

# Development Of Alumni Portal Application Based Android

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**Abstract:** Alumni are graduates from schools, colleges, high schools, colleges, or universities. Alumni are one of the important assets that must be embraced, coordinated, and developed as early as possible. The existence of alumni is very influential in improving the quality of an institution. In addition, alumni data is one of the data needed by universities in conducting the accreditation process. There are still several universities that have not provided a means to collect tracer study alumni data. Therefore, universities have difficulty obtaining the required alumni data quickly and accurately. The purpose of this research is to build an android-based application that can be used by alumni in filling out tracer study data online and can also help universities in tracking tracer study alumni easily and quickly through an android smartphone. In conducting research, the author uses research and development methods that focus on producing an android-based application product that can be used to solve problems that occur. The application development method used in this research is the Extreme Programming (XP) method which consists of planning, design, coding, and testing stages. Android-based applications that have been built can be used to assist alumni in filling out data and help universities to track alumni data online easily and quickly via an Android smartphone.

**Keywords:** Application, Alumni, Tracer Study, Android, Extreme Programming (XP).

## INTRODUCTION

The rapid development of information technology makes everything easy. Especially since the existence of the internet network, communication and dissemination of information have become faster and easier. In the world of education, the use of information technology is something that must be applied, one of which is the use of computer technology, apart from being a learning medium, it can also be used as a data processing tool, and information storage media (Rodianto et al., 2020).

Android is a smartphone or smartphone device whose development is very rapid, the use of smartphones in Indonesia is increasing from year to year, but there are still many people who use smartphones not optimally. Most people only use smartphones for social media or entertainment (Susanto et al., 2019).

Alumni are graduates from a school, academy, high school, college, or university. Alumni are one of the important assets that must be embraced, coordinated, and developed as early as possible. The existence of alumni is very influential in improving the quality of an institution. When alumni work for a company, alumni carry the good name of the school or university from which the alumni came from. In addition, alumni can also provide useful input and suggestions and provide job vacancy information to the alma mater (Kirana & Wahdaniyah, 2018).

So far, the Information Systems Study Program of the Faculty of Science and Technology of North Sumatra State Islamic University has not provided a means that can be used to collect data and track tracer study alumni so that the Information System of the Faculty of Science and Technology of North Sumatra State Islamic University has difficulties and obstacles in collecting and tracking data. tracer study alumni. Alumni tracer study data is one of the things needed in the study program accreditation process for that we need an application as a means of collecting data and tracking alumni tracer studies that can be accessed online.

Based on these problems, we need an application that can solve these problems. Therefore, the authors conducted research by building an android-based application. With this application, it is hoped that it will make it easier for alumni to fill out tracer study data and help the information system study program track alumni data to complete study program accreditation data easily and quickly through an Android smartphone.

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## LITERATURE REVIEW

The application comes from the word application which means application. In terms of application, an application is a ready-to-use program that is designed to carry out a function for other users or applications and can be used by the intended target (Azis, 2018). According to (Musrifah A, 2017) is software created by a computer company to do certain tasks, such as Microsoft Word, Microsoft Excel. The application comes from the word application which means the application of application for use.

Tracer study is a form of research on the situation of alumni, especially in terms of job search, work situations, and the use of competency acquisition while studying at universities or colleges. In developed countries, alumni tracking studies are the main studies that have been carried out systematically, institutionally, and continuously. The benefits of tracer studies are not limited to universities, but can further provide important information about the relationship (link) between the world of higher education and the world of work. Tracer studies can provide in-depth and detailed information regarding job compatibility, both horizontally (between various fields of knowledge) and vertically (between various levels/educational strata). For universities, information on competencies relevant to the world of work can help improve curriculum and learning systems. On the other hand, the industrial world and the world of work can look into higher education institutions through tracer studies, and thus can prepare themselves by providing more relevant training for new job seekers. One of the main keys to the success of a tracer study is the level of participation from alumni (Saiful et al., 2019).

