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AEMILIANUM COLLEGE INC. ALUMNI TRACER SYSTEM

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Abstract. To keep up with the constant usage of technology in daily life, there is now a need to gain the essential skills to keep up with the increasing technological progress in many countries. Technology implementation can be seen in a variety of professional disciplines, industries, and even the average home. Different sorts of technology are now being used to improve efficiency, increase output, and bring answers to present concerns and problems.

Universities throughout the world are promptly recognizing the importance of gathering data on and from their graduates in order to assess and enhance institutional quality while also monitoring career outcomes. Change existing and create new curricula, as well as impact institutional performance management systems. The researcher conducted a study on an alumni tracer system to trace the ACI alumni employment status, work alignment, and job whereabouts, as well as collect a high rate of data collection from the alumni utilizing an internet-based system for alumni records. The project examined alumni job employment history to determine if it matched with the Bachelor's degree: status for curriculum creation, as well as established a productive and accurate means to collect alumni whereabouts/ data. Through charts, the website can generate/provide data analysis.

The institution has never had an easy way of tracking down and managing graduates. More information from the graduates was needed to trace the graduates. For the department to have enough information regarding Aemilianum College Inc. alumni. It was critical that they have a system that keeps track of their graduates. The ACI Alumni Tracer System assisted the institution in easily tracking graduates and obtaining the information they require about the graduates. This system allowed the department's professors to obtain critical information such as the graduates' employment rate, career experiences, educational background, and program outcomes.

The Agile Development Methodology (ADM) was adopted by the researcher during system development. The agile technique included the following phases and processes: Agile is a project management method that involves breaking a project down into stages, regular discussion with stakeholders, and continual improvement and iteration at each level. After the work begins, teams cycle through a process of planning, executing, and reviewing, which may result in a change to the final delivery to better satisfy the needs of the customer.

Agile methodologies for software development use an iterative methodology. Agile projects are divided into smaller cycles known as sprints. Each is a mini-project with a backlog and stages for design, development, testing, and deployment within a set scope of work. As a result, with each iteration, additional features are added to the product, resulting in progressive project expansion. When features are reviewed early in the development process, the risks of generating a potentially disastrous product are greatly decreased.

The evaluation of the ACI Alumni Tracer System revealed that the built system met its functional requirements by utilizing a modern method of recording information and doing analytics. The weighted mean of the evaluation results in terms of system dependability shows that end-users and IT experts believe the system operates above and beyond expectations due to the system's accessibility and usefulness in its intended application.

Key Words: Aemilianum College Inc., Alumni Tracking, Alumni, Capstone Project, Online System, Tracer Study,

INTRODUCTION

To say that education is important is an understatement. Education is a weapon for bettering one's life. It undoubtedly influences the quality of a person's life. It enhances one's knowledge and skills while also developing one's personality and attitude. Most importantly, education influences people's prospects of finding work. A well-educated person is more likely to find a good career.

Education improves a person's ability to use technology. Education does give the technical skills required for utilizing technology. As a result, without education, it would be difficult to operate modern technologies. Learning is a process of acquiring knowledge that has a beginning but no end. A student is expected to become a successful person who embodies every definition of a professional. However, the majority of college graduates seem to be confused about employment. The dilemma is somewhere between remaining unemployed or accepting a position that is incompatible with the academic track they have pursued.

The career exits of graduates is incredibly important for the future of the students. As students finish their elementary education, it's essential that they have a plan for their next step. For some, this will mean continuing on to higher education, while for others, it may mean entering the workforce. The most obvious option for these graduates is to pursue further education. Higher education can set up K to 12 graduates for success in many areas, such as technology, business, engineering, and healthcare. Additionally, these graduates can pursue a path to a professional job in their chosen field.

For students who are interested in an entrepreneurial venture, the K to 12 programs has also prepared them for that. Starting a business requires a good understanding of the fundamentals of entrepreneurship, which the K to 12 curricula can provide. This education can give graduates the necessary skills to identify and capitalize on opportunities in the marketplace.

Finally, K to 12 graduates have the option of launching their own digital businesses. They can tap into the world of e-commerce, coding, and web design, or use the skills they've acquired to create a product or an app. With the right roadmap, K to 12 graduates can find success with their own businesses. Depending on the individual's goals and interests, these career exits can provide a viable path to a successful career.

