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Data Processing Android Applications EFU English Course

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A B S T R A C T

English for Us (EFU) is a foreign language course institution owned by individuals. This course is devoted to learning English. Currently English has been recognized as an international language, so many parents want their children to learn English as early as possible. With the increasing number of students in English for Us, it is necessary to develop a data processing system to support the business process. Therefore, by taking advantage of advances in information technology which is currently growing very rapidly, EFU wants to create a data processing application system that will facilitate the performance of admins in conducting the new student registration process, managing student and teacher data and managing finances. The system to be designed is in the form of an android application created using Android Studio. The device that will be used in making this system uses Java as a scripting language, Android Studio as an android-based application maker and MySQL as a database processor. Based on the analysis that has been done, it can be concluded that the application system that will be produced is able to facilitate the performance of the admin in processing data efficiently. And this application system will also make it easier for parents to register online.

1. Introduction

Science and technology is also developing rapidly and producing new developments that always continue to change for the better. "The rapid development of technology today, brings great changes in all fields [1]". With the development of science and technology also greatly affects the dissemination of information for all circles. The rapid development of information and communication technology in the world. Causing high competition in various aspects of life. So that human resources must be improved in order to compete globally. One of them is by increasing the ability to communicate using a foreign language as early as possible in children. By teaching foreign languages to children, especially English, it will make it easier for children to communicate with others when traveling abroad or can be used as a supporting language when at school or at work. Given that English has become an international language, it is very likely that many people around the world have learned English and made it their everyday language.

The EFU (English for Us) foreign language course is a non-official course institution established individually that specifically teaches English for children aged 5 to 15 years. With the outbreak of the COVID-19 virus, online schools have been implemented using online learning methods. What makes parents feel that online learning makes children's interest in learning decline and the learning obtained from school is not enough to support children's abilities. It's a good time to enroll their children to study English in this EFU foreign language course.

This caused several problems in the administration section that was already running at EFU. The problem faced at this time is the absence of a computerized payroll management procedure regarding the payroll manager for storing employee data which is stored in several separate databases. So that many errors can arise from a bad salary information system in an institution, because the current system has been done manually or in writing [2]. Judging from several complaints and criticisms from parents of students who revealed that the EFU admin was not responsive in responding to parents who asked questions about registration and payment. And also complaints submitted by the EFU admin regarding new student

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registration which is still being done by sending messages via whatsapp, the process of inputting student data which still has to be done one by one by the admin into Microsoft Excel and student tuition payments which are still manually written into the cash book provided. make admin performance ineffective and efficient.

By looking at the development of this increasingly advanced technology, the EFU tries to overcome the existing problems by designing an Android-based data processing application system. This system is expected to be able to make it easier for admins to complete their work and make it easier for parents to register their children who want to join EFU online.

2. Literature Review

Information is data that has been processed into another form that is more useful or valuable to the user and can be used as material in decision making. The source of information is data. Data is a fact that describes an event and the unity of reality. Data is a form that is still raw so it needs to be processed further in order to have value or use for the user [3].

Android is a Linux-based operating system for mobile phones such as smartphones and tablet computers. Android provides an open platform for developers to create their own applications for use by various mobile devices [4].

Android Studio which is an Integrated Development Environment (IDE) for Android application development, based on Intellij IDEA. The launch of Android Studio was announced by Google on May 16, 2013 at the Google I/O Conference event for 2013. Since then, Android Studio has replaced Eclipse as the official IDE for developing Android applications. Apart from being a powerful Intellij code editor and developer tool. Android Studio offers more features to increase productivity when building Android applications [5].

The Android SDK is an API (Application Programming Interface) tool needed to start developing applications on the Android platform using the Java programming language[6]. Some of the most important Android features are dalvik Virtual engine optimized for mobile devices, integrated browser based on the open source web kit engine, Optimized graphics and supported by 2D graphics libraries, 3D graphics based on the OpenGL ES 1.0 specification (Optional hardware acceleration), then MySQL for data storage (database).