Android is one of the most widely used mobile-based operating systems or operating systems today. Mainly on smartphones (smartphones) or tablets. Since its introduction in 2007, Android has had several variants or versions. the latest is the Android 10 OS version which was introduced on August 29, 2019. The name of this version is different from the previous ones, which used to use the names of desserts, such as cupcake, nougat, donut, etc. In the future, this OS will only issue version names based on a number sequence, namely Android versions 10, 11, 12, and so on (A. Y. Permana & Romadlon, 2019).

Kodular is a website that provides tools similar to MIT App Inventor for creating Android applications using block programming. In other words, you don't need to manually type in program code to create Android applications. Kodular is providing the advantages of features, namely the Kodular Store and the Kodular Extension IDE that can make it easier for developers to upload Android applications to the Kodular Store, to make blocks of IDE extension programs according to the developer's wishes. This Kodular can customize the theme according to you so that you are comfortable using the site in creating/creating Android applications. The existence file of Kodular is (.aia) and its existence plugin is (.aix). The content existence plugin contains some command code in Java programming language (.java) which will convert into an existence plugin file (.aix), this is a useful extension section (Alda, 2020a).

Airtable is a cloud collaboration service headquartered in San Francisco. Founded in 2012 by Howie Liu, Andrew Ofstad, and Emmett Nicholas. Airtable is a spreadsheet-database hybrid, with database features but applied to spreadsheets. Fields in an Airtable table are similar to cells in a spreadsheet, but have types such as 'checkbox', 'phone number', and 'drop-down list', and can reference file attachments Users can create databases, set column types, add records, link tables with each other, collaborate, sort records and publish views to external websites (Alda, 2020a).

Previous research discussed the importance of a means that can be used in online communication between alumni. So a web-based information system was built using the PHP programming language and MySQL database (Sebayang et al., 2018).

Other research discusses the process of developing an alumni portal application using Microsoft Visual Studio 2010 and Microsoft SQL Server 2008 R2 tools with the C# programming language that can be used as a medium to connect alumni with their almamater (Primasari, 2018).

Other research also discusses optimizing the ongoing alumni portal application by adding several important features, such as data validation, search features, and so on. The optimization process is carried out using the PHP programming language using the Laravel Framework and MySQL database (Yulvianda et al., 2017).

The difference between the author and similar research that has been done is that the author builds an android-based application using the Kodular framework and the Airtable database that can be used to assist alumni in filling out tracer study data and assist the information systems study program in tracking tracer study alumni to complete the tracer study. study program accreditation data easily and quickly via an android smartphone.

## METHOD

This research uses a system development methodology, namely Extreme Programming (XP). Extreme programming (XP) is a development methodology of agile software development methodologies which has the following features focus on coding which is the main activity in all stages of the development cycle of software (Gunawan et al., 2020). XP is a method that has a good level of responsiveness to changes (Ahmad et al., 2020). In the XP method, there is repetition that can be done repeatedly as needed. Advantages of The XP method also

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provides an offer of stages in a short time and repeats for parts that are needed differently according to the focus to be achieved. The stages of software development with XP are: planning, design, coding, and testing (Pertiwi, 2018)

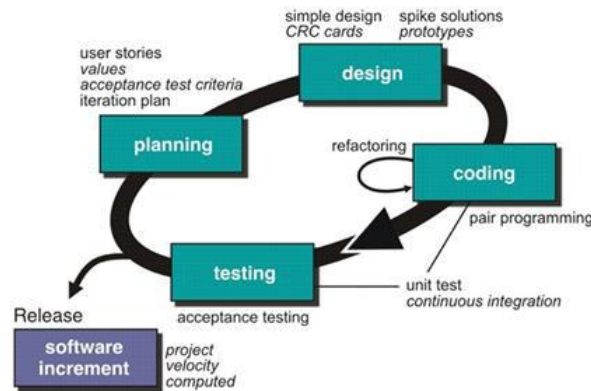


Fig. 1 Extreme Programming (XP) Models (Pertiwi, 2018)

The stages contained in the Extreme Programming method are as follows (Loisa et al., 2020):

### Planning

The planning activity (also called the planning game) usually begins with listening to an activity that aims to gather requirements that will allow the technical members of the XP team to understand the business context for the software to be developed. This stage is carried out to analyze the needs of the system so that it can be used by user requirements or user stories.