According to the Administrator of Information Parlour (2022), Parental involvement in school activities have a positive impact on academic performance. It is very important for

parents to be involved in the education of their children from the start. Parents are the primary educators of children as they have the greatest influence on them right from childhood to adulthood. Teachers' roles come into play when the children start schooling. In this sense, both the parents and teachers are important educators in a child's life. They help to develop the child's intellect and social life. There should not be communication gaps between parents and teachers and between the parents and the children.

According to Union College (2022). Alumni & Parent Engagement facilitates the relationship between the college and its alumni, parents, students, and friends through programming, volunteer opportunities, and communications and works closely with departments across campus.

For numerous reasons, alumni connections are a crucial component of a school's advancement efforts. The most devoted supporters of an institution are its alumni. Graduates are generally in a position to utilize the institution's knowledge and expertise in their professional careers. Alumni serve as the school's representatives abroad. By keeping in touch with your alumni, you can ensure that the words they spread about your school are both positive and up-to-date

According to Aluminati (2022), alumni engagement is essential for the long-term success of any university or college. Both institutions and past students benefit from an engaged and connected alumni network. Implementing an engagement strategy to keep alumni connected will boost student success over the long run. It will also help you as an institution maintain a good reputation for generations to come.

The Commission on Higher Education (CHED) has mandated HEIs to conduct tracer studies as part of the systems definition of a center of excellence and center of development of degree programs (CMO No. 46, s. 2012). The graduate profile is also one of the documentary requirements of the higher education accrediting body e.g., the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP), Inc. Data generated from a tracer study could re-evaluate the factors affecting and contributing to the status of the employment of graduates (CMO No. 29, s. 2013, MFO 2). Based on extant literature, the majority of graduates landed on local jobs, particularly in the government sector.

The Aemilianum College Inc., under the supervision of the Commission on Higher Education (CHED), Legal Education Board (LEB), and other government education regulatory agencies has been serving the community for more than three decades now. The institution produce professionals that graduated from different courses like Bachelor of Science in Electronics and Communication Engineering (BSECE), Bachelor of Science in Computer Science (BSCS), Bachelor of Science in Information Technology (BSIT), Bachelor of Science in Industrial Technology (BSIT) major in Automotive Technology, Bachelor of Elementary Education (BSEE), Bachelor of Secondary Education (BSEd), Bachelor of Arts in Office Administration (BSOA), Bachelor of Arts in Communication (BACom), and Bachelor of Arts in Political Science (ABPolSci). The institution is also offering Juris Doctor Program and the Master in Information Technology (MIT). These professionals are capable of competing for positions and careers. Some of them work in positions that correspond to their areas of expertise. Some work in positions unrelated to the specialties they have obtained. The difficulty in identifying graduates and their careers due to the various courses studied is one of the issues experienced due to the large number of graduates produced by the Aemilianum College Inc. each year. At present, the ACI only has Facebook page for Alumni which only

provides update and announcement of events but anyone can access the page. Given that this is the in a modern world, a web-based Alumni Tracer System is better than manual for fast and effective registration and tracking of Alumni using this tracer study as an evaluation tool we can measure the effectiveness and quality of the programs being offered by an academic institution. Thus, a tracer study is crucial to gather information over time about the fluctuation of the employability of graduates and what is being demanded by the labor market. In general, tracer study provides information to both educational policy makers as regards to what programs must be supported and what programs may be terminated.

An Aemilianum College Inc. Alumni Tracer System will provide an easy way for institutions to get in touch with their alumni, track whether graduates from a certain department are working or not, and, if they are, determine whether their employees are appropriate for the degree they received. The institution uses the data collected by the system to determine whether educational program adjustments are necessary and to determine the percentage of unemployed individuals and/or job mismatches.

This study dealt with the development of a web-based Alumni Tracer System for Aemilianum College Inc. It sought to provide information sharing for both alumni and the institution, keep records in good condition and make them easy to locate and modify. The tracer study was integrated integrate tracer studies into the system to guarantee accurate monitoring of curriculum relative importance, and interpret the research projects with ease.

