

Transforming Information Management Through Digitalization: JNEC Alumni Portal

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Abstract—It is observed that Jigme Namgyel Engineering College (JNEC) faces constant challenges in connecting with their alumni due to the lack of a comprehensive alumni database. To address this, a web-based JNEC Alumni Portal is proposed to create a centralized repository for alumni data. The portal will facilitate networking, and collaboration, and provide valuable resources for the college administration, faculty, and students. The portal will feature a comprehensive database of alumni profiles, including names, contact details, graduation years, and affiliations. The search functionality will enable easy access to specific alumni based on criteria such as graduation year or program of study. Additionally, an event system will keep alumni informed about college activities. The portal is developed using the Laravel framework, utilizing PHP for the backend and a MariaDB database for data storage. The development process will follow Reverse Engineering and Iterative methodologies to ensure a systematic approach with thorough planning and documentation.

I. INTRODUCTION

Our team recognizes the need for a comprehensive system to collect and maintain alumni details, leading to the proposal of developing a web-based JNEC Alumni Portal. Since the existing methods of data preservation were tabular forms, excel sheets, and documentation. The existing system limits to multiple access, easy modification of data, and search for records. “As we are moving towards digitalization”, techniques of data management need to be augmented. One of these methods includes a database management system. The database management system works on the principle of data-keeping using computerized technologies. The absence of such system has made it challenging for the college to stay connected with former students, resulting in a time-consuming process to reach out to them.

These existing methods provide global access considering cloud-based word documents such as Google Docs, Microsoft Word, and Excel sheets; which needs to be modified manually. This results in time consumption as well as a lack of

consistency in maintaining the data. Another limitations of this current methods are, they must be updated regularly to avoid loss of data and it becomes inconvenient for every user to do the same.

The proposed Alumni Management System will be essential to maintain records of current and former students of an institution, facilitating communication, and fostering a connection with the institution. The alumni can contribute their expertise and knowledge to the college, providing guidance to current students and keeping them updated on industries developments. This system primarily focuses on graduated students rather than current ones. By utilizing a database management system, the JNEC Alumni Portal will offer a centralized repository to store and manage alumni data, encompassing personal details, contact information, graduation years, and professional affiliations. The project also includes the development of a user-friendly interface for seamless input, updating, and retrieval of alumni information.

II. LITERATURE REVIEW

In their article titled "Design and Implementation of Student and Alumni Web Portal," [1] from the University of Zakho discuss the development of a Students and Alumni Web Portal (SAWP). The authors analyze the internal and external environment of three universities using the SWOT technique to identify factors that influence the strategic plan for the proposed system. The SAWP is built using technologies such as MySQL, HTML, CSS, JavaScript, jQuery, PHP, and AJAX, and it comprises two subsystems: the student portal system and the alumni portal system. The authors conducted testing in two stages, gathering student feedback and measuring system usability using the System Usability Scale (SUS) method with 22 potential users. The results indicated overall satisfaction, with around 80% of users reporting a positive experience. The implementation outcomes demonstrated strong compatibility and alignment between the

available data and system requirements. This article provides insights into the design and implementation of a Students and Alumni Web Portal, considering internal and external factors, employing the SWOT technique, and utilizing various technologies. The SUS testing confirms the system's usability and user satisfaction.

In today's technologically advanced world, web portals have emerged as a popular tool for businesses to enhance customer interactions and streamline operations. This literature review highlights the advantages of web portals in business, emphasizing their role in facilitating seamless communication, serving as a central hub for data organization, and effectively delivering information to the intended audience. Web portals provide businesses with a professional platform for efficient customer engagement through features like email, and purchasing systems, fostering stronger relationships, and boosting customer satisfaction. Furthermore, web portals centralize data organization, reducing duplication and errors while improving operational efficiency. They also excel at delivering information to the target audience through personalized features such as user profiles, targeted messaging, and content customization, ultimately enhancing engagement and communication effectiveness [3].

III. METHODOLOGY

The development of the JNEC Alumni Portal incorporated a methodology that combined reverse engineering and an iterative approach. The reverse engineering methodology was employed to analyze the existing system of maintaining the alumni database, including tabular forms, excel sheets, and documentation. This analysis provided insights into the structure, relationships, and efficiency of the system. By understanding the strengths and weaknesses of the existing system, the team proceeded to design and develop the portal using an iterative approach. Each iteration focused on implementing and testing specific features, with regular feedback loops from stakeholders and users. This feedback guided refinements and improvements throughout the development process. The combination of reverse engineering and an iterative approach ensured a systematic and structured development process, resulting in a modern and efficient web-based platform for managing alumni data and fostering alumni engagement.

The reverse engineering process started by thoroughly examining the existing methods of collecting and storing alumni data. This involved studying the tabular forms excel sheets, and documentation that were previously used to maintain the alumni database. Through this analysis, our team aimed to gain insights into the structure of the data, the relationships between different data elements, and the overall efficiency of the existing system.