### Design

At the design stage, the modeling of a system is carried out based on the results of the needs analysis obtained. The modeling system used is Unified Modeling Language (UML) which consists of use case diagrams, sequence diagrams, activity diagrams, and class diagrams.

### Coding

This stage is the implementation of the system model design that has been made into programming code that produces software. In the development of the alumni portal application using the Kodular framework and the Airtable database.

### Testing

This stage is the stage of testing the application that has been made. The application will then be reviewed by system users regarding the overall features and functionality of the system itself.

while the method used by the author to collect the data needed in this research activity is as follows:

### Observation

The author made direct observations at the research site, namely the Information Systems Study Program, Faculty of Science and Technology, North Sumatra State Islamic University, to observe the problems that occurred in the tracer study alumni tracking process.

### Interview

The author conducted questions and answers to the study program admin and alumni regarding the process of filling out tracer study data for alumni and the problems faced in the process.

### Literature Study

The author looks for reference sources needed in the research and application development process, both from books, journal articles, the internet and from other sources.

## RESULT

### Problem Analysis

At this stage, the author analyzes the current system regarding the proposal seminar registration process at the Information Systems Study Program, Faculty of Science and Technology, North Sumatra State Islamic University. So far, the Information Systems Study Program of the Faculty of Science and Technology of North Sumatra State Islamic University has not provided a facility that can be used to collect data and track tracer study

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alumni. Doing this way, there are still some obstacles and problems that occur, including Alumni have difficulty filling out and updating tracer study data, admin and study program leaders experience difficulties and obstacles in collecting data and tracking tracer study alumni, unavailability of means to convey information about the development of study programs to alumni, and unavailability of means that connect alumni in sharing information, such as job vacancies or other news regarding alumni.

**System Requirements Analysis**

Based on the problems that occur in the results of the problem analysis, the authors determine one solution that can be used to solve the problem. By utilizing an android smartphone, the author wants to design and build an application for the alumni portal of the Information Systems Study Program, Faculty of Science and Technology, North Sumatra State Islamic University. The application can later be used by alumni to carry out the process of filling out and updating tracer study data and can also be used by the study program to track tracer studies online via an Android smartphone.

**System Design**

To create a visual application design, the author uses UML (Unified Modeling Language). UML (Unified Modeling Language) is an object-oriented paradigm system modeling language for specifying, and visualizing software systems, including involving the modeling of business rules (H. J. Permana et al., 2018). The UML (Unified Modeling Language) diagram used consists of use case diagrams, sequence diagrams, activity diagrams and class diagrams.

**Use Case Diagram**

Use case diagrams to describe the expected functionality of a system. Use case aims to present the interaction between the actor and the system. An actor is a human entity that interacts with the system to perform certain jobs (Rahmatuloh & Revanda, 2022).