Specific Objectives
Specifically, this study aimed to:
1.   develop a web-based Alumni Tracer System for ACI graduates
2.   develop a databank that would provide information on the following modules:
     2.1. Basic Education Graduate
             2.1.a. Elementary Graduates
             2.1.b. Junior High School Completers
             2.1.c. Senior High School Graduates
     2.2. Higher Education Graduates/Post Graduates
             2.2.a. Baccalaureate Degree Programs
             2.2.b. Master in Information Technology
             2.2.c. Juris Doctor
3.   determine the career exit pursued by Basic Education graduates
4.   determine the employment status of the graduates under the Baccalaureate Degree Programs, MIT and Juris Doctor
     4.1 Employed
             4.1.a. Government
             4.1.b. Private
     4.2 Self-employed
     4.3 Unemployed
5.   generate data on:
     5.1 General list of graduates
     5.2 Employment status
         5.2.a. Regular
         5.2.b. Contractual
         5.2.c. Job Order

      5.2.d. Job alignment
6. Evaluate the proposed system according to ISO 25010 in terms of:
      6.1. Functional Suitability
      6.2. Performance Efficiency
      6.3. Compatibility
      6.4. Usability
      6.5. Reliability
      6.6. Security
      6.7. Maintainability
      6.8. Portability

Phase 1: Project Planning

The first phase of the methodology, it covered the planning process. Following the approval of the system's title, the Researcher consulted one of the portal's end-users to describe what ideas they had and what critical information they expected from the system. The researcher also sought advice from her capstone project adviser. The researcher started planning the project with the advice of the adviser and the end user. Likewise, this method entailed observing the organization's current process and investigating the key objectives that were required to be satisfied in order to generate the desired outcome for the organization. Necessary data were gathered and analyzed by the researcher. Software requirements were reviewed and verified if they fit in the projected system. Time and development schedule were also monitored in order to ensure that its successes were completed on time.

Phase 2: Project Requirements

The second phase was the process of aligning the project's resources with the organization's objectives. Gathering project requirements efficiently can lead to higher project success rates, cost savings, and an improvement in the organization's current practice in terms of alumni tracing. The researcher used observation and interviews to determine the difficulties and problems encountered by the institution and individuals involved in keeping track of their alumni. An online application was required for the manual method's innovation so that the evaluation process could take place. All relevant data were analyzed for use in the system's development. Lastly, the researcher conducted an interview regarding the organization's current process and investigated the key objectives that are required to be satisfied in order to generate the desired outcome for the organization. Based on the information acquired, the organization has the necessary software needed to support the system, which would strengthen the current process. Similarly, it would benefit both the institution and the alumni.

Phase 3: Project Design

The third phase covers the research design. The designs are another critical part of project development. Every detail must be scrutinized. All of the sketches were necessary in order to have a clear plan of what needed to be done. The following data flow diagrams were generated by the Researcher, which surely contributed to the project's speedy progress. The research design refers to the totality of the researcher's strategy that has been used to

integrate the different components of the study aligned in a logical way, and this was to ensure that it would effectively address the research problem. The researcher created a design for their suggested system after planning. An ERD was created to help clients completely understand the system's process. The normalized table was shown to the clients in order to demonstrate the relationship between all of the accounts and the database. The blueprint for data collecting and analysis was incorporated into the project design. The researcher designed the suggested system that met the requirements identified and the system architecture was also established in the analysis phase. The components and interfaces, as well as the functionalities, were defined via system architecture. Details on the computer programming languages and environments used, as well as diagrams, application architecture, platforms, data structures, algorithms, and interfaces, were established.