By understanding the design and functionality of the current data management process, the team was able to identify the strengths and weaknesses of the system. The strengths could include aspects such as data completeness, while the

weaknesses could involve issues like data inconsistency, duplication, or difficulty in retrieving specific information.

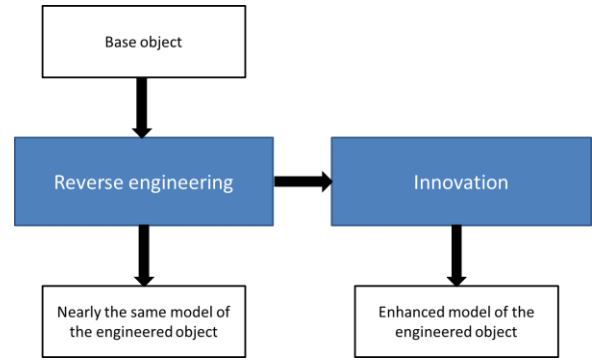


Figure 1. Reverse Engineering

With a clear understanding of the existing system's strengths and weaknesses, our team proceeded to design and develop the JNEC Alumni Portal using an iterative approach. This approach involved breaking down the development process into smaller, manageable iterations or cycles.

During each iteration, specific features and functionalities of the alumni portal were implemented and tested. This iterative cycle allowed for regular feedback from stakeholders and users, ensuring that their requirements and expectations were considered throughout the development process.

The feedback received during each iteration played a crucial role in refining and improving the portal. It helped the development team identify any deviations from the desired outcomes and make necessary adjustments to meet the needs of the users.

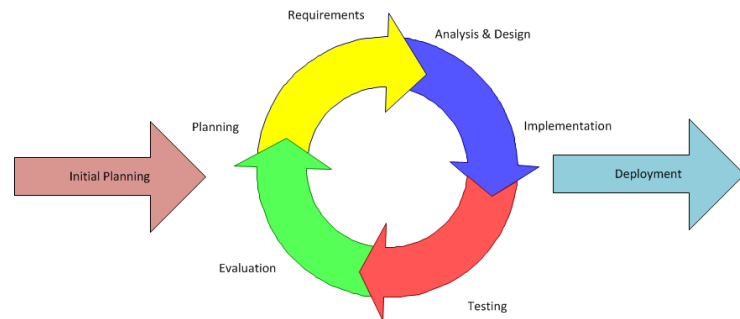


Figure 2. Iterative Method

A. Planning and requirements specification

The use-case diagram is a visualization of a use-case, that is, the alumni system interaction with the users. In this proposed alumni system, the use case mainly consists of a feedback case, a view Alumni details case, an update alumni details case, and an edit profile case. This Figure shows the use case diagram for the actions that the actors (alumni, staff, students, and Admin) can perform in our Alumni System.

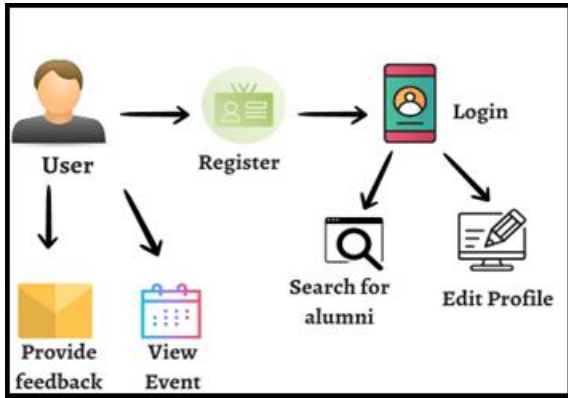


Figure 3. System Functionality

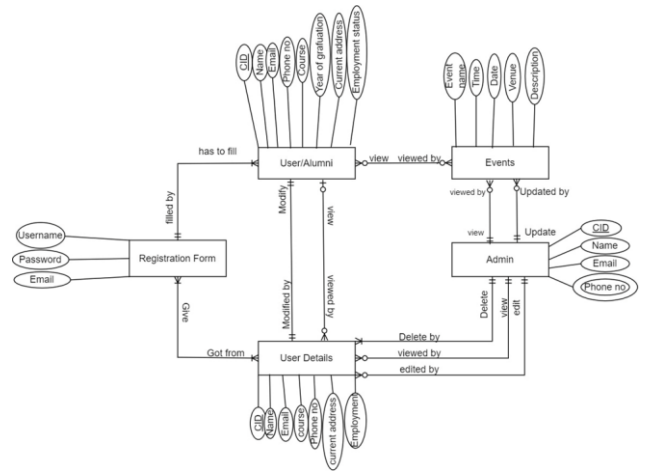


Figure 5. ER Diagram

IV. RESULT

The successful implementation of the JNEC Alumni Portal will yield several positive results for both the college and its alumni community. Here are some outcomes of this project:

A. Search Functionality

The portal will offer an alumni directory where users can search and browse through the profiles of former students. The scope includes implementing search filters to facilitate quick and accurate searches based on criteria such as graduation year, program of study, and current occupation.

