Tribhuvan University

Faculty of Humanities and Social Science

A PROJECT REPORT ON
GAMIFIED LEARNING PROGRESS TRACKER

Submitted to

Department of Computer Application

Nepal Mega College

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted by

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July, 2024

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SUPERVISOR'S RECOMMENDATION

I hereby recommend that this project prepared under my supervision by "**Bibek Kapali**" and "**Bijay Koirala**", entitled "**Gamified Learning Progress Tracker**" in partial fulfillment of the requirements for the degree of Bachelor of Computer Applications is recommended for the final evaluation.

Signature of the Supervisor

Dharma Raj Poudel

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LETTER OF APPROVAL

This is to certify that this project prepared by, "**Bibek Kapali**" and "**Bijay Koirala**" entitled "**Gamified Learning Progress tracker**" in partial fulfillment of the requirements for the degree of Bachelor in Computer Applicationhas been evaluated. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

…… **Dharma Raj Poudel** **Supervisor** Babarmahal, Kathmandu	---------- **Dharma Raj Poudel** **Coordinator** Babarmahal, Kathmandu
---------- **Internal Examiner**	---------- **External Examiner**

ABSTRACT

The Gamified Learning Progress Tracker is an exciting tool that makes learning more engaging and fun for students. This system keeps track of each student's information, showing their overall progress and skills in easy-to-read bar graphs. It helps students and teachers see how well they're doing and where they can improve.

To keep students motivated, the tracker awards badges for different achievements, giving them a sense of accomplishment and encouraging them to keep pushing forward. It also keeps track of homework, labs, and assignments given by teachers, helping students stay organized and on top of their work. This all-in-one solution aims to make learning more interactive and rewarding.

Keywords: ***Gamified Learning Progress Tracker, Progress Tracker, Modern Tracker, Best way to learn, and Progress tracker project.***

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Lastly, we would like to acknowledge the online communities and resources that provided the technical knowledge and inspiration necessary for this project. Its contributions to the broader field of educational technology are deeply appreciated.

Thank you all for your support and encouragement. This project would not have been possible without you.

Bibek Kapali (26602076)

Bijay Koirala (26602078)

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LIST OF ABBREVIATIONS

- BCA: Bachelor of Computer Applications
- CSS: Cascading Style Sheets
- DOB: Date of Birth
- GLPT: Gamified Learning Progress Tracker
- GPA: Grade Point Average
- HTML: Hypertext Markup Language
- JS: Java Script
- MySQL: My Structured Query Language
- PHP: Hypertext Preprocessor
- XAMPP: Cross-Platform (X), Apache (A), MySQL (M), PHP (P), and Perl (P

CHAPTER 1:
INTRODUCTION

1.1 Introduction

Let's imagine a world where learning is more like playing a game than dealing with dull grades. Meet the "Gamified Learning Progress Tracker" – a system that turns your academic journey into an exciting adventure! Instead, think of it as an exciting journey, where you face challenges, unlock skills, and level up as you learn.

Forget boring reports and confusing grades! This tracker will be your personal cheerleader, highlighting your strengths, supporting your weaknesses, and showing you exactly how far you've come. Imagine seeing your progress reflected in colorful graphs and charts, feeling the motivation surge with each earned badge, and celebrating milestones with virtual fireworks!

But it's not just about fun and games. This system is powered by real data, giving you and your teachers valuable insights into your learning journey. Think of it as a treasure map revealing your hidden potential, pinpointing areas where you shine, and guiding you towards becoming the ultimate learner.

Ready for the journey of making something awesome together? Join the Gamified Learning Progress Tracker and get ready to unlock a world of learning, excitement, and personalized growth!

Overall, this is just like old progress tracker but with a new interactive ui/ux and badge system.

1.2. Problem Statement:

Have you ever felt like report cards only tell half the story? They might show your grades, but what about the hours you spent studying, the challenges you overcame, or the skills you mastered? Traditional grading often paints a one-dimensional picture, neglecting the diverse learning styles, strengths, and needs of individual students. This can be discouraging, especially for those who learn differently or struggle to fit into a uniform pattern. It can also leave both students and teachers in the dark about the specific areas where improvement is needed.

Imagine a student who excels in creativity but struggles with memorization. Their grades might not reflect their true potential, leaving them feeling discouraged and their creativity untapped. Or, a teacher might see a dip in class performance but lack the insights to pinpoint the exact skill causing the difficulty. This is where the “Gamified Learning Progress Tracker” enters. By focusing on personalized progress and skill development with better user interface, it aims to bridge this gap and empower both students and teachers.

1.3. Objectives:

Get ready to embark on a personalized learning journey with exciting features aimed to benefit students, teachers, and parents/guardians alike! Each objective serves as a stepping stone, guiding all towards building a system that empowers everyone involved:

- To show students their learning progress in charts.
- To help teachers understand each student's strengths and needs.
- To keep parents informed about their child's learning journey.
- To make learning fun with badges, turning studying into an epic adventure.

In a nutshell, our goals set the stage for an awesome learning adventure! For students, it's all about seeing progress, unlocking skills, and getting motivated with fun gamification. Teachers get insights to personalize support and unlock each student's potential. Parents and guardians easily track their child's journey, becoming informed cheerleaders. These objectives create a cool, personalized, and fun learning space for everyone. Ready for an epic educational journey? Buckle up for the ride!

1.4. Scope and Limitation

1.4.1. Scope

- It allows users to view and track their progress in various subjects and skills.
- Teachers can assign homework, labs, and assignments to students.
- Students can receive and view badges for their achievements.
- The system displays overall performance and specific skill development in easy-to-read bar graphs.
- It helps students stay organized by keeping track of all assigned tasks.

1.4.2. Limitation

- The system requires internet access to function.
- It may not integrate seamlessly with all existing school management systems.
- Initial setup and data entry can be time-consuming.
- Technical support may be required for troubleshooting and maintenance.

1.5. Report Organization

The material presented in the main report is organized into five chapters. After this introductory chapter,

Chapter 1 provides an overview of the project, including its objectives, scope, and significance.

Chapter 2 describes the Background Study and Literature Review performed during and before starting this project.

Chapter 3 provides an account of the system analysis and design. It consists of subtopics System Analysis which consists of sub subtopic Requirement Analysis, Feasibility Analysis, Data Modeling, Process Modeling andanother subtopic System Design which consists of sub-subtopics Architectural Design, Database Schema Design, Interface Design, Physical DFD.

Chapter 4 incorporates the brief introduction on testing and lists all the Tests performed until this phase of the project. And last but not least,

Chapter 5 includes the conclusion of the project with lesson learnt and outcomes as well as Future Recommendations.

CHAPTER 2:
BACKGROUND STUDY AND LITERATURE REVIEW

2.1. Background Study

The Gamified Learning Progress Tracker represents a modern approach to monitoring student development by incorporating engaging elements from games. Rather than emphasizing competitive scores, the tracker uses badges to recognize and celebrate student achievements, fostering a positive learning environment. It features intuitive visual displays that provide clear insights into each student's progress, making it easy for educators to assess performance and identify areas for improvement. Additionally, the tracker simplifies task management by allowing teachers to efficiently assign and track homework and other assignments. Importantly, its user-friendly design extends to parents and guardians, enabling them to easily monitor their child's educational progress and actively support their learning journey. With more advancement in future the Gamified Learning Progress Tracker aims to enhance overall educational outcomes and student engagement.

2.2. Literature Review

In the research related to our project, we noticed that there aren't many projects similar to us. Most of the information we found talks more about theories rather than practical ways. This made it hard for me and my team-mate to find the specific details and guides we need for this project.

Progress Tracker: The Ultimate Guide [1]

This resource provided a comprehensive overview of progress tracking systems in a general way. It emphasized theoretical frameworks and general principles rather than practical implementation specifics. While informative, it lacked the detailed practical insights needed for developing this project. But this website provides the enough info about “what should progress tracker should have”.

Student Progress Tracker [2]

It was a report published by an organization in which there was mentioned about progress tracker specific to the student. Also, in this pdf there was some design related to the system.

Positive Aspects and Areas for Improvement

Positive Aspects

- Provides a comprehensive overview of progress tracking systems.
- Emphasizes theoretical frameworks and general principles.
- Sets a foundation for understanding essential progress tracker features.

Areas for Improvement

- Lacks detailed practical insights needed for project development.
- More focused research and development needed in gamified learning environments.
- Theory-focused discussions overshadow practical implementation guidance.

CHAPTER 3:

SYSTEM ANALYSIS AND DESIGN

3.1. System Analysis

After going through above mentioned models, the conclusion is made of iterative waterfall model. Because this project which is going to be develop is step by step and if there is any problem in any step we will be revert back.

