Jurnal Mantik
Volume 4, Number 1, May 2020, pp. 921-925 E-ISSN 2685-4236
https://iocscience.org/ejournal/index.php/mantik

Online Attendance System Design to Reduce the Potential of Covid-19 Distribution

Nurhafni Rahayu[1], Fauziah[2], Nur Hayati[3]

National University, Jalan Sawo Manila, Pasar Minggu, Kota Jakarta Selatan, Daerah Khusus Ibukota Jakarta 12520

Email: nurhafni.rahayu@gmail.com, Fauziah@civitas.unas.ac.id, nurh4y@gmail.com

ARTICLEINFO

Article history:
Received: 04/04/2020
Revised: 20/4/2020
Accepted: 30/5/2020

Keywords:
Covid-19, Attendance, Mobile Phone, GPS

ABSTRACT

Amid the outbreak of the Covid-19 Virus, the attendance system of lecturers using finger print at the National University is very risky to facilitate the spread of Covid-19. With the old-time attendance system, of course will increase the touch by using the hands and fingers of lecturers on the same object. While it is known that the main spread of Covid-19 is through the media of hands and / or fingers. Under these conditions, a new and more sophisticated attendance system is needed to minimize the risk of the spread of Covid-19 at the National University. One such system is attendance online via a mobile phone.For this purpose, the authors plan to strike the Online Attendance system at the National University. Making this application using the Appsheet and can be used as an attendance machine, which validates attendance based on location with the integration of Global Positioning System (GPS) technology. The system automatically tracks the position of the lecturer whether in the campus area which has been determined by its coordinate points or vice versa, if not yet, the lecturer will still be allowed to make an absence or return absent using photo evidence that will be uploaded and fill in the information. All are stored in the Attendance Application event so that the lecturer can find out about attendance. Attendance by using this mobile system is expected to reduce the potential for the spread of Covid-19 at the National University when The New Normal is enforced.

1. Introduction

Indonesia is facing a Covid-19 pandemic problem that is spreading rapidly. Transmission of the virus can be through droplets (splashes of liquid from the mouth) attached to any object or body organs, one of them is the hand. There is a fact that about 90% of the spread of Covid-19 through 3 (three) doors, namely the mouth, nose, and eyes that are touched through the hands.1 This makes all kinds of processes that have the potential to attach the hands of many people to 1 (one) same object must simplified, one of which is the process of recording attendance or attendance that still uses finger print or manual technology using signed paper. Attendance is the process of recording one's time present in a document that is made useful as a reference in determining decisions in assessing the performance of each individual, whether in the realm of work or lectures. Recording time attendance today can be in the form of filling the attendance list on paper included with the signature, there is also recording the time of attendance using a machine such as finger print. But current technological advances make attendance systems more sophisticated, including through mobile phones. In the realm of lectures, attendance using a mobile phone is still very rarely applied by a university. National University itself currently uses finger print technology for lecturer attendance. The government has the latest program, The New Normal, which in general wants to restore the conditions of activities like before the existence of Covid-19, one of which of course reactivated teaching and learning activities in campus with a Covid-19 protocol. Therefore, the National University should improve to prepare for the implementation of The New Normal on campus, one of which is to change attendance technology through a mobile application to minimize the possibility of touching many people in 1 (one) place. Thus reducing the potential for the spread of Covid-19 on Campus. National University should improve itself to prepare for the implementation of The New Normal on campus, one of which is to change attendance technology through a mobile application to

Accredited "Rank 4"(Sinta 4), DIKTI, No. 36/E/KPT/2019, December 13th 2019.

minimize the possibility of touching many people in 1 (one) place. Thus reducing the potential for the spread of Covid-19 on Campus. The National University should improve itself to prepare for the implementation of The New Normal on campus, one of which is to change attendance technology through a mobile application to minimize the possibility of touching many people in 1 (one) place. Thus reducing the potential for the spread of Covid-19 on Campus.