JDK (Java Development Kit) is a collection of software that you can use to develop Java-based software, while JRE (Java Runtime Environment) is an implementation of the Java Virtual Machine that is actually used to run Java programs. Typically, each JDK contains one or more JREs and various other development tools such as java compiler resources, bundling, debuggers, development libraries and so on. JDK is needed for compilers and interpreters of Java programs [7].

Databases or in technological terms known as databases are one of the fundamental things to learn in computer networks. Database or database, is a collection of all the data in an organization and the like. Usually, the database is stored on the server, which can be accessed at any time for certain purposes [8].

MySQL is a database server program that is capable of receiving and sending data very quickly, multi-user and using standard SQL (Structured Query Language) commands. MySQL is a free database server, meaning that we are free to use this database for personal or business purposes without buying or paying for a license [9].

Use Case Diagram is an activity carried out by the system in response to requests from users of the information system to be made. According to John, Robert and Stephen (2016) Use Case Diagram is a UML (Unified Modeling Language) model that is used to illustrate use cases and their relationship to actors [10].

Activity Diagram is a technique for describing procedural logic, business processes and workflows in most cases. Activity diagrams have a role like flowcharts, but the difference with flowcharts is that activity diagrams can support parallel behavior while flowcharts cannot [11].

ERD (Entity Relationship Diagram) is a form of relationship between an activity or a design in a system that is related to one another and has a function in the process. ERD (Entity Relationship Diagram) can also be described as a relational database modeling which consists of a set of objects that are interconnected with one another [12].

Sequence diagrams can be said to describe patterns of interaction between objects arranged in a chronological order. This diagram shows the objects involved in the interaction and the messages sent [13].

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Class diagram is one of the most important modeling in UML (Unified Modeling Language), which serves to create a logical model of a system. A class diagram will show how the schema of the architecture of a system is being designed. Class diagrams are depicted with classes that contain attributes and methods, each class will be connected by a line called Association [14].

Rina Oktarina in a 2015 study in the form of Application of Personnel Applications to streamline employee data search work in a sub-district in Margawati to facilitate the search for archives and files so that work becomes easier [13]

Fajar Baskoro his research in 2002 carried out the design of a software model for hotel reservations with UML and the unified approach target method which was produced in the form of specific documentation of hotel reservation software [14]

The research that has been carried out by Imam Kusuma Wijaya entitled "Design & Development of an Android-Based Student Final Project Service Information System Application". This research was conducted to design and create applications for Android-based Smartphones to make it easier for students to access students by using Android Studio with an Android plug-in [15].

The research conducted by Ardian, Andre Purnama with the title "Designing Android-Based Student Data Processing Applications". the most important thing in searching for data on these students, many schools are still experiencing these problems [4].

Furthermore, research conducted by Mayasari, Melati Suci entitled "Analysis and Design of Employee Payroll Information System Applications at PT. Aditya Buana Inter Sungailiat Bangka". The purpose of this study is to produce a computerized employee payroll information system where the previous employee payroll information system was still manual. Using a manual system allows many errors to occur. So it takes a lot of time and energy when we need data, there is data that is tucked away due to lack of guaranteed data security. So it requires a large enough storage media for the data [16].

In an effort to improve the quality of human resources and the smooth process of school administration, especially the SPP payment system (Education Organizing Contribution) which requires speed and accuracy so that services to the community, especially student guardians and students themselves can be served professionally [17].

3. Implementation Methods

The implementation method in this study was carried out in several stages consisting of:

3.1 The planning stage consists of:

a. Problem
b. Ideas
c. Construction
d. Testing and Evaluation

3.2 The System and application design stage consists of:

a. Use case models
b. Activity diagrams

3.3 The program planning stage consists of the initial display when the admin logs in, the display on the admin menu when logged in and the initial display of the user menu when logged in to the display for financial reports.

