you describe some of the main challenges or pain points you've encountered while managing Dolphin Tuition Centre?	<i>Mr. Lim:</i> "One of the main challenges we face at Dolphin Tuition Centre is the manual handling of administrative tasks. Enrollment, scheduling, and payment processing can be quite time-consuming and prone to errors."
2. How do you currently handle administrative tasks such as student enrollment, scheduling, and payment processing?	<i>Mr. Lim:</i> "Currently, administrative tasks are mostly handled manually using spreadsheets and paper-based systems. It's a tedious process that requires a lot of time and effort from our staff."
3. In what ways do you engage with students and parents outside of scheduled class hours?	<i>Mr. Lim:</i> "We mainly communicate with students and parents through emails, phone calls, and face-to-face meetings during class hours. However, there's limited interaction outside of scheduled classes."
4. What methods do you use to monitor student progress and identify areas for improvement?	<i>Mr. Lim:</i> "We rely on teacher observations and periodic assessments to monitor student progress. But, tracking individual student performance can be challenging without a structured system in place."

5. What improvements or enhancements do you envision for Dolphin Tuition Centre in the near future?	<i>Mr. Lim:</i> "I envision streamlining our administrative processes and enhancing our communication with students and parents. It would be beneficial to have a more efficient system in place for managing student data and facilitating engagement outside of class hours."
6. Can you provide any insights into the long-term goals or vision for Dolphin Tuition Centre?	<i>Mr. Lim:</i> "Our long-term goal is to create a supportive learning environment where every student can thrive academically. We aim to continuously improve our operations and services to better meet the needs of our students and parents."

These interview questions and hypothetical answers provide a glimpse into Mr. Lim's perspective and priorities as the stakeholder of Dolphin Tuition Centre.

Screenshot of the interviews:



3.0 Problem Statement

Dolphin Tuition Centre, under the stewardship of Mr. Lim, faces several critical challenges that hinder its effectiveness in providing quality education and support to students. These challenges are as follows:

1. Limited Reach and Localized Presence

Dolphin Tuition Centre operates within a confined geographic area, limiting its ability to reach students beyond the local community. The absence of an online presence and digital infrastructure further exacerbates this issue, preventing the centre from attracting students from other regions. As a result, Dolphin Tuition Centre's growth potential and revenue opportunities are constrained, hindering its ability to expand and serve a broader student demographic.

2. Manual Administrative Processes

The reliance on manual administrative processes presents a significant challenge for Dolphin Tuition Centre. Tasks such as managing student data, scheduling classes, tracking attendance, and processing payments are handled manually, leading to inefficiencies, errors, and increased administrative burden. These manual processes impede the centre's overall operations and scalability, limiting its capacity to accommodate growing student enrollment and deliver efficient administrative services.

3. Difficulty in Engaging Students Outside Class Hours

Dolphin Tuition Centre struggles to engage students beyond scheduled class hours due to the lack of a robust communication and collaboration platform. Without a centralized system for providing supplementary resources, support, and feedback, students' motivation and participation in the learning process diminish outside of class. This poses a significant challenge for Mr. Lim in effectively extending learning beyond the classroom and fostering continuous academic development among students.

4. Ineffective Student Monitoring and Progress Tracking

Mr. Lim faces challenges in monitoring students' learning progress and tracking their academic performance effectively. The absence of a structured system for tracking individual student progress and engagement hampers Mr. Lim's ability to identify students' strengths and weaknesses, tailor teaching methods accordingly, and provide timely intervention and support when needed. This limitation impedes the centre's ability to deliver personalized instruction and maximize student learning outcomes.

4.0 Proposed Solutions

To address the challenges faced by Dolphin Tuition Centre, we propose the implementation of DolphinLearn Hub, a comprehensive digital platform designed to revolutionize the center's operations and enhance the learning experience for students.