2. Research Methods

This type of research used is development research. In this development research using ADDIE model. The ADDIE model is widely used by educators in instructional design throughout the world. According to Ngussa (2014), every effective learning must be planned well. ADDIE Model Development consists of 5 stages, namely:

a) Analyze
b) Design
c) Development
d) Implement
e) Evaluate

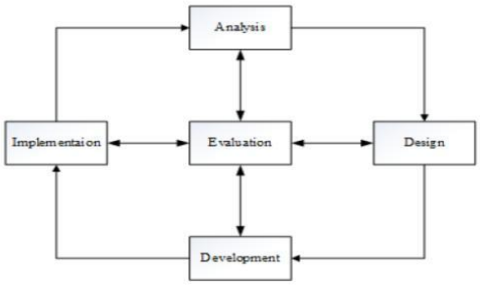

Fig 1. Development Methodology

a) Analyze

In the analysis phase, the problem definition is carried out. The analysis phase of this process focuses on understanding the target audience and instructional objectives.2 This means trying to gain knowledge about the user's needs to meet the needs of the program that was built through questionnaires and research related to systems that have already been developed. Both of the hardware and software needed and the appearance of the interface on the system to be built.

b) Design

The design phase is where most of the work takes place. [2] This stage is the system design stage that is built so that the system is built in accordance with the software needed from the analysis stage and can be implemented into a program at a later stage.

a. Definition Use cases were first formally introduced to the OOSE method (Jacobson, 1992). In 1996, the use case model concept was incorporated into the UML standard, and since then, the use case diagram has become one of the most commonly used among UML users, representing the largest object-oriented modeling community in the world.3 Use case diagrams are used to find out what functions are in the information system that is built and who has the right to use these functions. Use cases describe the system requirements that are built from the user's perspective, focusing on the computerization process. The following use case diagrams from lecturers' mobile attendance:

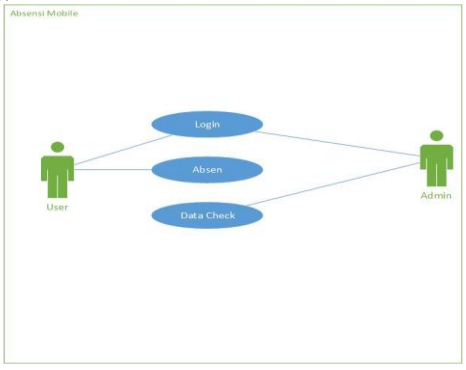

Fig 2. Use case Mobile Attendance Diagram

Accredited "Rank 4" (Sprott 4),DIKTI, No. 36 / E / KPT / 2019, December 13th 2019.

The explanation is as follows: use case diagram of the attendance attendance list of mobile attendees consists of 2 actors and 3 activities, of which 2 actors are User and Admin. The 3 activities in the form of Login, Absent and Data Check. Activities that can be done by Users are Login and absent while the admin can do Data Check from attendance that has been inputted by the lecturer.

b. Activity Diagram illustrates the workflow (workflow) or activity of a system that is built or a business process. Activity diagrams illustrate the activities in the system that are running, each flow starts from the start, the decision that might occur, and how the activity ends. Following is the Activity diagram of lecturer mobile attendance:

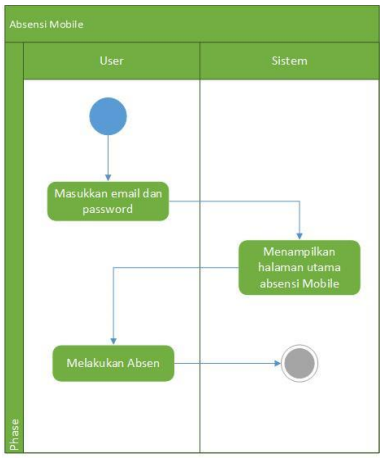

Fig 3. Activity Diagram

The information is as follows:

User Login using email and password. The system displays the main mobile attendance page, then the user does attendance.

c. System Interface Design

The mobile attendance interface design for lecturer attendance list is an illustration of the interface design of the system to be implemented.