3.4 The Implementation Phase consists of

a. Hardware Requirements
b. Software Requirements

3.5 The Testing stage is carried out by means of Black box Testing. The test method is carried out by running a data processing information system and seeing whether the output is in accordance with the expected results

The method of data collection by Observation is to make direct observations in English for Us (UFU) and conduct interviews with employees, especially in the Administration section, as well as literature study.

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4. Discussion

The implementation phase of this program is one of the stages of implementing the system and application analysis described previously. System requirements consist of hardware and software requirements that must be able to meet the needs in the application creation process in order to run smoothly.

4.1 Design of Use case diagrams, Activity diagrams and Entity Relationship Diagrams, Class Diagrams

a. Use case diagrams user Use case diagrams user

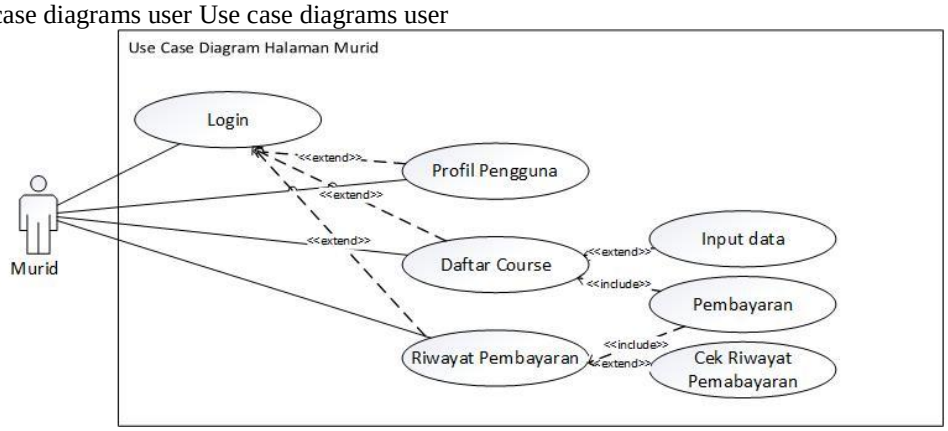

Fig 1 *Use Case* Diagram User Page

b. Use case diagram admin

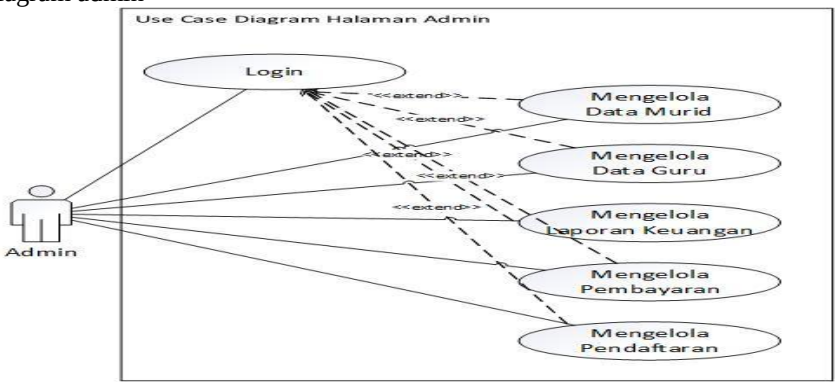

Fig 2 *Use Case* Diagram Admin Page

c. Activity diagram login

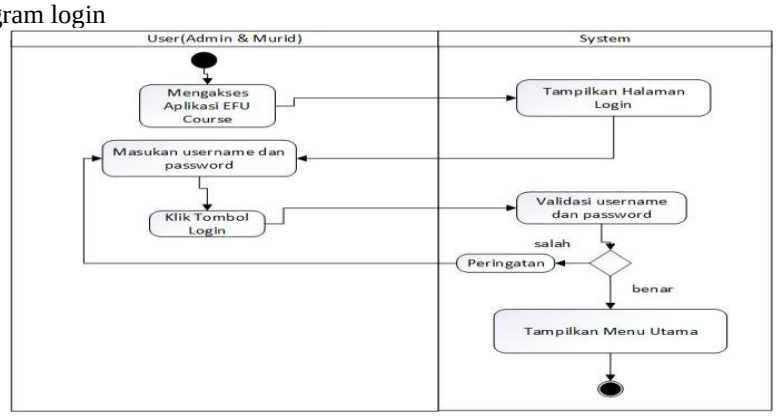

Fig 3 Activity Diagram Login

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d. Registration Activity Diagram