First and foremost, DolphinLearn Hub will focus on expanding the center's online presence by developing a user-friendly website and mobile application. This will enable Dolphin Tuition Centre to establish a strong online presence and reach a broader audience of potential students beyond the local community. Through digital marketing strategies such as social media marketing and search engine optimization, the center will effectively promote its programs, courses, instructors, and facilities to attract and engage prospective students and parents.

Additionally, DolphinLearn Hub will automate administrative processes within the center, streamlining tasks such as student enrollment, scheduling, attendance tracking, and payment processing. This integrated management system will utilize advanced features such as automated reminders and notifications to facilitate communication and administrative workflows, reducing manual effort and minimizing errors. Furthermore, the platform will offer online payment options and secure transaction processing to ensure convenient and efficient fee collection for students and parents.

Moreover, DolphinLearn Hub will include a robust communication and collaboration platform, facilitating seamless interaction and engagement between students, parents, teachers, and administrative staff. Through tools for sharing resources, posting announcements, and facilitating discussions, Dolphin Tuition Centre will enhance communication and collaboration outside of scheduled class hours. Real-time messaging, video conferencing, and virtual classrooms will support remote learning and ensure continuous engagement among students and teachers.

Lastly, DolphinLearn Hub will implement a comprehensive student monitoring and progress tracking system, enabling Mr. Lim and teachers to monitor individual student performance, track academic progress, and identify areas for intervention. Data analytics and reporting tools will provide insights into student learning patterns, behavior, and engagement levels, allowing for personalized instruction and targeted support. With dashboards and performance indicators for students, parents, and teachers, Dolphin Tuition Centre will enable stakeholders to track progress, set goals, and monitor achievements in real time. Through the integration of these proposed solutions, DolphinLearn Hub will empower Dolphin Tuition Centre to overcome its challenges, expand its reach, improve operational efficiency, foster student engagement, and maximize learning outcomes for all students.

Technical Feasibility

The DolphinLearn Hub system is technically feasible with the current technology available. To develop the mobile application component of DolphinLearn Hub, we will utilize popular cross-platform development frameworks such as React Native or Flutter. These frameworks allow developers to write code once and deploy it on both iOS and Android platforms, significantly reducing development time and effort. Additionally, we will employ familiar web development tools such as HTML, CSS, and JavaScript for building the user interface of the mobile application. The backend of the system will utilize SQL for database management, ensuring efficient storage and retrieval of data related to student enrollment, scheduling, attendance tracking, and payment processing. This technology stack is well-documented, widely supported, and suitable for creating scalable web and mobile applications, providing a solid foundation for the development of DolphinLearn Hub.

Operational Feasibility

The operational feasibility of DolphinLearn Hub hinges on the availability of an Information System (IS) support team to manage and operate the system effectively. This team will be responsible for maintaining the functionality and performance of the DolphinLearn Hub website and mobile application, including managing the database system, sorting system, and other features. With DolphinLearn Hub handling bookings and ticket issues automatically, the IS support team can focus on providing support and solutions to customers who encounter any problems or issues while using the system. By streamlining processes and automating tasks, DolphinLearn Hub will not only reduce the occurrence of mistakes but also expedite the overall process, resulting in improved efficiency and customer satisfaction.

Economic Feasibility (CBA)

Assumptions	
Discount Rate	10%
Sensitivity Factor (costs)	1.1
Sensitivity Factor (benefits)	0.9
Annual Change in production costs	5%
Annual change in benefits	6%

Estimated Costs	
Hardware	RM 9500
Software	RM 10000
Maintenance	RM 3500 per year
Marketing	RM 3000 per year
Staff salary	RM 38000 per year

Estimated Benefits	
Increase in sales	RM 50000 per year
Savings	RM 24000 per year

Costs	Year 0	Year 1	Year 2	Year 3
Development Costs				
-Hardware	10450			
-Software	11000			
Total	21450			
Production Costs				
-Maintenance		3850	4042.50	4244.63
-Marketing		3300	3465	3638.25
-Staff salary		41800	43890	46084.50
Annual Production Costs		48950	51379.50	53967.38
(Present Values)		44500	42462.40	40546.49
Accumulated Costs		65950	108412.40	148958.89