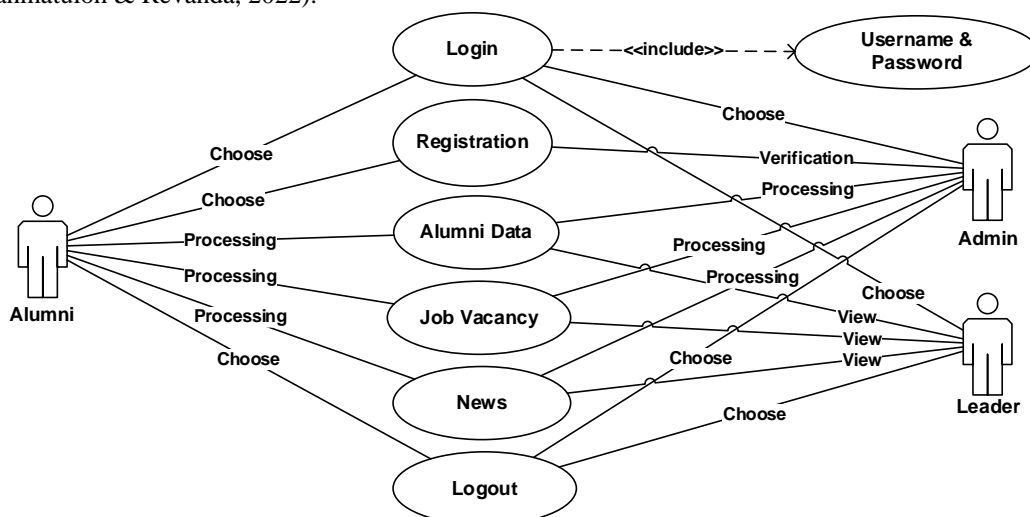


Fig. 2 Use Case Diagram

**Sequence Diagram**

Sequence diagrams are used to describe interactions between objects in and around the system in the form of messages depicted against time. Sequence diagrams consist of a vertical dimension (time) and a horizontal dimension (related objects) (Kurniawan, T. Bayu, 2020). The sequence Diagram illustrates how the user interacts with the application to get the information needed (Alda, 2019).

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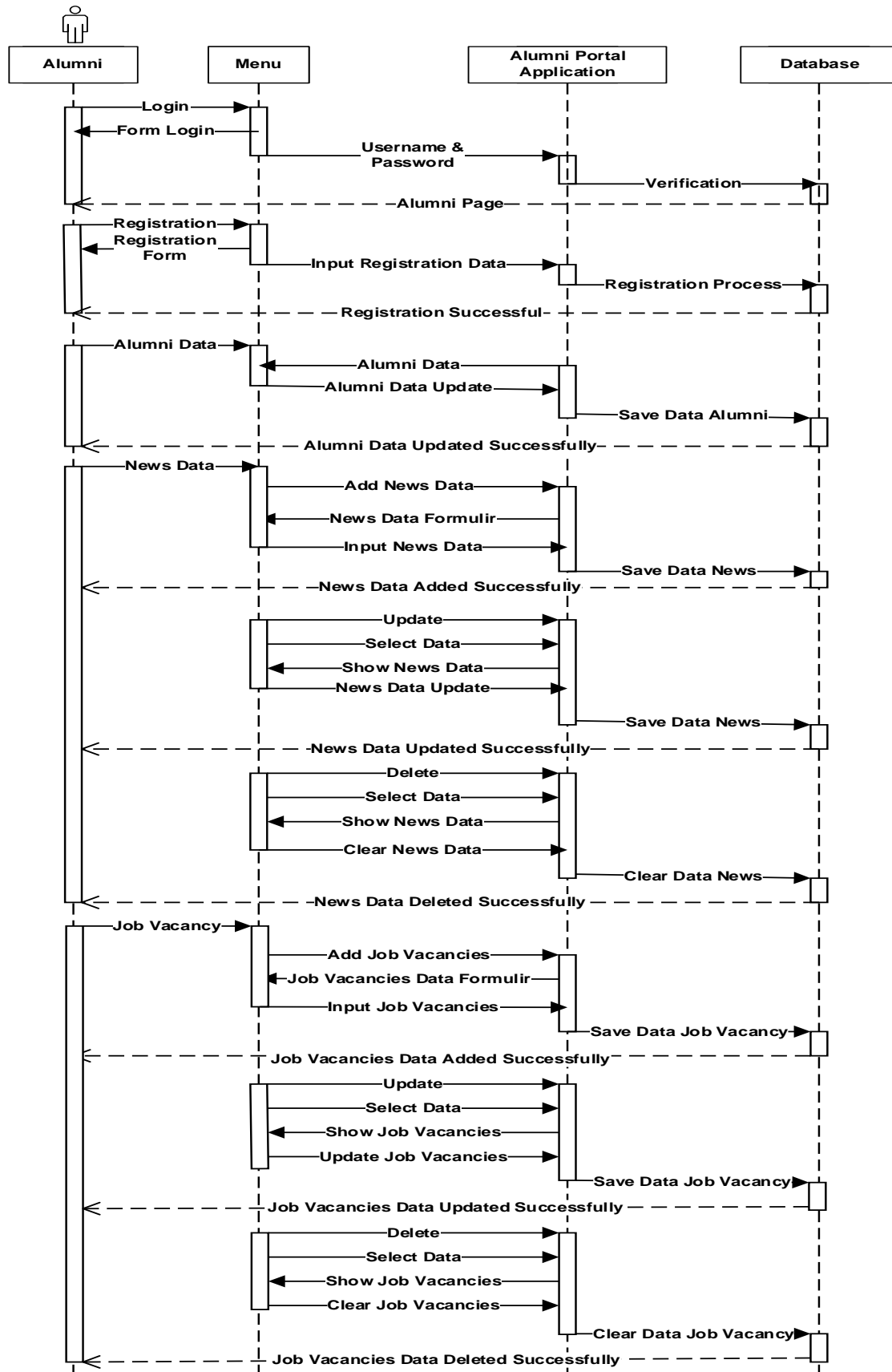