Iterative Waterfall Model for software development

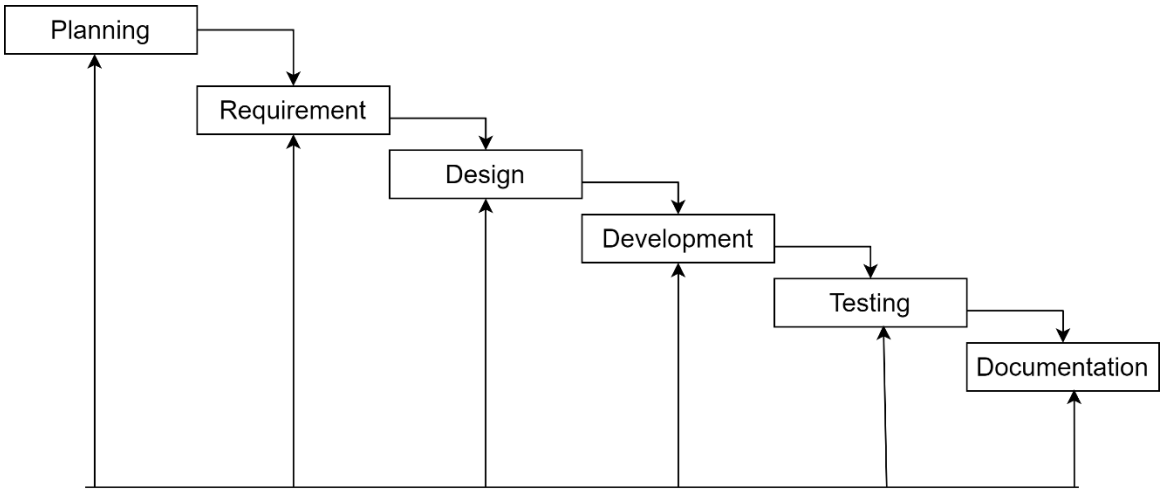


Figure 3.1: Iterative Waterfall model of GLPT

For a straightforward process, the iterative waterfall methodology will be followed for effective project development. The system will progress through phases one after another but in an iterative way.

Here are the benefits of iterative waterfall models:

- **Structured Approach**: Provides a systematic framework with well-defined phases (requirements, design, implementation, testing, deployment).
- **Progress Tracking**: Offers clear visibility into project progress and milestones, facilitating effective project management.
- **Quality Assurance**: Ensures each phase is thoroughly tested and validated before moving to the next, maintaining high-quality deliverables.

3.1.1. Requirement Analysis

Requirement analysis is a critical step in determining the success of a system or software project. It involves identifying and documenting the essential needs and expectations that the project must fulfill during its development. These requirements serve as the foundation for designing and implementing the system effectively.

Requirements are of two types:

i. Functional requirements
ii. Non-functional requirements

i. Functional Requirements

These are the requirements that the end user specifically demands as basic facilities that the system should offer. All these functionalities need to be necessarily incorporated into the system as a part of the contract.

These are represented or stated in the form of input to be given to the system, the operation performed and the output expected. They are the requirements stated by the user which one can see directly in the final product, unlike the non-functional requirements.

Functional requirements can be represented in use case diagram.

Use Case Diagram:

It helps in understanding the functional requirements by showing what the system is supposed to do and how users will interact with it.

Here is a brief overview of the components of a use case diagram:

- **Actors**: These represent the users or other systems that interact with the system. Actors can be humans, other systems, or hardware devices.
- **Use Cases**: These represent the functional requirements or the specific goals that actors want to achieve with the system. Each use case describes a sequence of actions performed by the system to provide a result of value to an actor.
- **System Boundary**: This defines the scope of the system and what is included in it. The use cases inside the boundary represent the functionality provided by the system.

- **Relationships**: These show the interactions between actors and use cases, as well as relationships between different use cases.

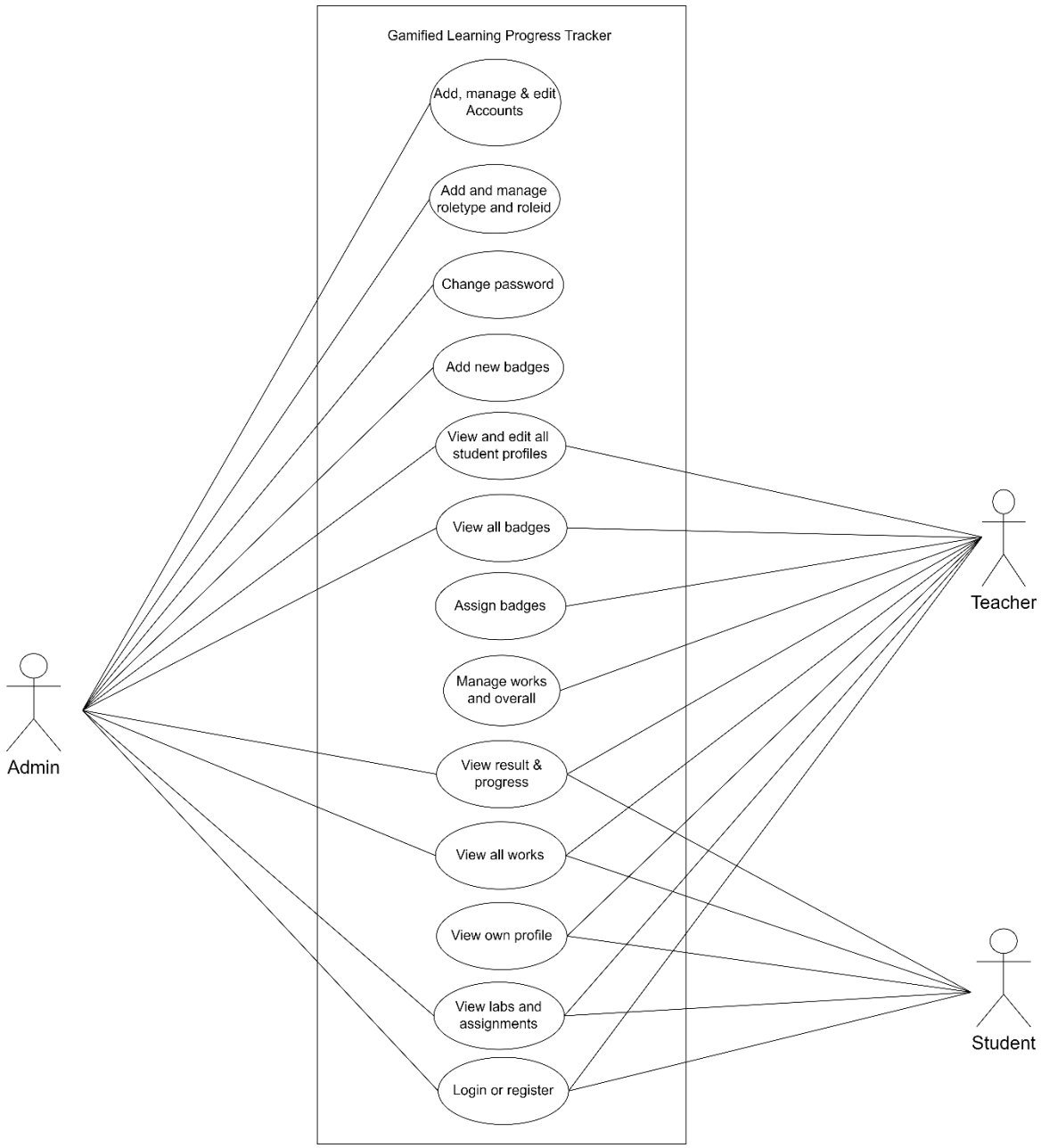


Figure 3.2: Use Case Diagram of GLPT

Based on the given figure:

- Admin can perform all functional tasks.
- Teacher can perform tasks related viewing user personal info including overall and posting works but not modifying registration of any user which changes personal data.

- Student can register once and access tasks, assignments, notes, and their own profile & dashboard.

ii. Non-functional Requirements

These are the quality constraints that the system must meet, often referred to as non-functional requirements. They do not describe specific behaviors or functions of the system but rather the qualities and attributes it should possess. The priority and extent of implementation for these requirements can vary between projects. Non-functional requirements address various important issues, including but not limited to:

- Portability: It is a web-based project so there is no restriction related to any device like iOS, android, windows, Linux etc, until and unless there is internet connection.
- Security: The system is secured because even if someone get password it requires "id" given by college admin, else the user neither can register nor can login.
- Maintainability: The code of this system is written for each part individually in a separate folder, if anyone wants to upgrade or update this system it is easily maintainable.
- Reliability: All the users of the system can rely on this system because it consistently performs its intended functions under predefined conditions without failure with some better error handling.
- Scalability: This system is be able to handle increasing loads, such as a growing number of users or transactions, without performance degradation. It can be little laggy sometimes but it will handle.
- Reusability: The codes of this system is written individually so we can reuse them with another system after doing some modification.

3.1.2. Feasibility Study

Feasibility refers to the practicality or possibility of a proposed plan, project, or system being successful and effective. A feasibility study is like checking if an idea makes sense and is do-able before diving into it. It's a thorough examination to ensure that a proposed project is realistic, achievable, and economically viable. It involves examining various aspects, including technical, operational, and economic considerations, to determine whether the proposed is feasible and worth pursuing or not [7].

i. Technical Feasibility

Examines whether the proposed project can be successfully implemented from a technological perspective.