Benefits	Year 0	Year 1	Year 2	Year 3
-Increase in sales		45000	47700	50562
-Savings		21600	22896	24269.76
Annual Benefits		66600	70596	74831.76
(Present Value)		60000	58343	56222.21
Accumulated benefits		60000	118343	174565.21
Gain or Loss		(5950)	9930.60	25606.32
Profitability Index	1.194			

Since Profitability Index (PI) = 1.194 > 1.00, it indicates that the proposed system has the potential to generate positive returns and is financially viable for Mr. Tan's tuition centre.

5.0 Objectives

The objectives of implementing DolphinLearn Hub are as follows:

1. Expand Reach and Enrollment:

Increase Dolphin Tuition Centre's reach beyond the local community by establishing an online presence and attracting students from other regions, thereby expanding enrollment and revenue opportunities.

2. Improve Operational Efficiency:

Streamline administrative processes such as student enrollment, scheduling, attendance tracking, and payment processing to reduce manual effort, minimize errors, and enhance operational efficiency within Dolphin Tuition Centre.

3. Enhance Student Engagement:

Foster continuous engagement and interaction between students, parents, teachers, and administrative staff by providing a robust communication and collaboration platform, facilitating resource sharing, discussions, and feedback outside of scheduled class hours.

4. Optimize Student Monitoring and Support:

Implement a comprehensive student monitoring and progress tracking system to enable Mr. Lim and teachers to monitor individual student performance, identify areas for improvement, and provide timely intervention and support to maximize student learning outcomes.

5. Promote Growth and Sustainability:

Lay the foundation for long-term growth and sustainability of Dolphin Tuition Centre by leveraging digital technologies, modernizing operations, and enhancing the overall learning experience for students, parents, and staff.

6.0 Scope of the Project

DolphinLearn Hub encompasses a multifaceted scope aimed at enhancing the educational experience and operational efficiency for all stakeholders within Dolphin Tuition Centre.

For staff, the platform streamlines administrative processes by automating tasks such as student enrollment, scheduling, attendance tracking, and payment processing. Additionally, DolphinLearn Hub provides a centralized communication and collaboration hub for staff members to share resources, coordinate schedules, and communicate effectively, fostering teamwork and productivity.

For tutors, DolphinLearn Hub empowers them to provide personalized support and guidance to students, facilitating their academic growth and development. Tutors can track individual student progress, identify areas for improvement, and offer timely intervention and assistance as needed. The platform also facilitates resource sharing among tutors, enabling collaboration on lesson plans, sharing teaching materials, and exchanging best practices to enhance teaching effectiveness.

For students, DolphinLearn Hub serves as a comprehensive learning platform, offering access to resources, support, and engagement opportunities. Students can access learning materials, assignments, and supplementary resources to support their academic development. The platform also facilitates communication with tutors, allowing students to seek clarification, receive feedback, and engage in discussions to deepen their understanding of course materials. Features designed to promote engagement and collaboration, such as discussion forums and group projects, encourage active participation and peer learning among students.

