The Design of The Alumni and Career Development Center (ACDC) Application at Faculty of Engineering, Universitas Negeri Medan

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Abstract. One of the key indicators of higher education accreditation is the occupation of its alumni in the workforce. The Faculty of Engineering at Universitas Negeri Medan does not yet have a special forum that has the function of providing information on job opportunities for alumni and establishing cooperation with employers to integrate the system. Therefore, this study aims to design an Alumni and Career Development Center web-based application to connect the Business World and the Industrial World with alumni that can be accessed by alumni and employers online. The Agile Method, UML, the PHP scripting language, and the MariaDB database engine are used in designing the system. However, the system still needs to be improved in integrating the process of candidates' selection. Based on the testing data, the results indicate that the system is reliable enough to be implemented.

Keywords: alumni, career center, application, agile method

1 Introduction

One measure of an educational institution's success in gaining accreditation is how well its graduates are absorbed into the workforce. This includes universities and other educational institutions. Furthermore, to prepare students for professions both domestically and internationally, the Merdeka Campus curriculum policy supports and promotes the involvement of the Business and Industry World (DUDI) in their education. This is in keeping with the growing expectations and challenges that businesses will face in relation to employment in the context of the Fourth Industrial Revolution and beyond.

In this regard, the faculty should have played an active role in promoting the success of its alumni in pursuing careers after completing their education at the university. The Faculty of Engineering of Universitas Negeri Medan, as a provider of engineering graduates required by companies and other employers, does not have a specialized container that performs functions to provide and gather information about job opportunities and invite as well as offer alumni

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with specific criteria to companies in need. Information and communication constraints between faculty and alumni are one of the problems that must be addressed so that faculty can help the alumni's career development.

The increasing use and development of information systems technology becomes one of the advantages of the university to bridge the demand between DUDI and alumni so that the concept of "Link and Match" can be met [3], [5]. Therefore, based on this research, a web-based application design will be made that can connect DUDI with alumni as well as become a media provider for the development of alumni competence at the Faculty of Engineering of the Universitas Negeri Medan. Both alumni and employers can access and provide information through the same application that can be obtained online anytime and from anywhere.

2 Method

The research method that will be used in this research is the Agile SDLC Development Method or known as The Agile Method. The term of *Agile* method is a development of *System Development Life Cycle* (SDLC) which can facilitate software development for a short period of time and provide a better success rate than structured design methods [7].

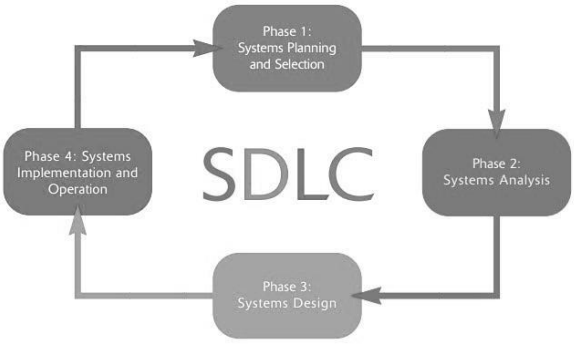

Fig. 1. Phase of the System Development Life Cycle

SDLC have 4 (four) phases in its implementation such as *Planning*, *Analysis*, *Design*, and Implementation. As a development and approach from SDLC, *Agile* methods take a software development approach that is based on iterative development. Like the iterative model, Agile methods divide projects into smaller parts, and involve long-term planning. These small parts are given in iterations. Each iteration contains cross-functional teams that working together in different areas. This area includes requirements, design, construction/literation, testing, deployment, and feedback [6].

3 Results and discussion

3.1 Results

Data analysis. The process of breaking down a data system into its component parts in order to identify and understand issues, opportunities, roadblocks, and requirements in order to suggest improvements is known as data analysis [9]. This system consists of 3 types of users, namely administrators, alumni/job seekers, and employers. The administrator is a user with the highest level of privilege who manages all processes that occur in the system. Alumni/job seekers are users who will carry out the process of searching for job vacancy information up to the job application process. Employer is user who can send job vacancies directly to the system at the same time they can see job seeking candidates who meet the specified requirements. The UML is used in this study to achieve good application design, because it can reduce typical encoding errors and increase the effectiveness and efficiency of software development time [1]. The roles of the 3 types of users can be seen in the following use case image:

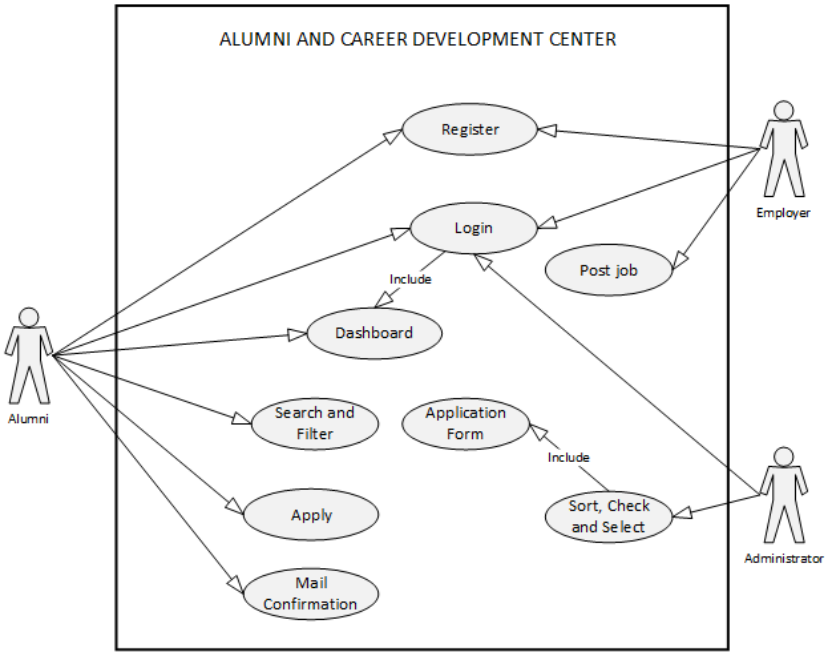

Fig. 2. The use case diagram of the system

Based on the use case diagram in **Figure 2** above, we can see the interactivity between users in the system. Administrators are assigned to carry out the initial initialization of the system, then examine the process of job vacancies and job applicants (sorting, checking, and selecting). Alumni can log in to access the dashboard, search, and filter jobs they wish to apply for, upload all documents needed and confirm via e-mail. Meanwhile, users in the form

of employers in this system can log in to upload job vacancy data according to the required requirements.

Database design. Based on the requirements above, a database design is carried out to store transaction data in the system. Next, the design results will be implemented into the *engine server* MariaDB. MariaDB which was originally MySQL that developed to handle large databases that can process data quickly and has been successfully implemented in production environments for several years. Connectivity, speed, and security make MariaDB as a database server that is very suitable for online application. The relationship between the Alumni career development center system tables can be seen in the following Entity Relationship Diagram (ERD) in **Figure 4**.