Context Diagram

A context diagram is a high-level view of a system. It's a basic sketch meant to define an entity based on its scope, boundaries, and relation to external components like stakeholders. Otherwise known as a data flow diagram, a context diagram provides a general overview of a process, focusing on its interaction with outside elements rather than its internal sub-processes. The latter is typically reserved for more advanced data flow diagrams.
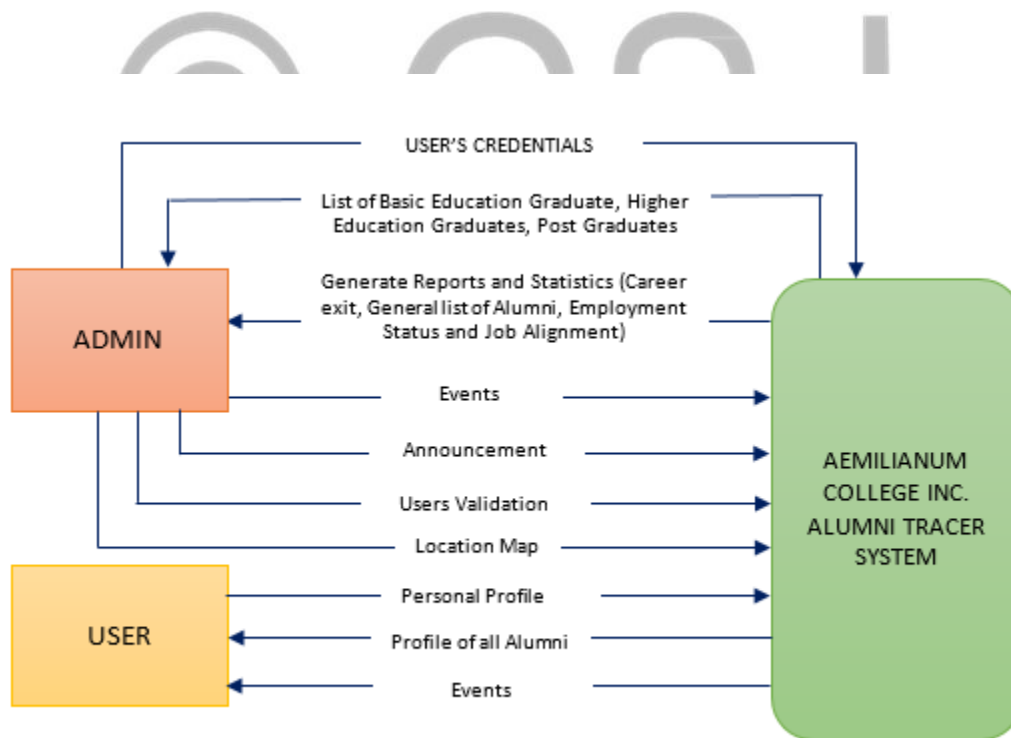

Figure 1 – Context Diagram

Figure 1 showed the process and people involved in the proposed Alumni Tracer System. The diagram depicted the interchange of information and actions between the systems and their users. It also demonstrates how the developed system's users interact with the system itself.
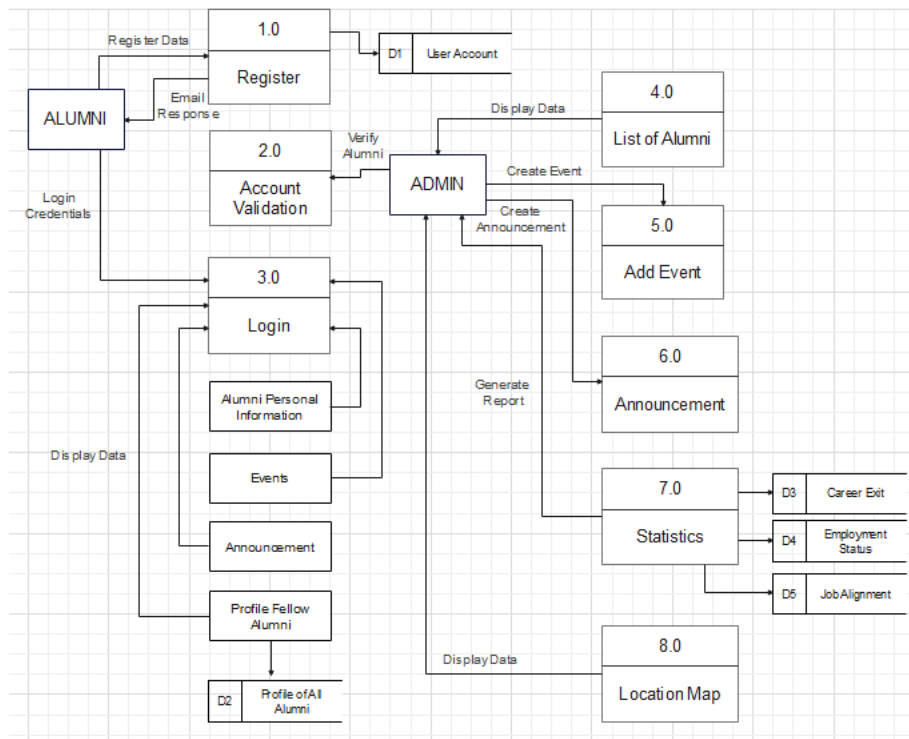
Data Flow Diagram

Figure 2 - Data Flow Diagram Level 0

The level 0 diagram showed the details of the system operations that were expected to happen. It was shown in Figure 4.2 in which it was divided into modules (processes). The flow of information, and system functions that capture, store, process, and distribute data between the system and its environment, as well as between components, were represented in the diagram. This visual representation provided an effective means of communication between the user and the system developer. The Level 0 data Flow Diagram of the system represented the detailed format of the context diagram wherein actual processes of the system were shown such as: create, update account, search, delete and generate report. The input and output data were included in each procedure. The figure above provided a high-level overview of the system, allowing the next level to work down to a hierarchy of detailed diagrams displaying the detailed procedure of each module.