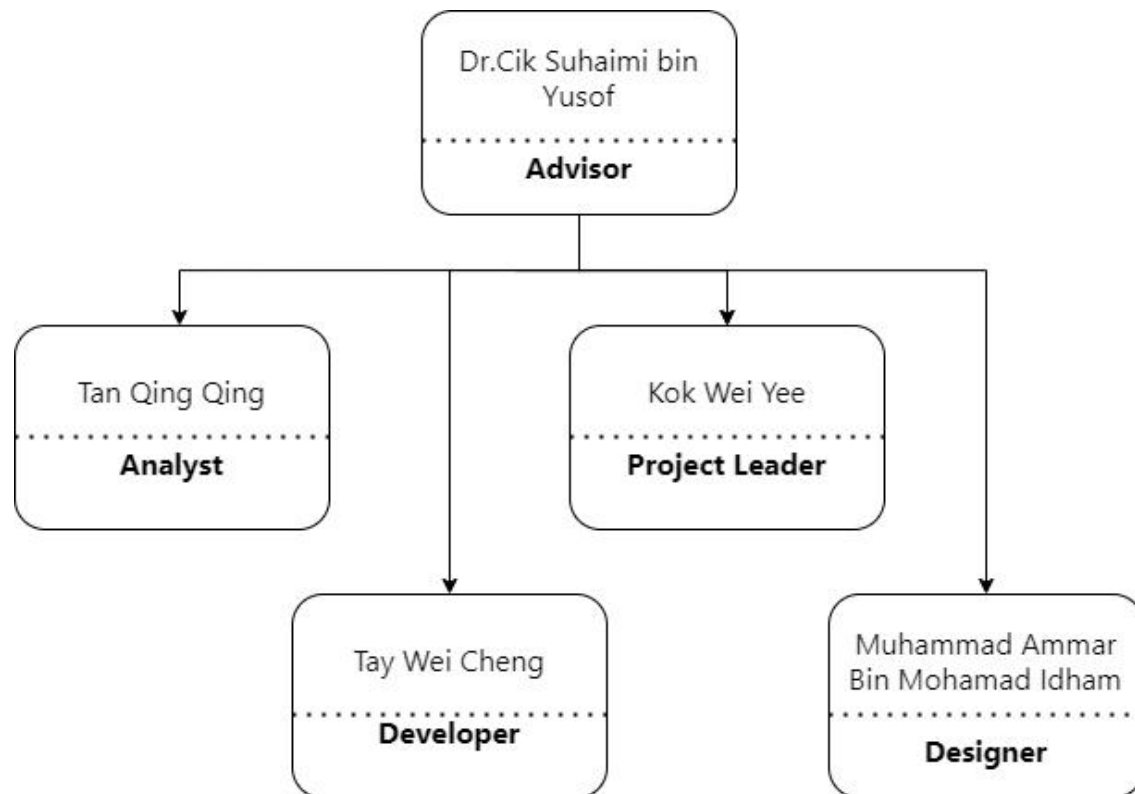
For parents, DolphinLearn Hub provides visibility and involvement in their child's academic journey, enhancing communication, collaboration, and support. Parents can access real-time updates on their child's progress, attendance records, and performance metrics, enabling them to stay informed and involved in their child's education. The platform also facilitates direct communication between parents

and tutors, allowing parents to receive updates on their child's learning progress and collaborate with teachers to support their child's academic success. Additionally, DolphinLearn Hub offers convenient access to payment and scheduling information, allowing parents to manage their child's tuition schedule, make payments, and view billing details with ease.