With the existing knowledge of HTML, CSS, JavaScript, PHP, and MySQL, a solid foundation is laid for completing this project. So, this project is technically viable.

ii. Operational Feasibility

Operational feasibility assesses the practicality of implementing the project in daily operations.

The system enhances user experience and operational efficiency for students, teachers, and administrators, seamlessly integrating into their daily tasks. Once initialized, it operates smoothly without disrupting workflow, ensuring ease of use and maintenance.

This ensures the system achieves operational feasibility by being user-friendly, non-disruptive post-initialization, and easy to maintain.

iii. Economic Feasibility

Economic feasibility evaluates whether the proposed project is financially viable and beneficial.

Any extra software and hardware are not required for this system i.e., all freely available technologies were used, so there is no recurring cost other than just the internet connection and labor cost.

Calculating ROI involves estimating the costs and benefits over time, including reduced operational costs, increased productivity, and improved service delivery. This financial analysis ensures that the project's benefits outweigh its costs, making it economically feasible and potentially profitable.

- ⇨ ROI = (Total Costs/Net Benefits) ×100

The project makes financial sense because it saves time, save resources within a reasonable cost. It's a good investment for any colleges or for any educational institutions.

iv. Schedule Feasibility

Schedule feasibility evaluates whether the project can be completed within the allocated time frame and meets required deadlines.

Based on these technical skills, planned features, and resource management approach and by effectively managing timelines and milestones, the project aims to achieve its objectives within the desired timeframe, ensuring schedule feasibility and timely delivery of results.

Gant chart:

A gantt chart is a horizontal bar chart used in project management to visually represent a project plan over time. The purpose of a Gantt chart is to help people see and understand the schedule of a project. It shows all the tasks that need to be done, when they start, and when they finish. This makes it easier to plan and manage the project, as everyone can see what needs to be done and when it needs to be finished. Gantt charts are especially helpful for keeping track of deadlines and making sure that everyone is on the same page about what should happen next.

Table 3.1: Activity Table of GLPT

Gamified Learning Progress Tracker			
Start-date	29-Jan		
Task	Start-Date	End-Date	Duration(weeks)
Planning	29-Jan	12-Feb	2
Requirement	12-Feb	26-Feb	2
Design	26-Feb	18-Mar	3
Development	18-Mar	13-May	8
Testing	13-May	20-May	1
Documentation	29-Jan	16-Jun	17
Deployment	--	--	--
Maintenance	--	--	--
Total weeks	--	--	17

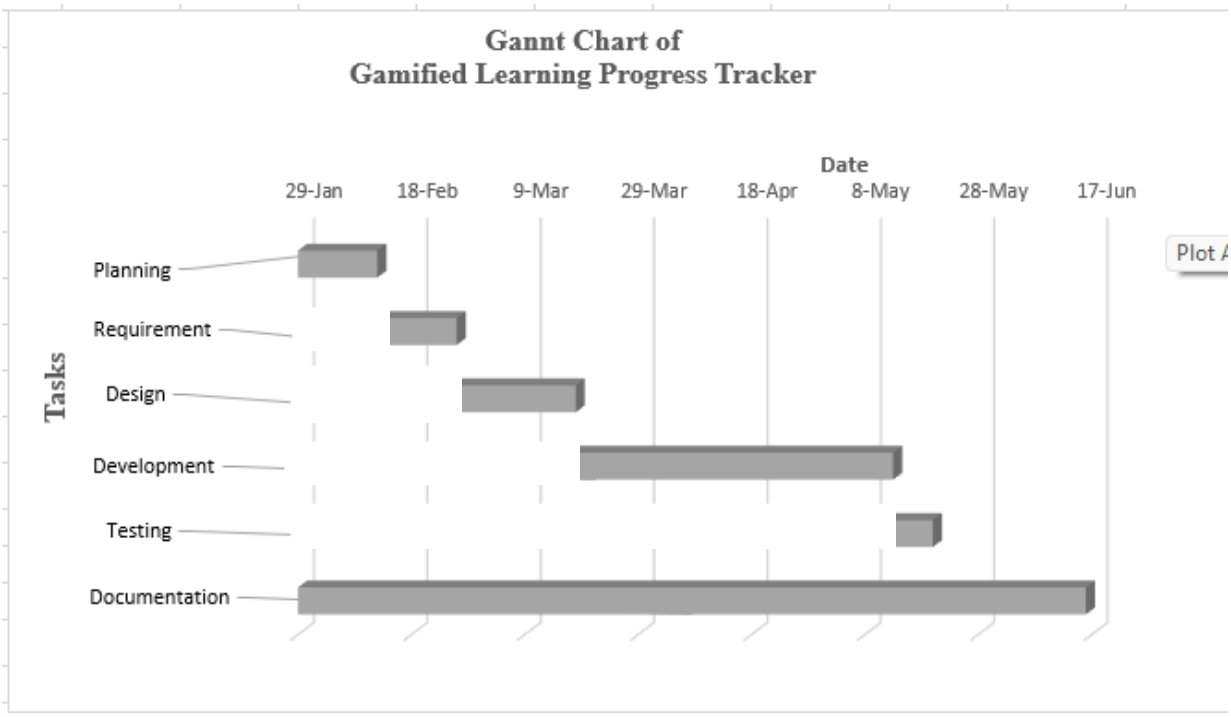


Figure 3.3: Gannt Chart of GLPT

For this project, the schedule has been carefully planned to ensure timely completion. The planning phase is allocated 12 days, followed by a requirement analysis phase lasting 2 weeks (14 days). The design phase is scheduled for 3 weeks (21 days), and the development (coding) phase is set for 8 weeks (56 days). Testing is planned to take 1 week (7 days). Additionally, documentation will be ongoing throughout the entire project.

In total, the project spans approximately 16 weeks and 3 days, with a comprehensive timeline that ensures each phase is completed within a reasonable timeframe, ensuring the project's overall schedule feasibility.

3.1.3. Data Modelling (ER Diagram)

Data modeling is a process used to define and organize data requirements needed to support the business processes of an organization. It involves creating conceptual, logical, and physical representations of data entities, relationships, and attributes.

Entity-Relationship (ER) modeling is a technique used to visually represent the structure of a database. It is a critical component in the database design process, helping to create a conceptual blueprint of how data is organized and how entities interact with each other within the system.