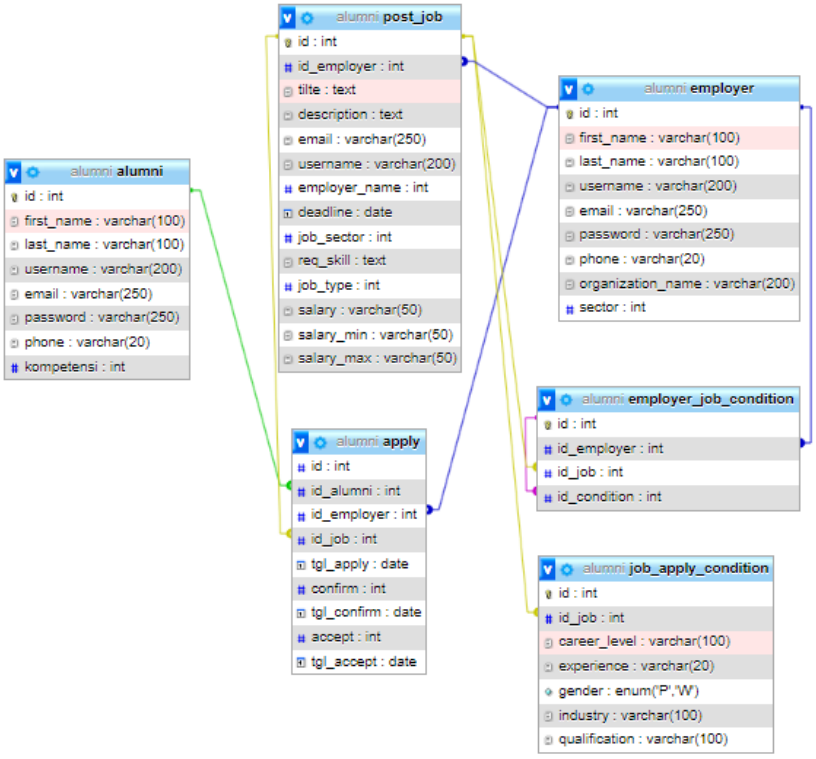

Fig. 3. Design of the Entity Relationship Table

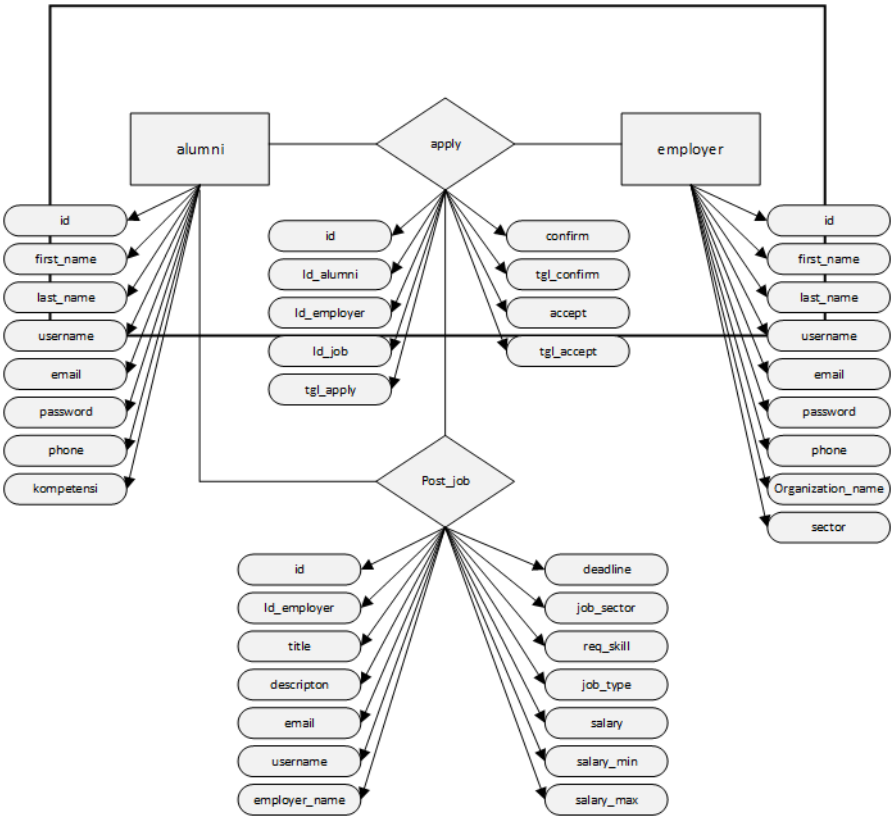

Fig. 4. Design of the Entity Relationship Diagram

Based on the **Figure 3** and **Figure 4**, we can see the form of storing transaction data between system users using six tables. From the alumni table, store data in the form of alumni biodata and the competencies they have. Then, the post job table stores data in the form of job vacancies and their requirements. The apply table stores alumni job application filing data according to the job vacancies they are interested in. The employer table stores data about the company. The job condition table stores data in the form of requirements from the company. And the employer condition table holds the entire registration file and company data from the employer, post job and apply tables.

The interface designs. The system interface is designed to be web-based using the PHP programming language. This system design uses a responsive system, so that users can interact anywhere with their respective mobile devices, although the other devices such as laptops or tablets is still recommended to use to get a more optimal and wider view from the eye's perspective. The application uses the Web 3.0 technology, techniques that are embedded into web pages allow computers to learn and process the information on web pages [2], [4], [8]. The implementation of the alumni career development center system is as follows.

Log in page. The login page as shown in **Figure 5** is used for all users to access the system so that users can access the data they have created and enter the dashboard based on user type.