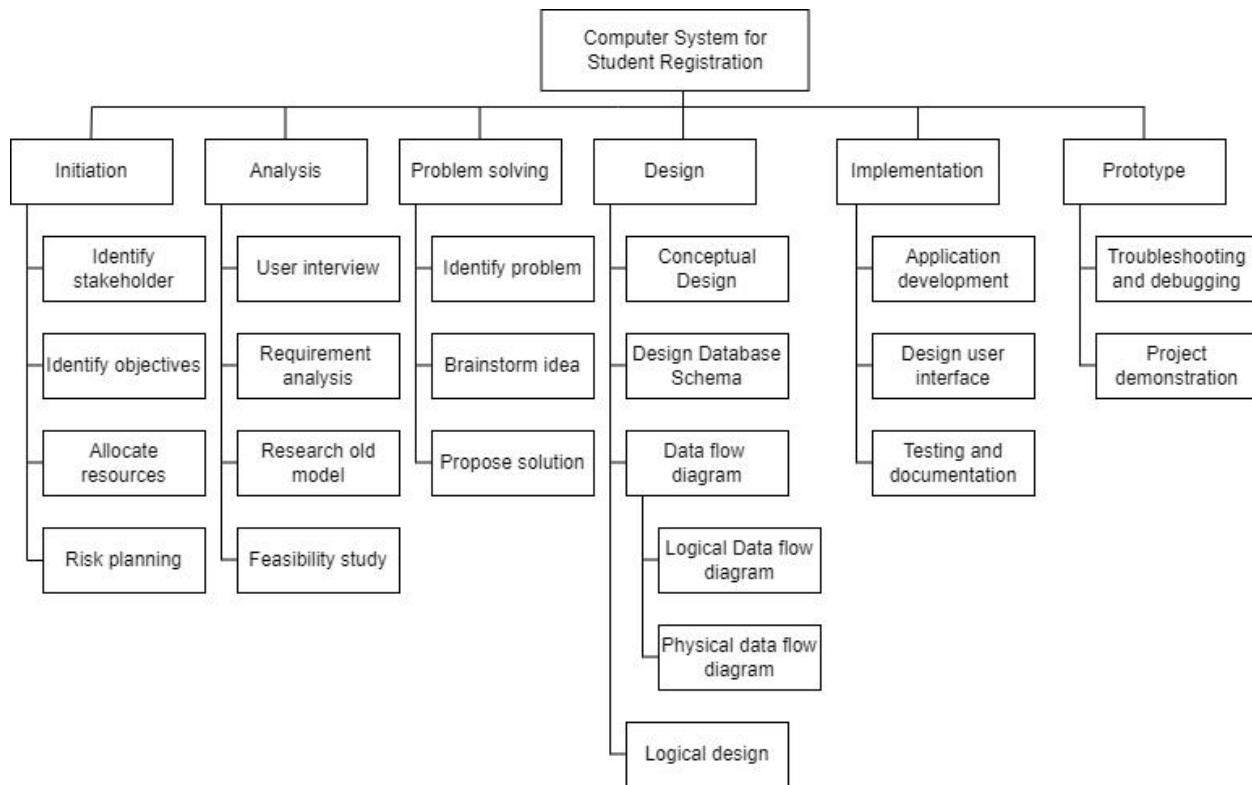
Overall, DolphinLearn Hub aims to create a collaborative and supportive learning environment within Dolphin Tuition Centre, enhancing communication, engagement, and academic outcomes for all stakeholders involved.