Output and User-Interface Design

The user interface (UI) is the space where interactions between humans and machines occur. The goal of this interaction is to allow effective operation and control of the machine from the human end, while the machine simultaneously feeds back information that aids the operators' decision-

making process.[3] It serves as the face of the system, and how the system looks is aligned with its functions. The system interface is considered one of the most important parts of the system. System users can interact and make use of the functions by clicking, filling in, providing inputs, etc.   The interface included screen displays that allowed users to navigate the system, forms that collected data, and reports created by the system. The proposed approach aims to provide solutions to performance evaluation issues. The system's environment and design were tailored to the needs of the user and its essential functions. This section showed the output and user- interface design as well as the reports generated in the proposed Alumni Tracer System.

Login Form

The login form is the first thing the system user sees. Alumni create user accounts, which are then validated by the Alumni Administrator. This is the beginning of the user's engagement with the system, which will allow them to navigate and perform their actions.
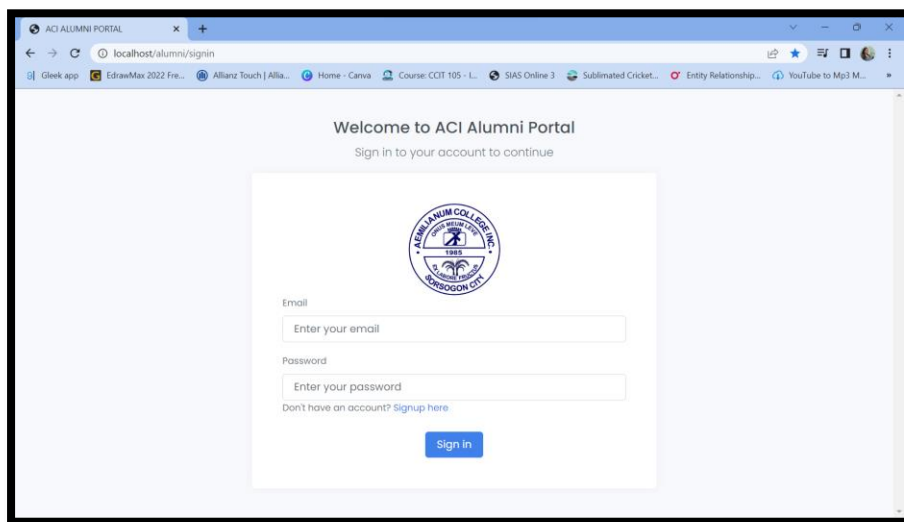

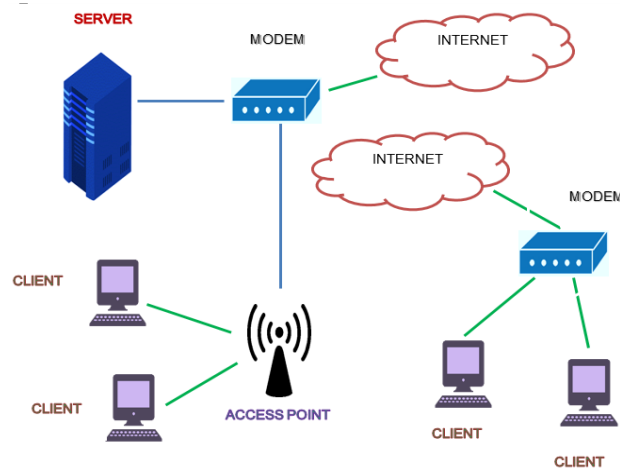
Figure 3 - Login Form

System Architecture

Figure 4- Wireless Network Topology

The Figure 4 showed the suggested system's wireless network topology. A wireless network requires no physical connection to communicate with the system or other computers as long as it is connected to the internet.