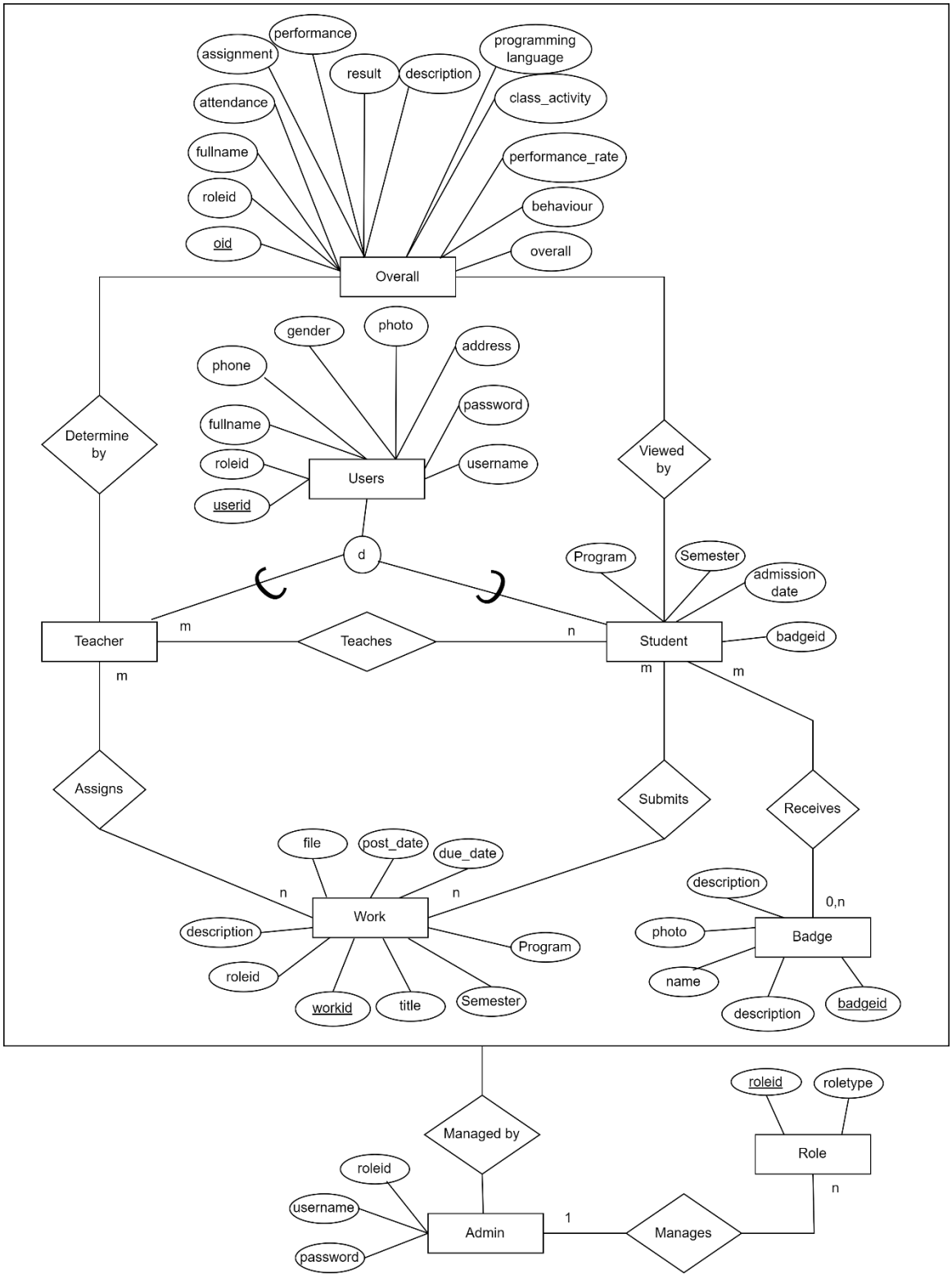


Figure 3.4: ER Diagram of GLPT

3.1.4. Process Modelling (DFD)

For Process Modeling of Gamified Learning Progress Tracker context diagram (Level-0 DFD) and Level-1 DFD of the system were designed. The figures are below:

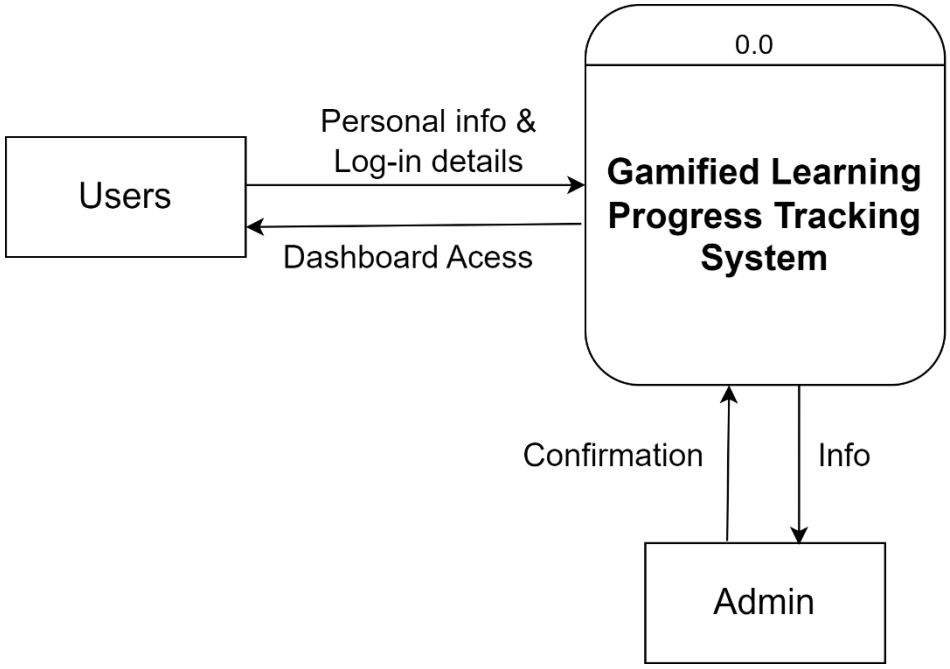


Figure 3.5: Level 0 dfd of GLPT

A Level 0 Logical Data Flow Diagram (DFD) provides a high-level overview of the system, showing the primary processes and data flows between users and the system. In this context, the DFD illustrates that users (teachers and students) are sharing info to the system. In this process modeling, only the positive cases are taken, where the information is correct, and access is granted.

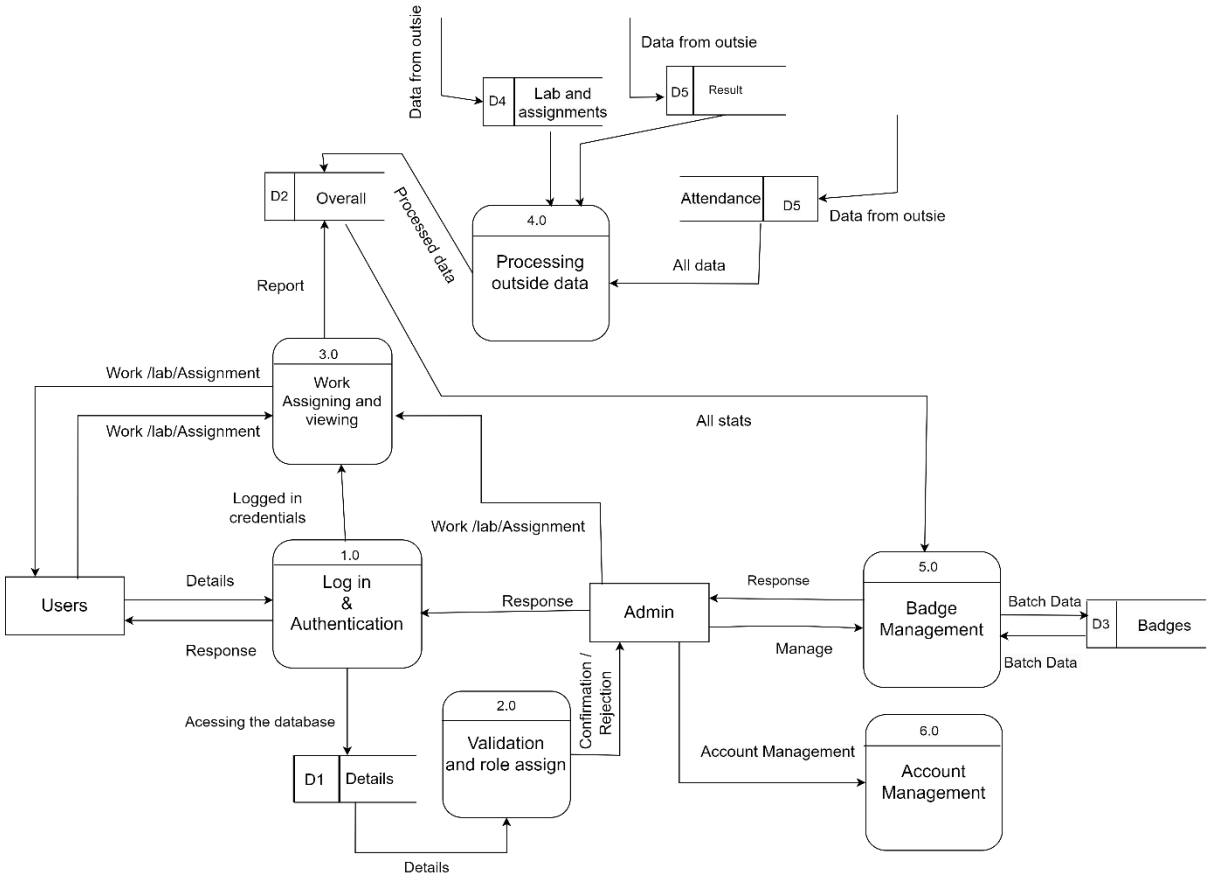


Figure 3.6: Level 1 dfd of GLPT

A Level 1 Logical Data Flow Diagram (DFD) is more detailed than a Level 0 DFD, which provides a high-level overview of the system. In a Level 1 DFD, processes are labeled as 1.0, 2.0, 3.0, etc., showing the main functions and their interactions. It is broken down in more detailed processes like user registration, data verification, and access control by showing how data is flowing to which part. A Level 2 DFD further breaks down these processes into smaller subprocesses, showing even more detail about each part of the system.

3.2. System Design

System design is the process of defining the architecture, components, interfaces, and data for a software system to meet specific requirements. It's like creating a blueprint for how the system will be built. In the System Designing stage, the architecture of the system, database schema, interface and the physical DFDs were designed. Each of those phases are explained below:

3.2.1. Architectural Design

This system follows data-centered architecture. All the data are stored in the database and is accessed by all the parties involved with the system. Features like User Authentication, User Registration, Viewing Information and editing profiles are included in the Front-end portion. Security, Strengths and Forms are included in the processing.