7.0 Project Planning

7.1 Human Resource

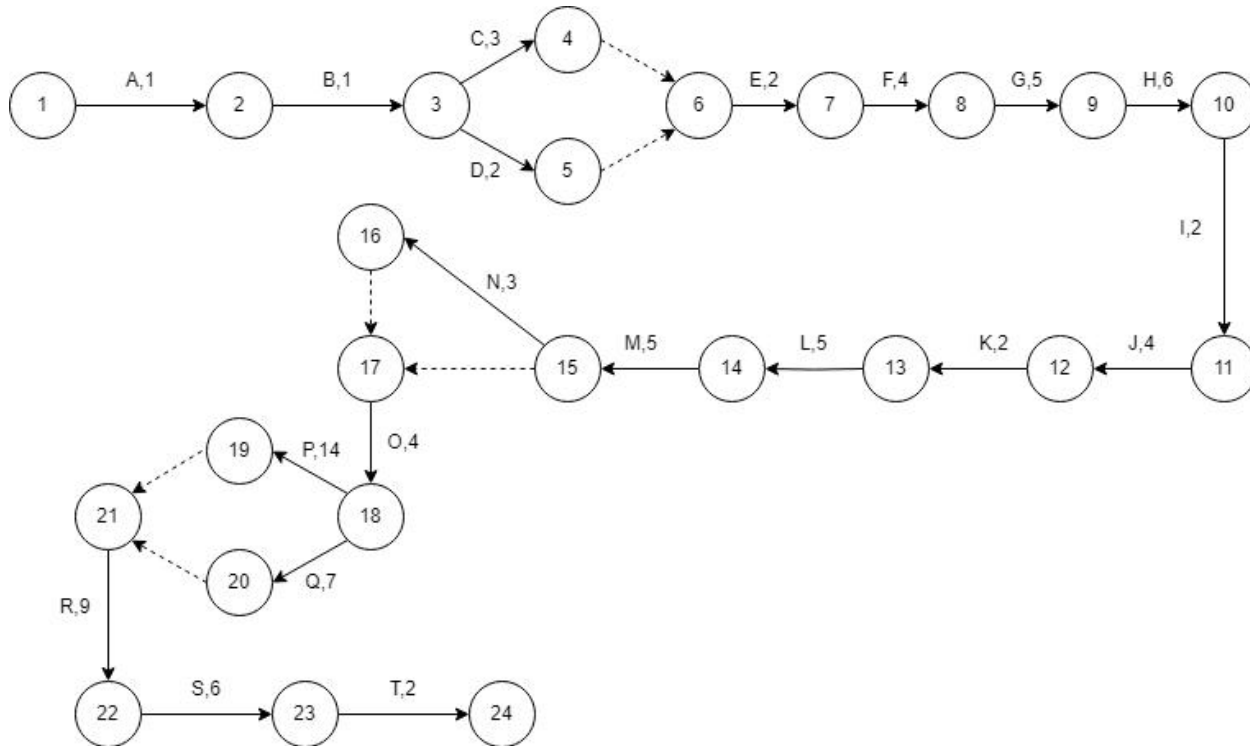


7.2 Work Breakdown Structure (WBS)



7.3 PERT Chart (based on WBS)

Activity	Description	Predecessor	Duration (days)
A	Identify stakeholder	None	1
B	Identify objectives	A	1
C	Allocate resources	B	3
D	Risk planning	B	2
E	User interview	C, D	2
F	Requirement analysis	E	4
G	Research relational model	F	5
H	Feasibility study	G	6
I	Identify problem	H	2
J	Brainstorm idea	I	4
K	Propose solution	J	2
L	Conceptual Design	K	5
M	Design Database Schema	L	5
N	Data flow diagram	M	3
O	Logical design	M, N	4
P	Application development	O	14
Q	Design user interface	O	7
R	Testing and documentation	P, Q	9
S	Troubleshooting and debugging	R	7
T	Project demonstration	S	2



Path 1: A-B-C-E-F-G-H-I-J-K-L-M-N-O-P-R-S-T

Length: $1+1+3+2+4+5+6+2+4+2+5+5+3+4+14+9+6+2=78$

Path 2: A-B-C-E-F-G-H-I-J-K-L-M-N-O-Q-R-S-T

Length: $1+1+3+2+4+5+6+2+4+2+5+5+3+4+7+9+6+2=71$

Path 3: A-B-C-E-F-G-H-I-J-K-L-M-O-P-R-S-T

Length: $1+1+3+2+4+5+6+2+4+2+5+5+4+14+9+6+2=75$

Path 4: A-B-C-E-F-G-H-I-J-K-L-M-O-Q-R-S-T

Length: $1+1+3+2+4+5+6+2+4+2+5+5+4+7+9+6+2=68$

Path 5: A-B-D-E-F-G-H-I-J-K-L-M-N-O-P-R-S-T

Length: $1+1+2+2+4+5+6+2+4+2+5+5+3+4+14+9+6+2=77$

Path 6: A-B-D-E-F-G-H-I-J-K-L-M-N-O-Q-R-S-T

Length: $1+1+2+2+4+5+6+2+4+2+5+5+3+4+7+9+6+2=70$

Path 7: A-B-D-E-F-G-H-I-J-K-L-M-O-P-R-S-T

Length: $1+1+2+2+4+5+6+2+4+2+5+5+4+14+9+6+2=74$

Path 8: A-B-D-E-F-G-H-I-J-K-L-M-O-Q-R-S-T

Length: $1+1+2+2+4+5+6+2+4+2+5+5+4+7+9+6+2=67$

Since the critical path is the longest path through the network diagram, Path 1 is the critical path for this project.