Fig. 3 Sequence Diagram

Activity Diagram

\*name of corresponding author



Activity diagrams describe the various streams of activity in the system being designed, how each flow begins, the decisions that may occur, and how they end. Activity diagrams can also describe parallel processes that may occur in several executions (Kurniawan, T. Bayu, 2020). An activity diagram or also called an activity diagram is a diagram that describes the activities of a system, and how the system performs an activity in carrying out certain functions selected by the user (Alda, 2020b).

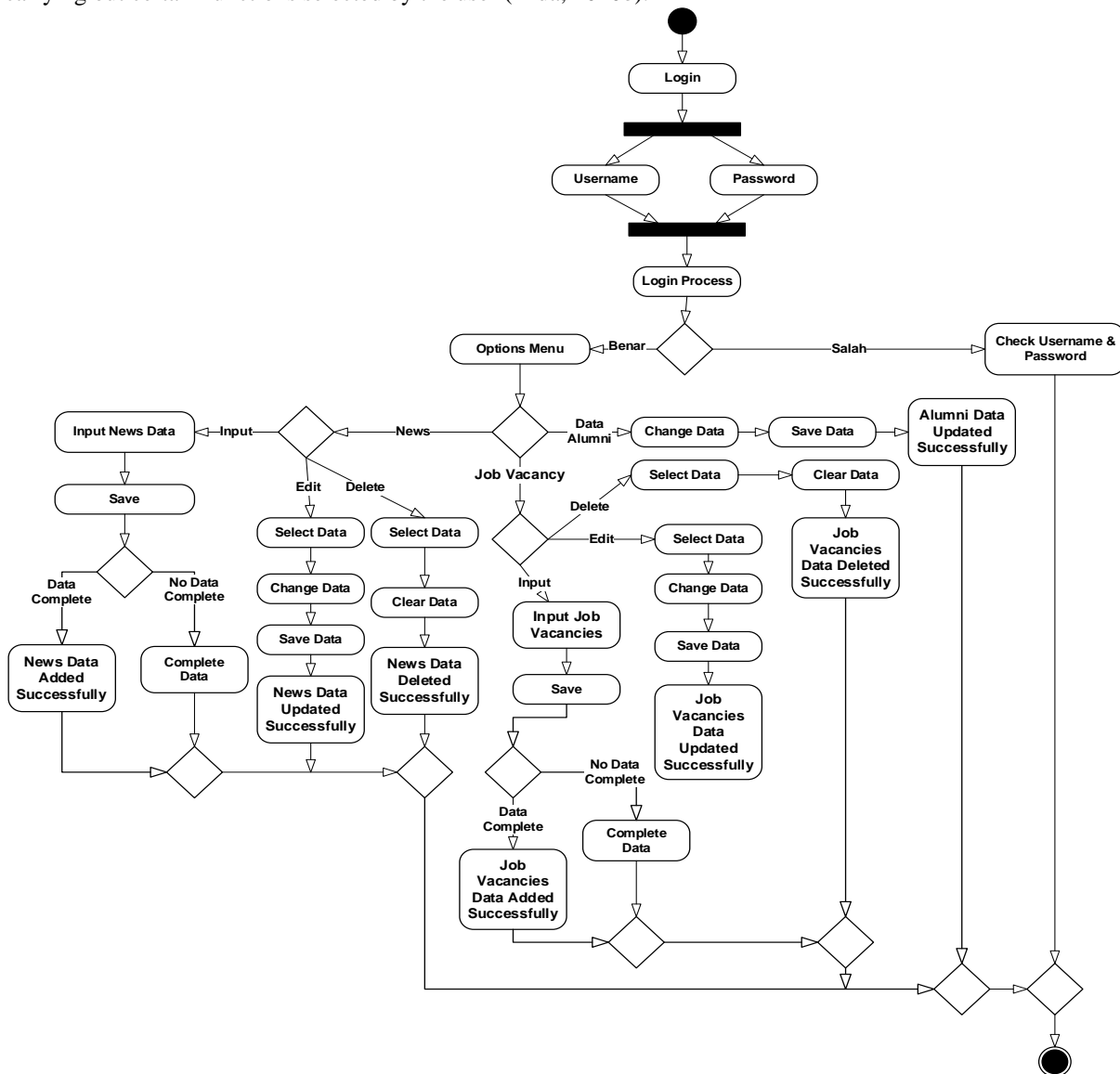


Fig. 4 Activity Diagram

**Class Diagram**

Class diagram is a UML diagram that provides an overview of each class relation (table) from the information system database that is built (Alda, 2022). Alumni Portal Class or Application consists of admin table, alumni table, leadership table, news table and job vacancy table.