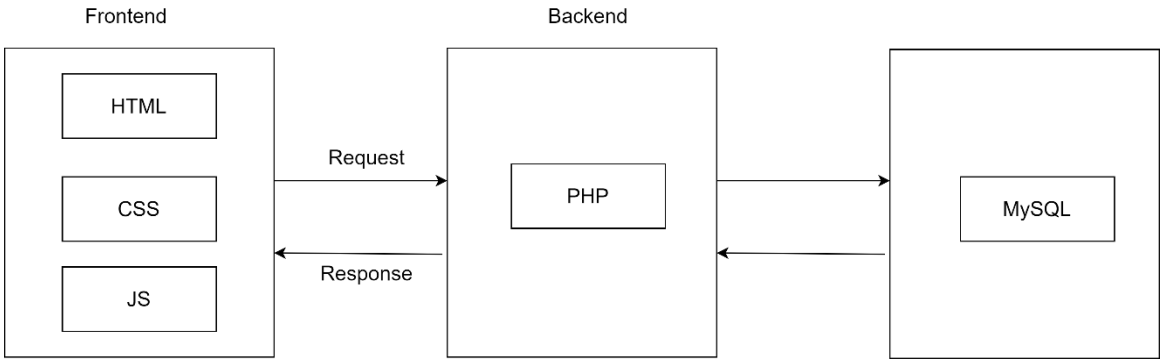


Figure 3.7: Architecture Design of GLPT

3.2.2. Database Schema Design

A database schema design is the blueprint for how data is organized and structured within a database. It defines how data is stored, the relationships between different data entities, and the constraints that ensure data integrity. This design is crucial because it determines the efficiency and scalability of data retrieval and manipulation.

A well-thought-out schema design helps in avoiding redundancy, ensuring consistency, and supporting efficient query processing. For a Gamified Learning Progress Tracker, the schema design would outline how students, teachers, and admin data are stored and related, enabling the system to efficiently track progress, assign tasks, and manage user roles and permissions.

Following database tables are included in the database schema of Gamified Learning Progress Tracker: student, teacher and admin.

- A user is assigned 1 and only 1 role.
- A user may have 0 or many works. A user may assign 0 or many works.
- A user has only 1 overall data.
- A user may have 0 or many badge.

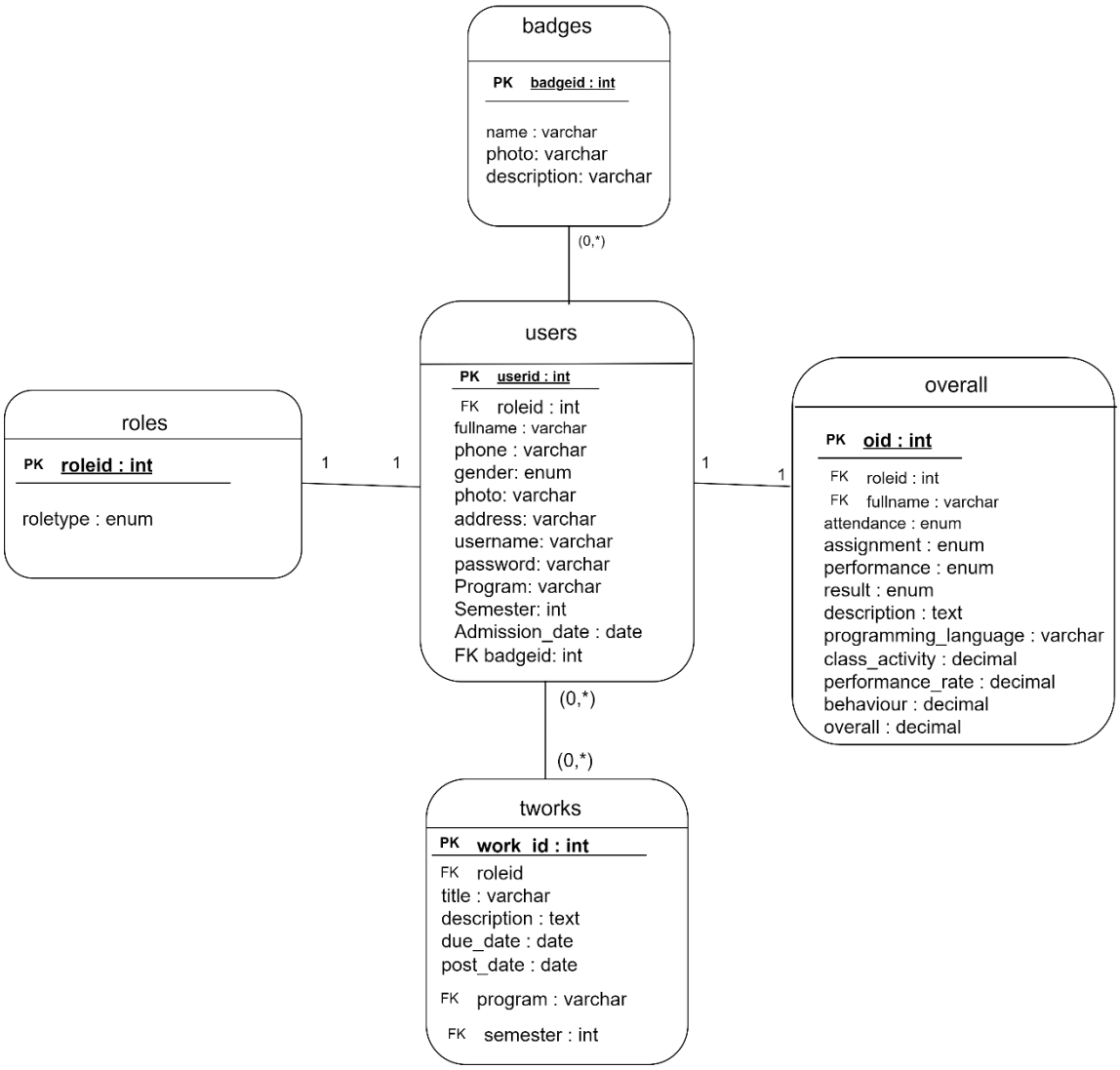


Figure 3.8: Database Schema of GLPT

3.2.3. Interface Design (UI Interface)

During Interface Design, wireframe designs were created for the system. Figma was used as a mockup tool during the interface design. Various mock-ups designed for the interfaces of the Gamified Learning Progress Tracker are shown below:

Figure 3.9: Login wireframe of GLPT

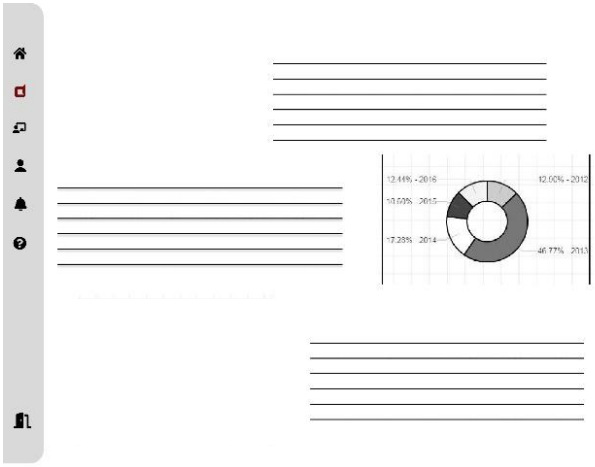


Figure 3.10: Homepage of GLPT

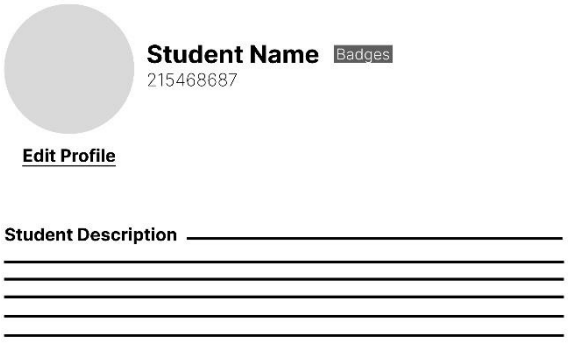


Figure 3.11: Profile of GLPT

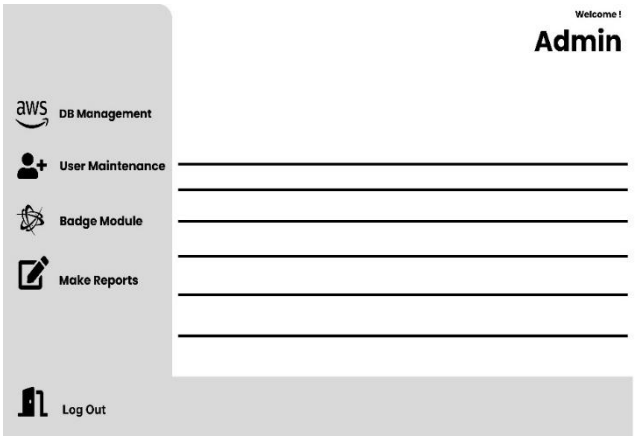


Figure 3.12: Admin page of GLPT

3.2.4. Physical DFD

A Physical Data Flow Diagram (Physical DFD) is a detailed representation of how data flows within a system, focusing on the actual implementation aspects. It illustrates the specific hardware, software, files, and people involved in the data processing.