Table 1 System's Testing

Requirements	Components	Rating (Passed/Failed)	
		IT Expert	Client
Alumni Tracer System	Add User Account, Personal Information, Educational Background and Work History	Passed	Passed
	Edit User's Personal Information, Educational Background and Work History	Passed	Passed
	Update Record (Alumni)	Passed	Passed
	Delete Record	Passed	Passed
	Save Record	Passed	Passed
Generate Reports	Show report	Passed	Passed
	Save report	Passed	Passed
	Print report		

System testing was performed to evaluate whether the problem had been fixed and was error-free. Users' information and critical requirements were compiled so that they could simply access and use the system, manage data, and generate statistics. End-users and IT experts were asked to evaluate the stated facts. System tests were also utilized to evaluate system specifications. Clients participated in system testing.

User Acceptance

User acceptability testing was performed to determine whether the requirements of the specification or contract were met. Physical or performance tests may be done as part of the testing process. The proposed Aemilianum College Inc. Alumni Tracer System was evaluated in terms of accuracy, efficiency, maintainability and reliability to determine its acceptability. Respondents evaluating the Alumni Tracer System were given questionnaires to rank the software's quality on a scale of 1 to 5. This test examined whether the developed system met its objectives and addressed the issues encountered in the manual or paper-based system.

Summary of Findings
1. The Aemilianum College Inc. Alumni Tracer System was a web-based Alumni Tracer System for ACI graduates that was designed and developed by the researcher using the Agile Methodology.

2. The ACI Alumni Tracer System has a databank that stored and provided information on Graduates of Basic Education (Elementary Graduates, Junior High School Completers and Senior High School Graduates), Higher Education Graduates/Post Graduates (Baccalaureate Degree Programs, Master in Information Technology and Juris Doctor)

3. Based on the study most of Basic Education graduates proceeded with their Higher Education Degree. The system generated statistical data of the Alumni presented in bar graph.

4. Based on the study majority of the respondents that has a Bachelor's Degree were permanent in status.

5. The ACI Alumni Tracer System can generate data or reports on the work status, work location and job alignment of the Alumni through printouts and statistical bar graphs.

6. Based on the conducted system evaluation, the researcher determines the system and specifies that it achieves the ISO 25010 level of acceptability. The functional suitability, performance efficiency, compatibility, usability, reliability, security, maintainability, and portability of the developed system were all assessed. The group of evaluators were composed of (20) people from Aemilianum College Inc. as the end-users, and (10) IT experts, with an overall mean of 4.78, with a verbal interpretation of more than what is expected.

Conclusions

After the conduct of evaluation and test performed by the end users of ACI Alumni Tracer System, the researcher concluded the following.

1. The developed system was ready to reach out to those graduates of the Aemilianum College Inc. With the result of the testing and evaluation, the portal can now be functional once installed.

2. The developed system can display data with the following information on Graduates of Basic Education (Elementary Graduates, Junior High School Completers and Senior High School Graduates), Higher Education Graduates/Post Graduates (Baccalaureate Degree Programs, Master in Information Technology and Juris Doctor)

3. The developed system can generate data on the Career Exit of Basic Education Graduates (Elementary to Junior High School, Junior High School to Senior High School, Senior High School to Higher Education, Higher Education to Post Graduates Studies

4. The developed system can generate data on the Employment Status and Job Alignment of the ACI Graduates.

5. Upon presenting to the identified evaluators, and by using the standard model of system, the developed portal was rated 4.78 and therefore passed the conducted evaluation.

Recommendations

1. The tracer system may be utilized by the beneficiaries once installed.

2. The databank is ready and may be utilized in storing and providing of information on Graduates of Basic Education (Elementary Graduates, Junior High School Completers and Senior High School Graduates), Higher Education Graduates/Post Graduates (Baccalaureate Degree Programs, Master in Information Technology and Juris Doctor).

3. The developed system may generate data on the Career Exit of Basic Education Graduates (Elementary to Junior High School, Junior High School to Senior High School, Senior High School to Higher Education, and Higher Education to Post Graduates Studies.

4. The developed system can be utilized in data generation on the Employment Status and Job Alignment of the ACI Graduates.

5. The developed system can be useful to the beneficiaries.

6. Setting scheduled backup of the database.

7. Adding activity log with a timestamp.

8. Adding a corner for donations allows Alumni to give back to their Alma Mater.

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