7.4 Gantt Chart



8.0 Benefit and Overall Summary of Proposed System

The implementation of DolphinLearn Hub at Dolphin Tuition Centre promises a multitude of benefits, heralding a new era of efficiency and effectiveness in educational administration and student engagement. Through the establishment of a robust online presence facilitated by DolphinLearn Hub, the centre will transcend geographical boundaries, reaching students far beyond its local community. This expanded reach not only opens doors to a broader demographic of students but also presents lucrative revenue opportunities, laying the groundwork for sustainable growth.

Moreover, DolphinLearn Hub will revolutionize administrative processes within the centre, liberating staff from the shackles of manual labor. By automating tasks such as student enrollment, scheduling, attendance tracking, and payment processing, the platform will drastically reduce errors and streamline operations. This newfound efficiency will empower staff to focus their energies on delivering exceptional educational experiences, unencumbered by administrative burdens.

The cornerstone of DolphinLearn Hub lies in its ability to foster unparalleled student engagement and support. Through a comprehensive communication and collaboration platform, students, parents, teachers, and administrative staff will seamlessly interact, share resources, and provide feedback. This continuous engagement outside of scheduled class hours will invigorate the learning process, nurturing a community of learners committed to academic excellence.

Furthermore, DolphinLearn Hub's sophisticated student monitoring and progress tracking system will provide invaluable insights into individual student performance and academic progress. Armed with real-time data and analytics, Mr. Lim and teachers will tailor instruction and intervention strategies to address each student's unique needs effectively. This personalized approach ensures that no student falls through the cracks, fostering an environment where every learner can thrive.

In essence, DolphinLearn Hub represents more than just a technological upgrade. It embodies Dolphin Tuition Centre's unwavering commitment to excellence in education. By embracing digital innovation and modernizing its operations, the centre is poised to uphold its reputation as a beacon of educational excellence. Through DolphinLearn Hub, Dolphin Tuition Centre will continue to empower students to achieve their academic aspirations, forging a path towards a brighter and more promising future.

URL of the GitHub Repository: https://github.com/KOKWEIYEE/Project1_SAD_20232024

GitHub Repository Snapshot

KOKWEIYEE / Project1_SAD_20232024

<> Code Issues 3 Pull requests Actions Projects 1 Wiki Security Insights Settings

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KOKWEIYEE Update README.md f776852 · now 11 Commits

README.md Update README.md now

README

SECD2613 SYSTEM ANALYSIS AND DESIGN PROJECT

【DolphinLearn Hub】

Description

DolphinLearn Hub represents a transformative solution designed to propel Dolphin Tuition Centre into the digital age, addressing longstanding challenges and revolutionizing the learning experience for students, parents, tutors, and administrative staff. By seamlessly integrating technology into every facet of operations, DolphinLearn Hub streamlines administrative tasks, enhances communication, and fosters collaboration among stakeholders. This comprehensive platform empowers tutors to deliver personalized support, enables students to access resources and engage in meaningful discussions, and provides parents with real-time insights into their child's academic journey. DolphinLearn Hub's multifaceted approach expands the reach of Dolphin Tuition Centre beyond local boundaries, attracting students from diverse regions and backgrounds and driving enrollment and revenue growth. With a focus on operational efficiency, student engagement, and continuous improvement, DolphinLearn Hub sets the stage for sustained growth and success, ensuring Dolphin Tuition Centre remains a beacon of educational excellence in the community.

Group Member

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Phase 1: Project Proposal and Planning

[Kanban Board Link](#)

[Phase 1 - Project Proposal and Planning link](#)

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Contributors 4

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Kanban Board Integration: <https://github.com/users/KOKWEIYEE/projects/3>

Kanban Board Screenshot