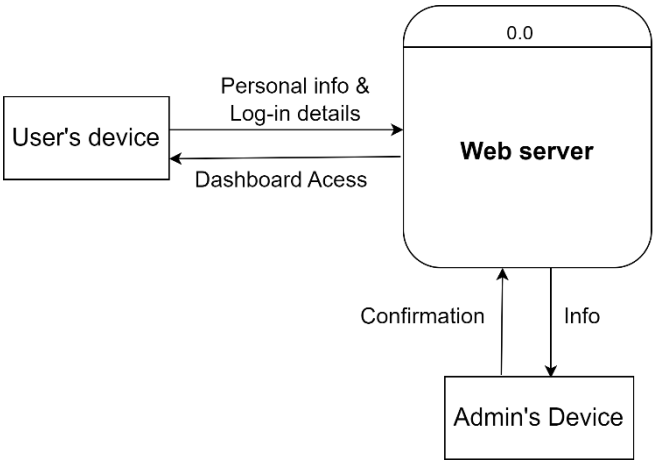


Figure 3.13: DFD level 0 of GLPT

In a Level 0 for our scenario, the DFD would show that users (teachers and students) use physical devices like computers or smartphones to register their personal information (username, photo, password, full name, phone number, address, etc.) into the system. This data is transmitted over the network to a web server, which processes the registration requests. The web server then communicates with an application server that handles the verification of the submitted information by querying a database server.

CHAPTER 4:
IMPLEMENTATION AND TESTING

4.1. Implementation

In the implementation phase, we turn our plans into reality. This involves writing the code for the system, creating the user interface, and setting up the database. We use the right programming languages and tools to build each part of the system. During this stage, we make sure all the pieces fit together and work as expected, getting everything ready for the testing phase.

4.1.1. Tools Used

During the implementation phase, the following tools were instrumental in developing the system:

- **Case Tool**: Draw.io was used for diagramming and visualizing the system architecture.
- **Programming Languages**: HTML, CSS, JavaScript (for frontend interactions), PHP (for backend logic), and MySQL (for database management) formed the core of the system's development.
- **Development Environment**: Tools such as VS Code for coding, XAMPP for local server hosting, Chrome for testing, and GitHub for version control were utilized to streamline the development process.

These tools collectively supported the creation and integration of various system components, ensuring efficiency and functionality throughout the implementation phase.

4.1.2. Implementation Details of Modules

Registration Module:

The Registration Module allows users, such as students and teachers, to register into the system. But admin is not able to register through register panel. It verifies user credentials to ensure validity before allowing registration. This module manages user information, including profiles and roles (like student or teacher), facilitating access to personalized learning resources and progress tracking features. It is designed to streamline user

onboarding and ensure accurate user data management. The user is not able to register his/her accounts if his/her details(roleid) is not in database.

Login Module:

The Login Module ensures secure access to the system, specifically for administrators and registered users. It authenticates user credentials to protect system data and ensure privacy. This module plays a crucial role in maintaining system security and managing user access rights effectively, supporting a safe and reliable learning environment. Even if any cracker or unknown user get any of the info whether it is username or pass or roleid s/he won't be able to login until it all 3 info are valid. So, unless and until someone share it is not possible to get all 3 info at once.

User Module:

The User Module offers interactive features for both students and teachers using the system. Students can track their learning progress, complete tasks, and earn badge based on their achievements. Teachers can assign tasks, monitor student progress, and provide feedback through the system. Also, teacher can view student profile and modify the overall of any student. Beside this a teacher can monitor who and how many students had registered to the system, which student has what type of badges, how many badges are there inside the system. Last thing teacher can do is post assignment, edit the posted assignment and student can only view all the assignment posted on the system from anywhere anytime without any issue. Assigned or posted assignments, notes, labs can be deleted. This module maintains profiles for each user, tracks their learning activities, and supports collaborative learning environments.

Admin Module:

The Admin Module provides administrative functionalities within the Gamified Learning Progress Tracker. Administrators can manage user accounts, activate new users, and oversee overall system activity. This module includes features to monitor user progress, assign tasks, and badges also analyze user's data. The dashboard offers insights into user achievements, badge index and system usage statistics, supporting effective management and decision-making. Admin can every possible thing in this system. S/he can add new role, new badge, new users, assign badge, delete badge, assign homework, update and manage accounts of others. Also, security is one of the main duties of the admin.

Badge module:

The Badge Module in our Gamified Learning Progress Tracker project manages badges awarded to students based on their achievements. Each badge, defined in the tbl_badges table, includes fields for its unique identifier (badgeid), name (name), associated photo (photo), and criteria (description) for earning it. This module supports motivation and engagement by visually recognizing student accomplishments, enhancing participation through a structured reward system, and facilitating effective progress tracking within the learning platform.

4.2. Testing

Testing is the crucial process of evaluating and verifying that a software or system product performs according to its intended specifications and requirements. It ensures that the application functions correctly, meets user expectations, and operates reliably under various conditions. Testing involves executing software components or systems to identify defects, errors, or discrepancies, which are then corrected to enhance the overall quality and usability of the product.

4.2.1. Test Cases for Unit Testing

Table 4.1: Test case for unit testing of GLPT

Test id	Description	Input	Expected Outcome	Actual Outcome	Result
U12	Posting Assignment	Title: Js Lab2 Desc:<link to drive> Due date: 7/19/2024 Program: BCA Sem: 4	Js lab 2 (due date) Link and desc in assignment page.	Js lab 2 (due date) Link and desc in assignment page.	Pass
U13	Editing Assignment	Sem changed to 5	Sem: 5	Sem: 5	Pass
U14	Add new Badge (admin) file as .mp4	Name: badge3 Photo: badge3.mp4 Desc: Given to those who are not good at college.	Sorry, only JPG, JPEG, PNG & GIF files are allowed. Your file was not uploaded.	Sorry, only JPG, JPEG, PNG & GIF files are allowed. Your file was not uploaded.	Pass

U15	Add new badge (admin) as desc empty	Name: badge4 Photo: badge4.png Desc:	Enter description	Enter a description	Pass
U18	Editing user overall (admin)	Attendance: Full Result: Fail Desc: The student is hardworking but he fails.	All info: Same Attendance: Full Result: Fail Desc: The student is hardworking but he fails.	All info: Same Attendance: Full Result: Fail Desc: The student is hardworking but he fails.	Pass
U19	Editing user overall with invalid roleid(admin)	Roleid: ^(8293$73	The data cannot be edited.	Error updating record: Cannot add or update a child row: a foreign key constraint fails	Pass
U20	Updating overall with empty fullname (teacher)	Fullname:	Not Allowed	Please fill this filed.	Pass
U21	Adding new role (admin)	Roleid: S981234	New role added.	New role added.	Pass
U22	Adding new role (empty roleid)	Roleid:	Enter roleid.	Enter roleid.	Pass
U23	Filtering student data only	Filter: student	Data with roletype student showed up	Data with roletype student showed up	Pass

4.2.2. Test Cases for System Testing

After integrating all the modules into a workable system, the whole system was tested.

Table 4.2: Test case for system testing of GLPT

Test id	Description	Input	Expected Outcome	Actual Outcome	Result
S12	Student login	Roleid: S123456 Username: bijay Password: bijay@123	Login successful	Login successful	Pass
S13	Login with empty credentials	Roleid: Username: Password:	Redirect to login page.	Redirected to login page, no access to database.	Pass
S14	Login with bad username and pass	Roleid: T123456 Username: wrong Password: @12Wrong	Redirect to login page, no access to database	Redirected to login page, no access to database	Pass
S15	Check role for registration	Roleid: S123456	Already registered	Already registered	Pass
S16	Trying to register with miss matched credentials	Roleid: S98760 Roletype: Teacher	Role ID and Role Type do not match in the database. *Means you are not registered user. *Contact college admin if there is any problem.	Role ID and Role Type do not match in the database. *Means you are not registered user. *Contact college admin if there is any problem.	Pass

System Evaluation

The system was tested. Inserting, modifying some data, profile viewing, assignment, badges etc were done. There was very less errors (found errors were debugged). The system lags sometimes, the code need to be optimized more.

CHAPTER 5: CONCLUSION AND FUTURE RECOMMENDATIONS

5.1. Lesson Learnt / Outcome

Upon completion of the project, users are able to register using role IDs assigned by the college and log in with their credentials. The primary goal of this project was to explore merging educational and tracking systems in a gamified manner to enhance learning outcomes. Based on extensive testing, our web-based Gamified Learning Progress Tracker has demonstrated significant advantages in terms of convenience, efficiency, and security.

The system's functionalities are role-specific:

- Admin Role: Users with admin privileges have full access to the system, including adding new roles, deleting users, managing badges, modifying account information, and creating/editing assignments.
- Teacher Role: Teachers can view student profiles, manage overall progress, and post assignments.
- Student Role: Students can view their profiles, assignments, and laboratory information.

This role-based access ensures that users interact with the system in a way that aligns with their responsibilities and enhances their effectiveness within the educational environment. The integration of gamification elements has facilitated a more engaging and effective learning experience, contributing to improved student motivation and performance.

5.2 Conclusion

The goal was to create an application where education and progress tracker can be merged in a gamified way.

Specifications were followed strictly but to get the system working as plan. With the goals achieved the basis of the application and this project has been achieved. Building this web application has been challenging and enriching because throughout the project we learnt a lot about PHP, JavaScript and understand what it takes to build a fully functional website. There have been challenges especially when it came to backend and making sure that the application responses in a predictable. Careful planning related to the type of architecture,

the design, the database types to use and what type of business objects to create made the job easier.