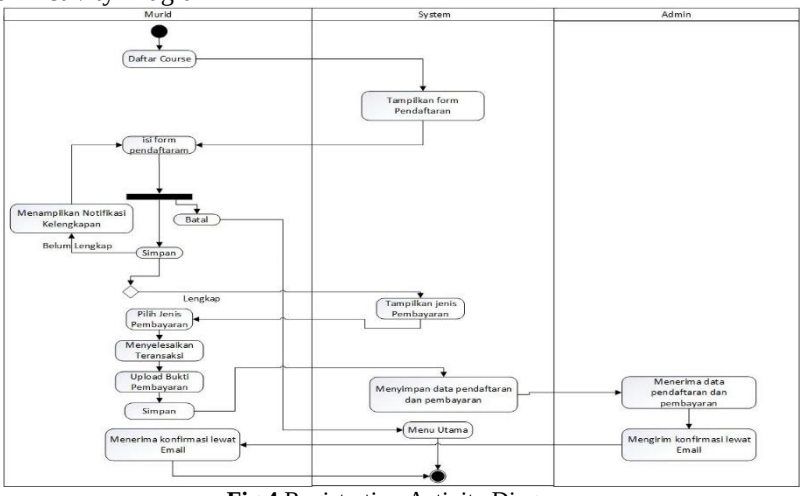

Fig 4 Registration Activity Diagram

e. Entity Relationship Diagram

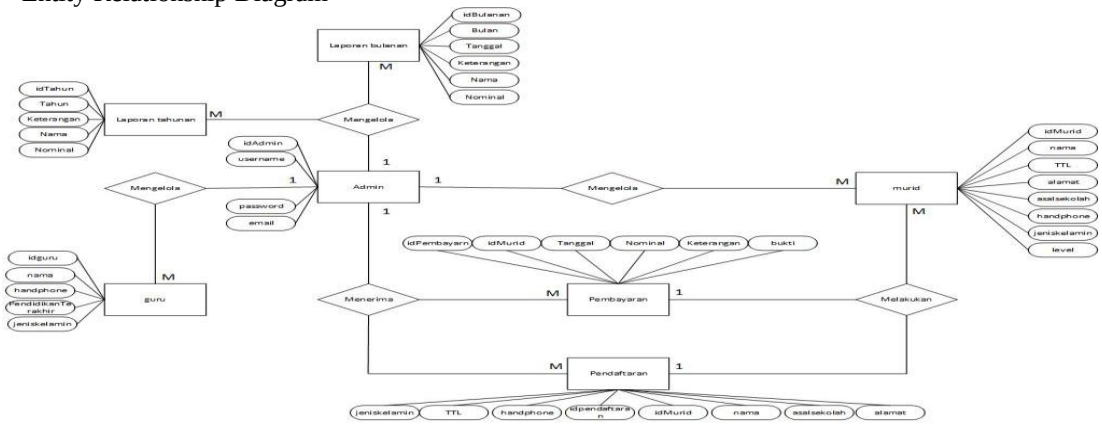

Fig 5 Entity Relationship Diagram

f. *Class* diagram

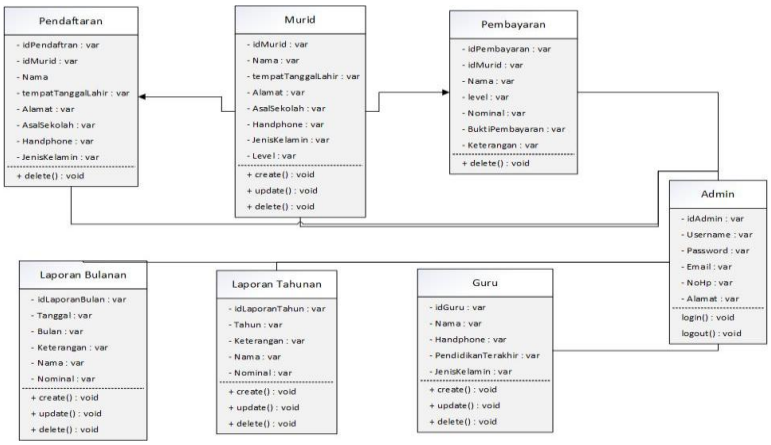

Fig 6 *Class* Diagram

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g. *Sequence* Diagram

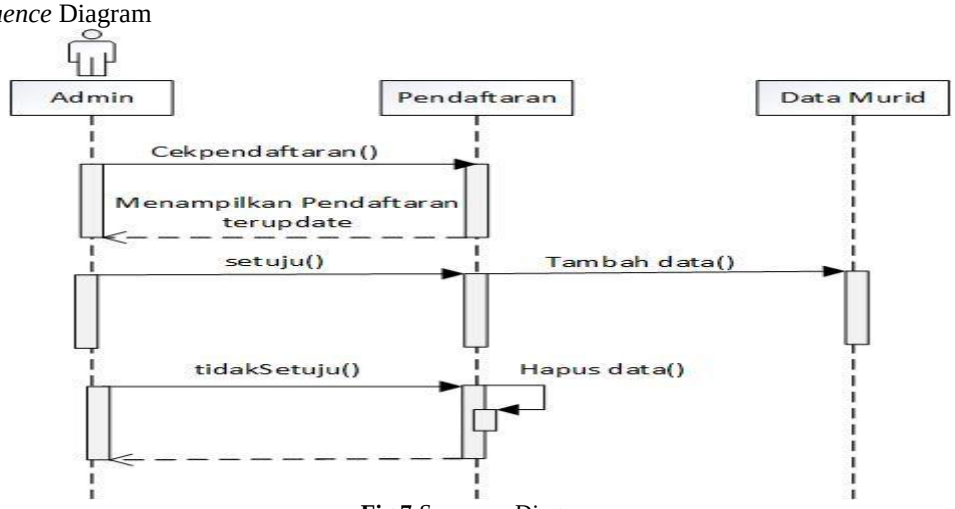

Fig 7 *Sequence* Diagram

4.2 User Interface Program

a. Implementation User Interface Login

Fig 8 User Interface Login

b. Implementation User Interface Registration

Fig 9 User Interface Registration

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c. Implementation User Interface Home Admin

Fig 10 User Interface Home Admin

d. Implementation User Interface Student Data

Fig 11 User Interface Student Data

e. Implementation User Interface Add Student

Fig 12 User Interface Add Student

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f. Implementation User Interface Teacher Data

Fig 15 User Interface Teacher Data

g. Implementation User Interface Add Teacher

Fig 16 User Interface Add Teacher

h. Implementation User Interface Monthly Financial Reports

Fig 17 User Interface Monthly Financial Reports

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i. Implementation User Interface Manage Payments

Fig 18 User Interface Manage Payments

j. Implementation User Interface Manage Registration

Fig 19 User Interface Manage Registration

k. Implementation User Interface Profil Page

Fig 20 User Interface Profile Page

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l. Implementation User Interface Course List

Fig 21 User Interface Course List

5. Conclusion

a. This android-based data processing application will facilitate the performance of the admin at the EFU.
b. This android application will make it easy to process student data at the EFU.
c. This android application will make it easier for admins to make monthly financial reports.
d. This application can also provide convenience for parents who will register their children at the EFU course.

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