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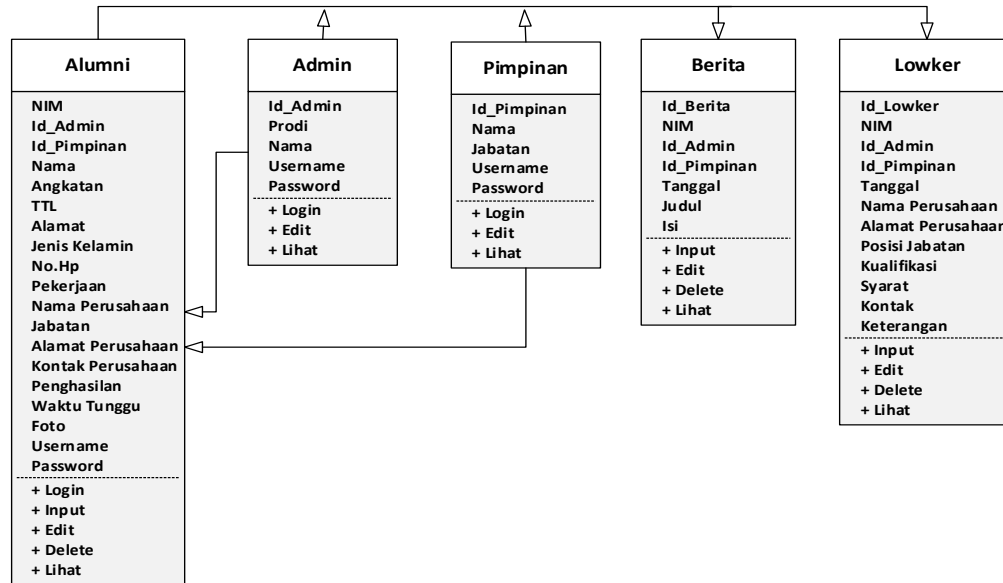


Fig. 5 Class Diagram

**System Testing**

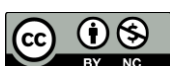
User-focused testing is done on the built-in information system. The user's smartphone device is used to conduct the test. The operating system and brand of the smartphone serve as the test variables. Testing is done to evaluate how well the information system works with smartphones from various manufacturers and with various operating systems. Twenty-one smartphones with various brands and operating systems were employed in the testing process. The twenty-one devices are broken down into seven categories based on the operating system, including three Android devices running version 6, three Android devices running version 7, three Android devices running version 8, three Android devices running version 9, three Android devices running version 10, three Android devices running version 11, and three android devices version 12