Based on the results, this study concluded that the gamified progress tracker is much better than the manual system. The findings showed that new users in the market prefer to use an online progress tracking system rather than the manual system because it offers many advantages and benefits that lead to its effectiveness and efficiency. Because of the increased confidence of the users in the system, it can be concluded that this project tracking system enhances user engagement, streamlines progress monitoring, and promotes a more proactive approach to achieving goals.

At the end of the project, the realization had been made that there is still so many enhancements needed.

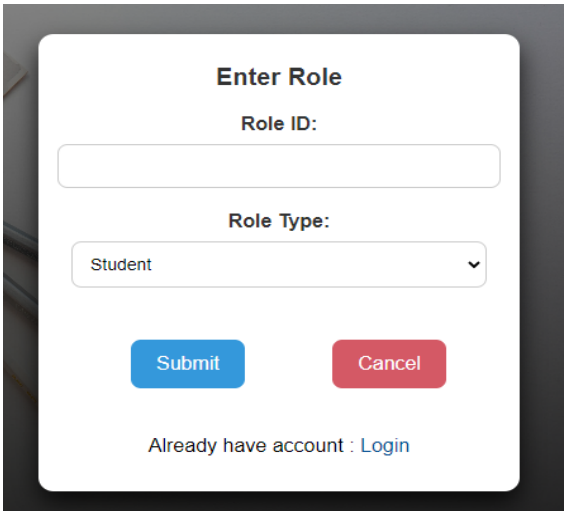
5.3. Future Recommendation

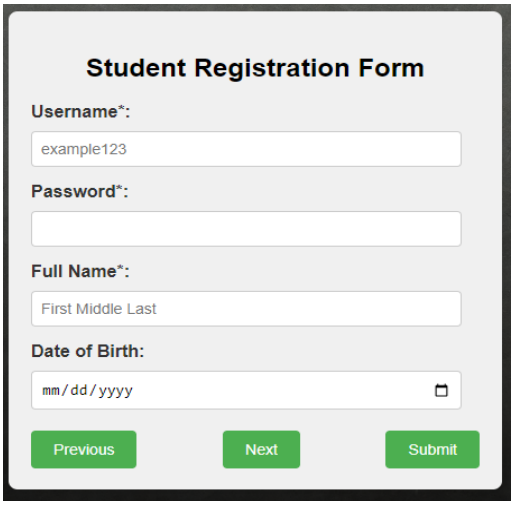
In the future, as if this project gets continue developing, there will be following changes/updates:

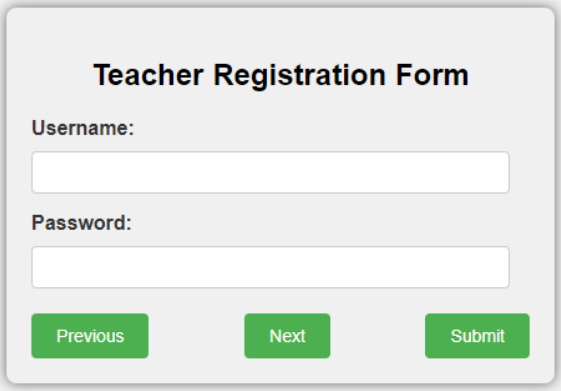
- Expand the online database capabilities.
- Integrate multiple badge system with ease.
- Optimize the whole source code.
- Enhance the UI to provide a better user experience.

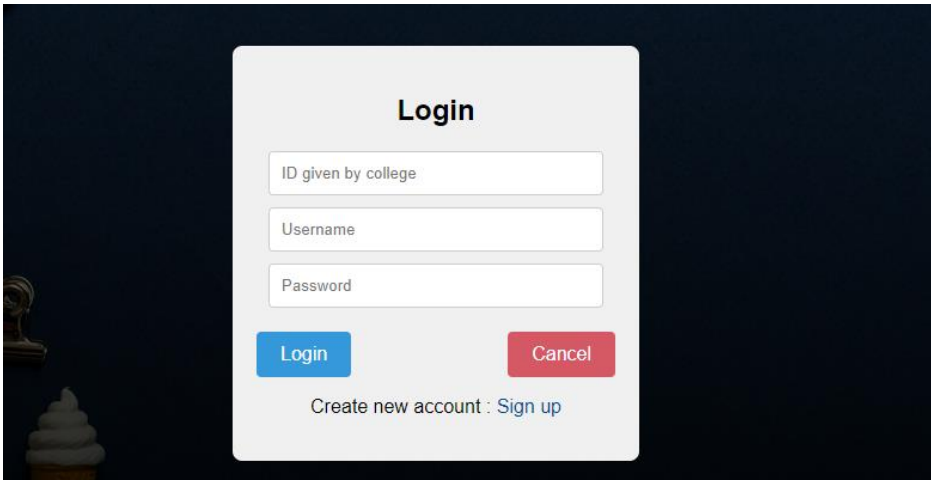
If anyone else is interested, they are welcome to contribute as well.

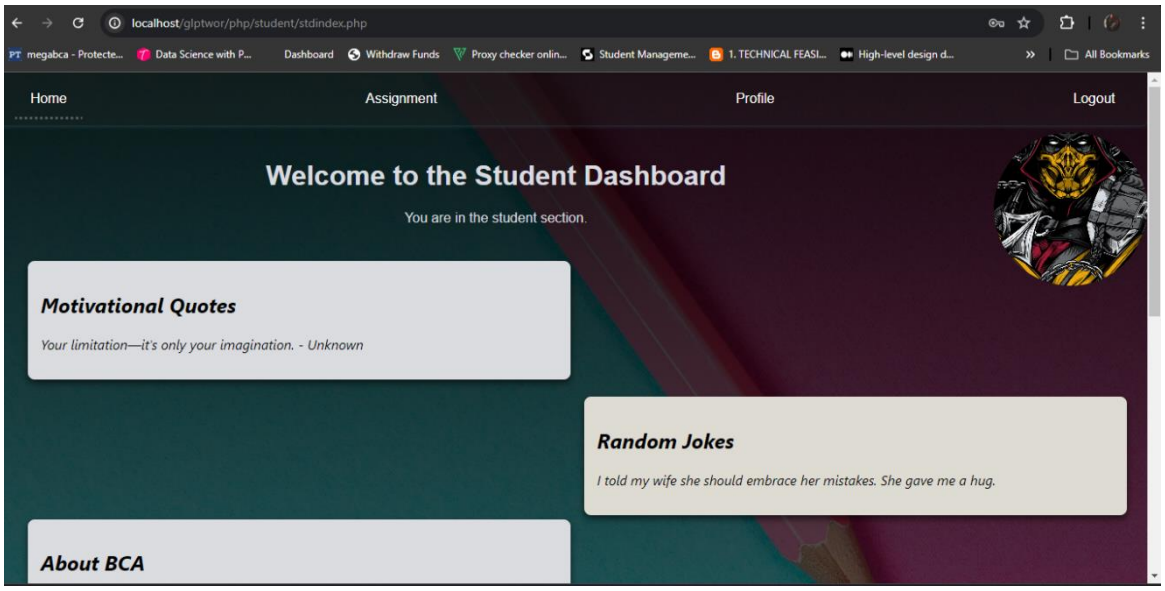
APPENDICES

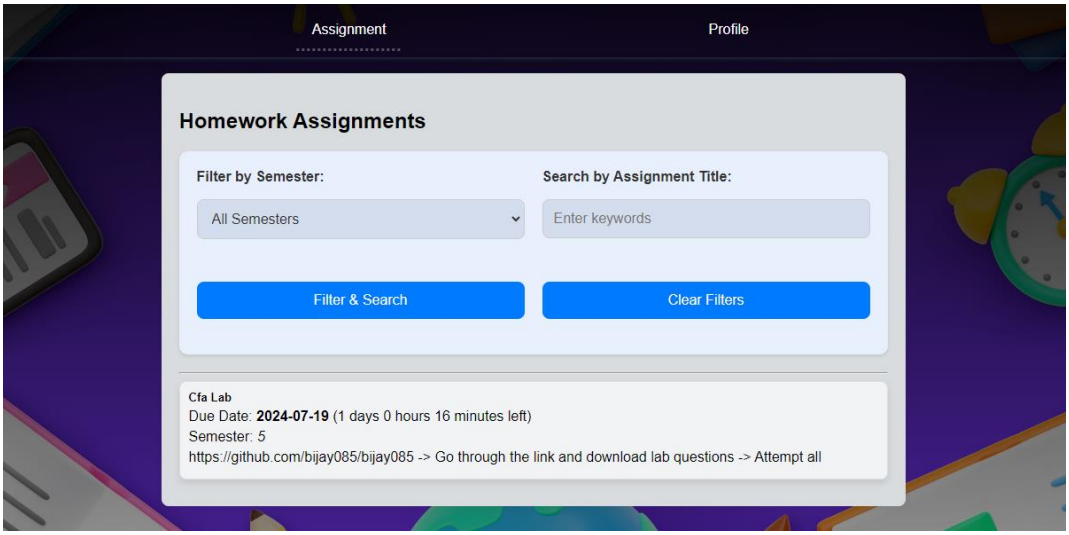

Enter Role
Role ID:
Role Type:
Student
Submit
Cancel
Already have account : Login