Search:

Department: Programme: Year of Graduation: Work Status:

Name	Email	Phone	Year of Graduation	Address	Department	Programme	E S
Nim Dem	nimdrew365@gmail.com	77647809	2023	Sarpang	DEPARTMENT OF INFORMATION TECHNOLOGY	Diploma in Computer System & Network	u
Bishal	dhakalbishal930@gmail.com	17959259	2023	Thimphu	DEPARTMENT OF INFORMATION TECHNOLOGY	Diploma in Computer System & Network	u

Figure 6. Search Functionality

B. Alumni Data Management

The system will provide a centralized repository to store and manage alumni data, including personal details, contact information, graduation years, and professional affiliations. The scope includes designing a user-friendly interface for inputting, updating, and retrieving alumni information.

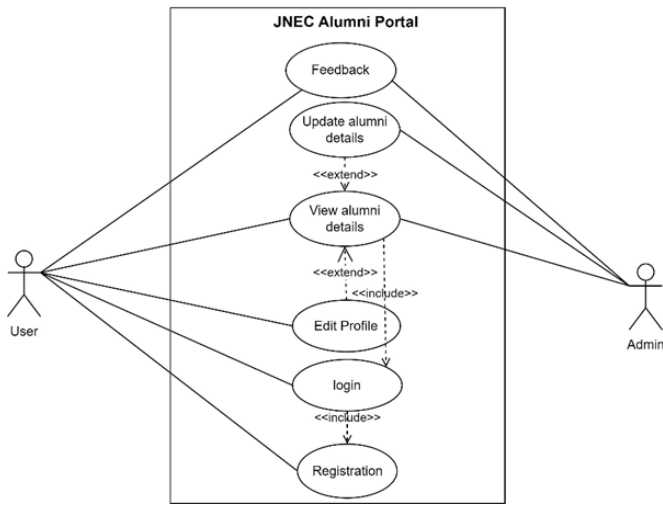


Figure 4. Usecase diagram

B. Analysis Design and implementation

An Entity-Relationship Diagram (ERD) is a visual representation of entities, their attributes, and the relationships between them. In the alumni system, there are five entities consisting of the user/alumni entity, registration form entity, user details entity, admin, and events entity. This shows the relationships among the entities in this system.

C. Communication and Networking Feature

The portal will facilitate effective communication and networking among alumni and the college. This includes features such as events that will share information about college activities and initiatives, thereby encouraging their participation and support.

See Our Exciting Event

DevOps Concept Training for CSN Students



Date: 2023-06-09

Time: 09:00

Venue: OCR-2

About the event: JNEC is organizing a

D2CSN Students Project Presentation



Figure 7. Event Page

D. Final website

<https://alumniportal.jnec.edu.bt>

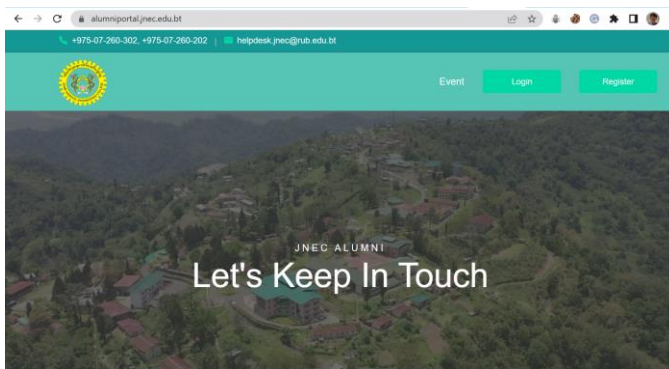


Figure 8. Landing Page

CONCLUSION

The development of the web-based JNEC Alumni Portal successfully addresses the need for a centralized system to collect and organize alumni details at Jigme Namgyal Engineering College. This project aims to provide a convenient platform for the college and its former students to stay connected, fostering a strong alumni network and

facilitating valuable networking and collaboration opportunities. The implementation of features such as comprehensive alumni listings, search functionality, notifications, and an event notice board fulfills the objective of creating a user-friendly and informative platform. Utilizing the Laravel framework, PHP as the backend language, and following the reverse engineering methodology ensures a systematic and efficient development process. The future scope of this system can be improved by features, such as a download feature where the details of the alumni can be downloaded in Excel or pdf format.

ACKNOWLEDGMENT

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REFERENCES

- [1] Abdulrazaq B, Ahmad M, Sabri Q. (n.d). University of Zakho: *Design and Implementation of Student and Alumni Portal*.
- [2] Laravel. (n.d). *The PHP Framework for Web Artisans*. Retrieved from <https://laravel.com/docs/10.x>
- [3] Patel M, Rami D, Soni M. (n.d). *Next Generation Web for Alumni Web Portal*.
- [4] Stake Overflow. (n.d). *Laravel Jetstream multiple-user source with multiple routes*. Retrieved from <https://stackoverflow.com/search?q=laravel+jetsream>
- [5] Web Tech Knowledge. (n.d). *Laravel Hospital Management project*. Retrieved from https://www.youtube.com/results?search_query=web+tech+knowledge+hospital+management+system