Table 1. Application Test Table

Devices	Android Version	Information System Display	Information System Process	Information System Performance
Samsung Galaxy S7	Android 6	Success	Success	Success
Xiaomi Mi 5	Android 6	Success	Success	Success
Infinix Hot S	Android 6	Success	Success	Success
Redmi Note 3	Android 7	Success	Success	Success
Samsung Galaxy Note 8	Android 7	Success	Success	Success
Oppo F5	Android 7	Success	Success	Success
Infinix Hot 6 Pro	Android 8	Success	Success	Success
Xiaomi Redmi 6	Android 8	Success	Success	Success
Samsung Galaxy J4	Android 8	Success	Success	Success
Xiaomi Mi 8	Android 9	Success	Success	Success
Xiaomi Redmi 6 Pro	Android 9	Success	Success	Success
Samsung Galaxy Note 9	Android 9	Success	Success	Success
Samsung Galaxy M40	Android 10	Success	Success	Success
Samsung Galaxy Tab S6	Android 10	Success	Success	Success
Vivo X27	Android 10	Success	Success	Success
Realme 7 Pro	Android 11	Success	Success	Success
Realme X3	Android 11	Success	Success	Success
Vivo V17 Pro	Android 11	Success	Success	Success
Xiaomi Mi 11 Ultra	Android 12	Success	Success	Success
Xiaomi Mi 11X Pro	Android 12	Success	Success	Success
Realme GT	Android 12	Success	Success	Success

The test findings indicate that the information system created can function and be accessed properly on Android devices with Android version 6 and higher, from the information system's display to its procedures, the

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uploading of documents, and other features. By the author's standards and user requirements, the information system has been functioning successfully.

### System Implementation

The android-based alumni portal application for the information systems study program at North Sumatra State Islamic University was built using the Kodular framework and the Airtable database. The following is an android-based alumni portal application page display consisting of an account registration page, login page, alumni page, news page, job vacancy page, and information page.

SELAMAT DATANG  
APLIKASI PORTAL ALUMNI

**Daftar Alumni**

NIM 0702172114

Nama Mia Nurjannah

Angkatan 2017

Username 0702172114

Password .....

Daftar Kembali

UNIVERSITAS ISLAM NEGERI  
SUMATERA UTARA

Fig. 6 Account Registration Page

SELAMAT DATANG  
APLIKASI PORTAL ALUMNI

**Login Alumni**

Username 0702172114

Password .....

Angkatan 2017

Login Kembali

Belum Punya Akun

UNIVERSITAS ISLAM NEGERI  
SUMATERA UTARA

Fig. 7 Login Page

\*name of corresponding author



**Data Alumni**



**Pilih File** **Upload**

**NIM** 0702172114

**Nama** Mia Nurjannah

**Angkatan** 2017

**TTL** Panji Mulia II, 27 Juli 1999

**Alamat** Jl HM Said No 110 Medan Timur

**Jenis Kelamin** Perempuan


**No.HP** 082248247323

**Pekerjaan** LAINNYA

**Nama Perusahaan** Universitas Islam Negeri Sumatera Utara

**Jabatan** Staf

Fig. 8 Alumni Page



**SELAMAT DATANG  
APLIKASI PORTAL ALUMNI**

**Data Berita**

**Tanggal** 04 Okt 2021

**Judul Berita** Berita Duka

**Isi Berita**  
Telah meninggal dunia orang tua teman kita

**Input** **Kembali**

**UNIVERSITAS ISLAM NEGERI  
SUMATERA UTARA**

Fig. 9 News Page

\*name of corresponding author



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Data Lowongan Kerja

**Tanggal**                    **04 Okt 2021**

**Nama Perusahaan**  
**PT. TELKOM**

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**Alamat Perusahaan**  
**Jl. Gunung Krakatau No.17 A, Pulo Brayan Darat II, Kec. Medan Tim., Kota Medan, Sumatera Utara 20237**