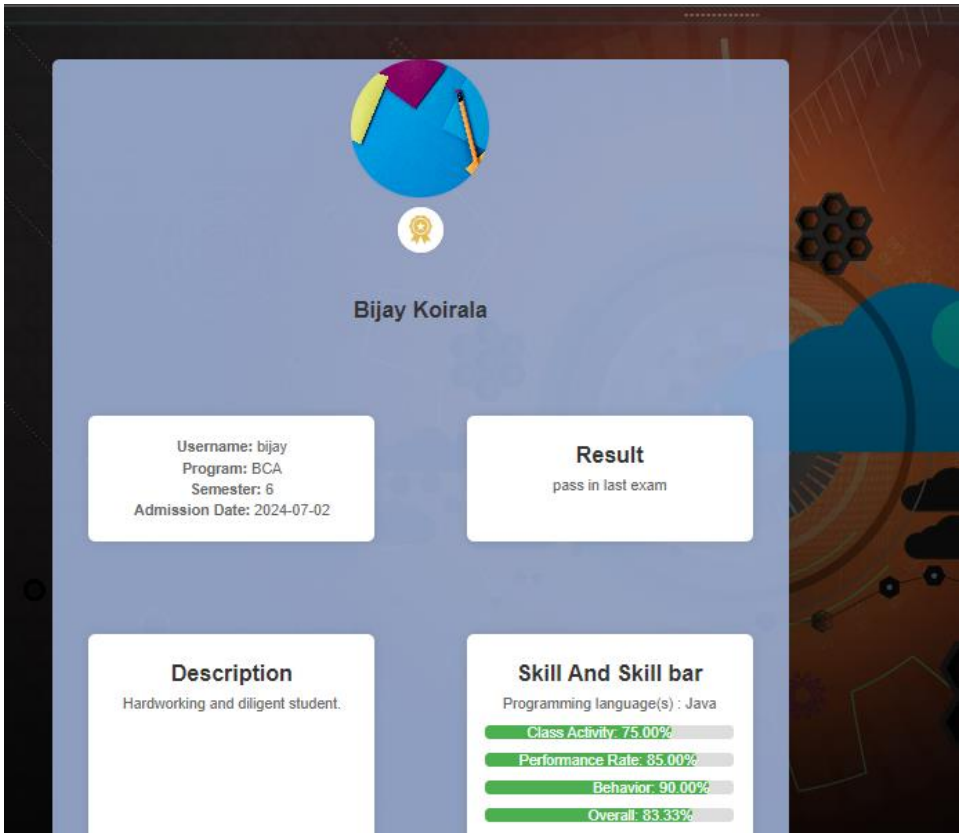

Student Registration Form
Username*:
example123
Password*:
Full Name*:
First Middle Last
Date of Birth:
mm/dd/yyyy
Previous
Next
Submit

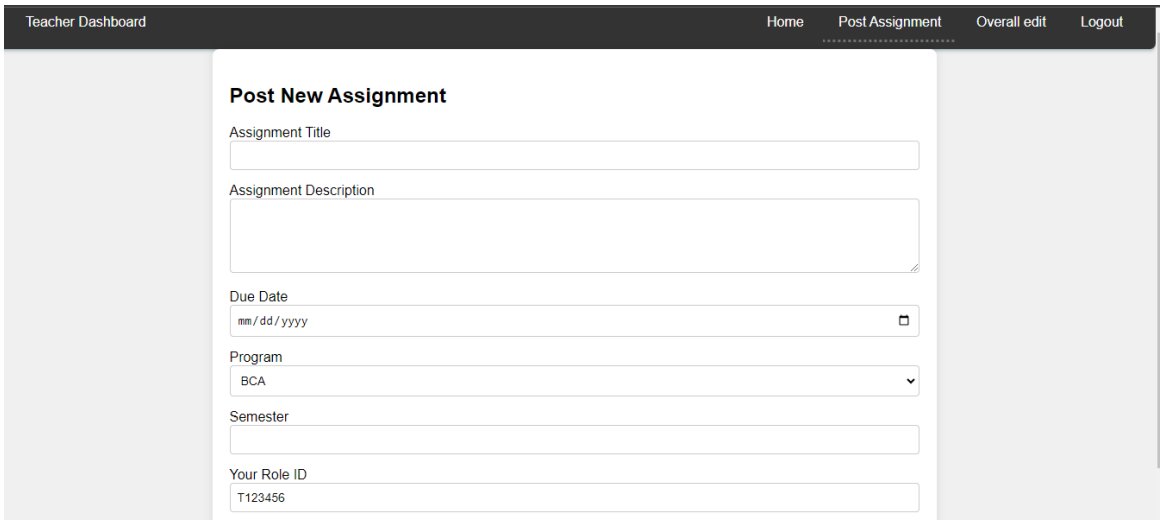

Teacher Registration Form
Username:
Password:
Previous
Next
Submit


Login
ID given by college
Username
Password
Login
Cancel
Create new account : Sign up


localhost/glptwor/php/student/stdindex.php
megabca - Protecte...
Data Science with P...
Dashboard
Withdraw Funds
Proxy checker onlin...
Student Manageme...
1. TECHNICAL FEASI...
High-level design d...
All Bookmarks
Home
Assignment
Profile
Logout
Welcome to the Student Dashboard
You are in the student section.
Motivational Quotes
Your limitation—it's only your imagination. - Unknown
Random Jokes
I told my wife she should embrace her mistakes. She gave me a hug.
About BCA


Assignment
Profile
Homework Assignments
Filter by Semester:
All Semesters
Search by Assignment Title:
Enter keywords
Filter & Search
Clear Filters
Cfa Lab
Due Date: 2024-07-19 (1 days 0 hours 16 minutes left)
Semester: 5
https://github.com/bijay085/bijay085 -> Go through the link and download lab questions -> Attempt all


Bijay Koirala
Username: bijay
Program: BCA
Semester: 6
Admission Date: 2024-07-02
Result
pass in last exam
Description
Hardworking and diligent student.
Skill And Skill bar
Programming language(s) : Java
Class Activity: 75.00%
Performance Rate: 85.00%
Behavior: 90.00%
Overall: 83.33%


Teacher Dashboard
Home
Post Assignment
Overall edit
Logout
Post New Assignment
Assignment Title
Assignment Description
Due Date
mm/dd/yyyy
Program
BCA
Semester
Your Role ID
T123456

Admin Dashboard

Users | Assignment | Roles | Badge | Overall

Show 10 entries Search:

User ID	Role ID	Username	Photo	Semester	Gender	Address	Admission Date	Actions
3	T123456	Teach12		0	male	Kathmandu Nepal	0000-00-00	Edit Delete View Profile
4	S123456	bijay		6	male	Kathmandu Nepal	2024-07-02	Edit Delete View Profile
6	S12345678	newStudent		8	male	Baluwatar	2024-05-01	Edit Delete View Profile

Previous 1 Next

localhost/glptwor/php/admin/roleassign.php

megabca - Protecte... Data Science with P... Dashboard Withdraw Funds Proxy checker onlin... Student Manageme... 1. TECHNICAL FEASI... High-level design d...

Admin Locator

Users | Assignment | roles

Manage Roles

Search by Role ID or Role Type Search

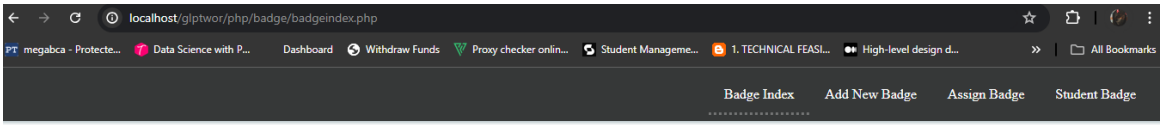
Filter Students | Filter Teachers | Show All

Role ID	Role Type	Actions
S123456	student	Edit | Delete
S12345678	student	Edit | Delete
S234567	student	Edit | Delete
S9876543	student	Edit | Delete
T123456	teacher	Edit | Delete
T23323232	teacher	Edit | Delete
T9876543	teacher	Edit | Delete

Users | Assignment | Roles | Badge | Overall

Overall Records

OID	Role ID	Full Name	Attendance	Assignment	Performance	Result	Description	Actions
2	S123456	Bijay Koirala	full	submitted	good	pass	Hardworking and diligent student.	Edit Delete



Badge ID	Name	Photo	Description	Actions
9	Board first		Given to those student who	Edit Delete
10	Verified		Verified	Edit Delete
12	new Tag test		Updating description of tag test badge with name new tag test	Edit Delete

Add New Badge

Name:

Photo:

Choose File No file chosen

Description:

Submit

Assign Badge to User

Search User:

Search

User:

Teach12

Badge:

Board first

Assign Badge

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