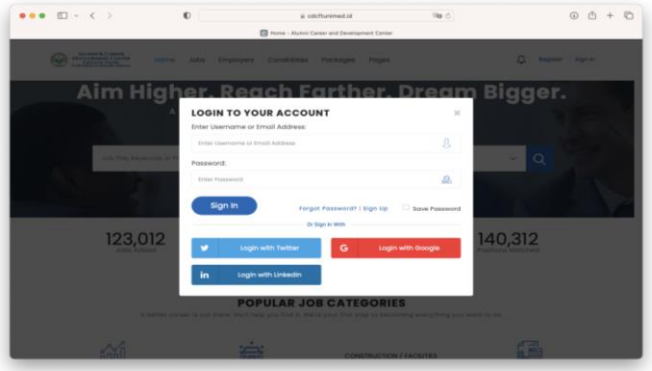

Fig. 5. Design of log in page

Alumni registration page. The alumni registration page as shown in **Figure 6** is used by alumni to register into the system. Alumni as one of the system users can fill in their personal data to be saved into the system.

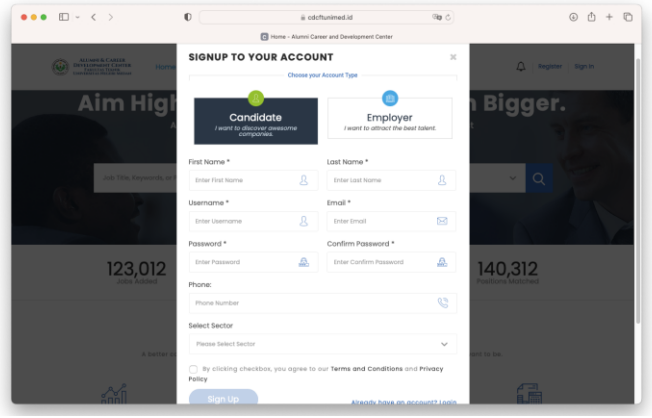

Fig. 6. Design of alumni registration page

Employer registration page. This employer registration page shown in **Figure 7** is used by the employer or company users to register their companies into the system, companies can fill in company data information to be saved into the system.

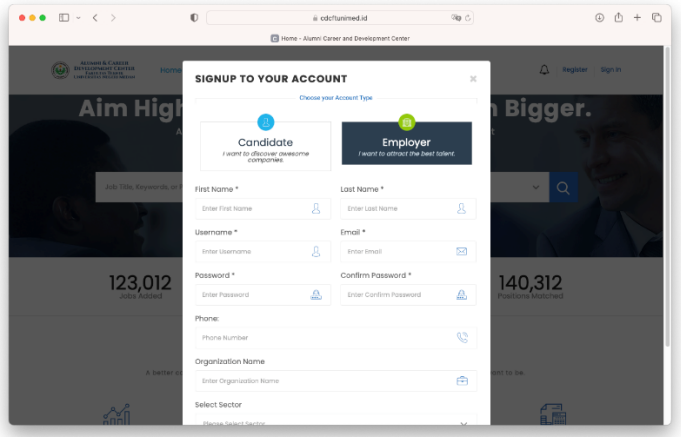

Fig. 7. Design of employer registration page

Post job page. On the post job page, users with the type of employer or company can post job vacancies by filling in the data form on this page. Employers can determine all the requirements needed for vacancies that will be published on this page.

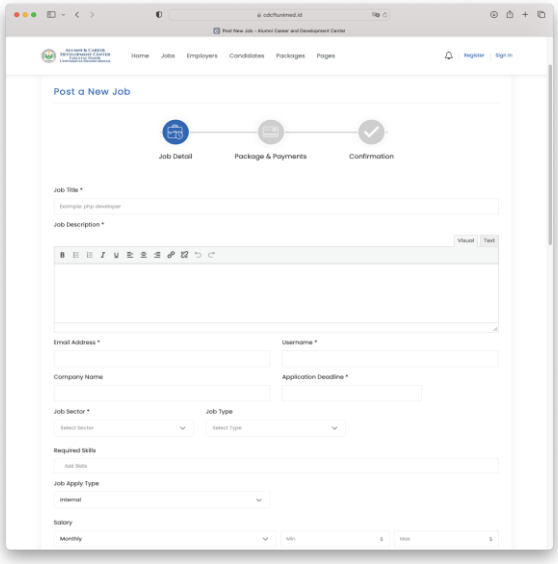

Fig. 8. Design of post job page

System testing. The testing of alumni and career development center was carried out using the black box testing and the result can be seen in the Table 1 below:

Table 1. The System Testing using Black Box Method

No	Test Scenarios	Description	Result
1	Login	User can do the login activity to enter the system with dashboard based on the user types	succeed
2	Alumni Register	Alumni can register the data to the system	succeed
3	Employer Register	Company or employer can register the data to the system	succeed
4	Page transition	User able to access the page based on the available menu	succeed
5	Data search	Alumni can search the job vacancy data	succeed
6	Data filter	Alumni can filter the data based on the category that they want	succeed
7	Entering the job vacancy	Company can enter the data of new job vacancy to be display	succeed
8	Reading the information of job vacancy	Alumni can see the information of job vacancy that has been chosen	succeed
9	Register the job vacancy	Alumni can register the job vacancy that has been chosen	succeed
10	compile, sort and view	Administrator can compile, sort and view the job vacancy registrants	succeed

3.5 Discussion

From the site page migration process to data organization, data sequencing, and interface display testing, the system test scenario is considered overall successful based on the test results shown in Table 1 because it is in line with the description given in the system testing scenario. These results contrast with the findings produced by Nisa et al.'s previous research [5]. The speed of access and the interactivity of the system can be achieved using Web 3.0 technology and the development of UML. However, research has limitations where alumni data is not accessed from university servers, so alumni are required to re-register on the application.

4 Conclusion

The conclusion that can be concluded based on the previous discussion is that the Alumni and Career Development Center (ACDC) application has been created to provide job vacancy information services directly to alumni. The application design consists of a website to process alumni/job seeker data and connect to employers who are responsive so users can communicate using smartphones or other mobile devices. Through application features that have been designed, the system can help the communication process between job seekers, employers and universities become easier and well documented.

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References

[1] Gustriansyah, R., Suhandi, N., & Antony, F.: The Design of UML-Based Sales Forecasting Application. International Journal of Recent Technology and Engineering (IJRTE), 7(06), pp. 1507-1511 (2019)

[2] Himawan, Harjanti, T. W., Supriati, R., & Setiyani, H.: Evolusi Penggunaan Teknologi Web 3.0: Semantic Web. Journal of Information System, Graphics, Hospitality and Technology. Vol. 2 no. 2, pp. 54-60 (2020)

[3] Katharina, LPP dan Dewi A.A Sagung Kartika.: The Effect of Career Development on Employee Performance Through Work Satisfaction as A Variable of Mediation. International Journal of Business, Economics and Law. Vol. 22 no. 1, pp. 1-7 (2020)

[4] Maulana, B., Feriyansyah, F., & Sari, R. D.: The Design of Web-based Thesis Management Information System to Increase the Quality and Efficiency of Guiding Process and Document Management. INFOKUM. Vol. 10 no. 2, pp. 1358-1361 (2022)

[5] Morris, R. D.: Web3.0: Implications for Online Learning. TechTrends. Vol. 55 no. 1, pp 42-46 (2011)

[6] Nisa H. H., Riasti B. K.: Sistem Informasi Career Development Center Fakultas Matematika Dan Ilmu Pengetahuan Alam Universitas Sebelas Maret Surakarta. IJAI (Indonesian Journal of Applied Informatics). Vol. 5 no. 2, pp. 110-124 (2021)

[7] Pratasik, S., & Rianto, I.: Pengembangan Aplikasi E-DUK Dalam Pengelolaan SDM Menggunakan Metode Agile Development. CogITo Smart Journal, Vol. 6 no. 2, pp. 204–216 (2020)

[8] Pressman, R., Maxim, B.: Software Engineering: A Practitioner's Approach. Ninth Edition. New York: McGraw-Hill Education (2020)

[9] S. Syukhri and P. Gusmayeni, “Design of Web-Based Archive Management Information System,” J. Teknol. Inf. dan Pendidik., Vol. 14, no. 2, pp. 92–98 (2021)