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**Posisi Jabatan**  
**Teknisi**

---

**Kualifikasi**  
**Pendidikan S1 Jurusan Teknik Elektro, berpengalaman minimal 1 tahun**

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**Syarat**  
**FC KTP, FC KK, FC Ijazah, FC, Trankrip Nilai, CV, Surat Lamaran**

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**Kontak**  
**(061) 6634845**

Fig. 10 Job Vacancy Page

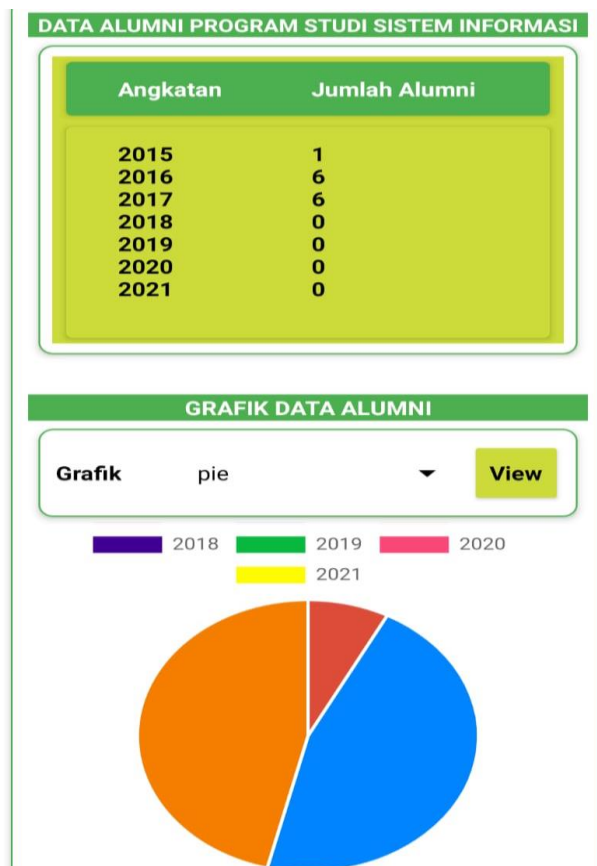


Fig. 11 Information Page  
**DISCUSSIONS**

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The android-based application that has been built by the author can assist alumni in filling out tracer study data and assist the admin of the information system study program in tracking tracer study alumni easily and quickly through an android smartphone. The application can be accessed by three users, namely alumni, admins, and leaders. On the alumni menu, alumni can register for an account to get the username and password needed to log into the application. After the alumni have successfully logged in and entered the application, the alumni can choose the available menus, including alumni data, news, and job vacancies. On the alumni data menu, alumni can update data as needed. On the news menu, alumni can add new news or view news that has been added by admins or other alumni. On the job vacancy menu, alumni can add information about job vacancies or view job vacancies information that has been added by admins or other alumni. In addition, alumni can also view other alumni data by batch.

On the admin page, the admin can verify the account registration that has been done by the alumni and can delete the alumni data if it doesn't match, besides that, the admin can also process news data and job vacancies data. On the leadership page, leaders can view information about alumni data, news data, and processed job vacancies. In addition, the application also displays information on the number of alumni who have filled in data in graphical form

### CONCLUSION

The author draws conclusions from research on the creation of an Android-based alumni portal application in the information systems study program at North Sumatra State Islamic University after conducting this research. The planning, design, coding, and testing stages are the stages of the Extreme programming (XP) method, which is the approach used in this study to create applications that successfully function according to user needs. The application that has been built can help alumni in filling out tracer study data and help admin of information systems study programs in tracking tracer study alumni. In addition, with this application, alumni and study programs can exchange information about job vacancies or other information related to alumni and information systems study programs easily and quickly via an Android smartphone. With this application, it is hoped that it can maintain good relations between fellow alumni or alumni and the study program.

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