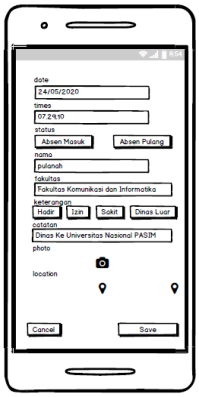

Fig 4. System Interface Design

c) Development

The development phase of the ADDIE model referred to is the result of the design then implemented into the programming language to build a real system. In the development process, researchers need several devices used to implement it, both from hardware and software. The hardware and software needed are as follows:

Hardware Specifications

Processor	Intel Core i5-8250U CPU @ 1.60 GHz 1.80 GHz
RAM	8 GB of RAM

Software Specifications

Build Software	Android Studio, Visual Studio Code, CPanel Hosting
Framework	Codeigneter, Bootstrap
Language	PHP, Java
Database	MySql

d) Implement

At this stage, the system that has been developed at the development stage is implemented and tested on several users. This trial method is conducted using the User Experience Questionaire (UEQ), black box testing and white box testing methods. Black box testing concentrates in terms of the suitability of the software built with user requirements that have been defined in the initial stages of design. White box testing is a test that is based on checking the design details that are made, using the control structure of the program design procedurally to get the output from the input.

e) Evaluate

The evaluate stage is the conclusion stage of developing and testing the system. If an imperfection occurs or the system displays different results than expected, then a revision or amendment action is needed which will be implemented to the next stage.

3. Results and Discussion

From the analysis results obtained, the next step the writer begins to explain the displays in the attendance system for National University lecturers. The application display is as follows:

Display Application Administration Bureau

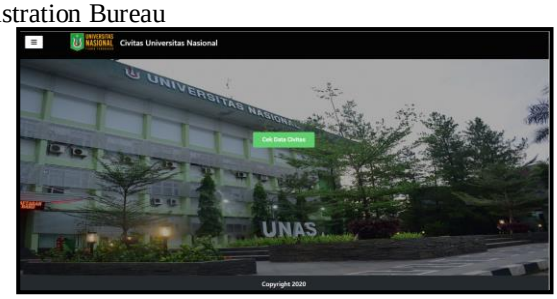

Fig 5. Login page

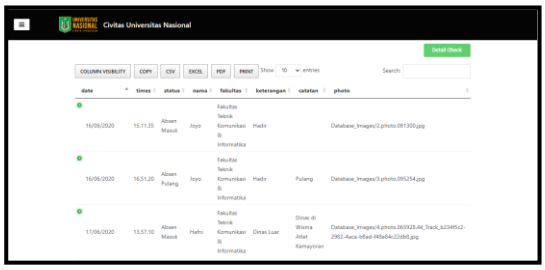

Fig 6. National University Lecturers' Report

After logging in, the Administration Bureau starting page will appear, namely the National University Lecturer Civitas Report, the officer examines the data and click the Details Check button to see the details of each lecturer who has missed.

Display User Absent Application

Fig 7. Mobile Attendance Display

Accredited "Rank 4" (Sprott 4),DIKTI, No. 36 / E / KPT / 2019, December 13th 2019.

In Figure 7 is a mobile attendance display for lecturers, where for the date and times are standardized on the mobile used by the lecturer. Status consists of Absent Entry and Absence Return, then input the name of the lecturer, faculty and choose the information that has been provided. The information consisted of Present, Permit, Sick and External Service. Then proceed to image no.8.

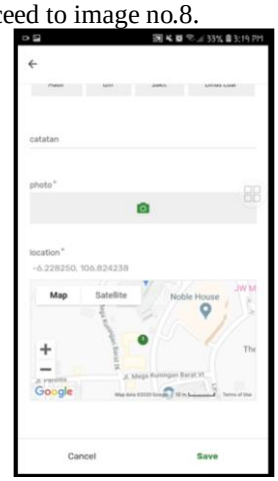

Fig 8. Display Take Photos and Location Attendance Mobile

In picture 8 is a photo capture display and location of Mobile Attendance. Take photos as proof that the lecturer is on the campus of the National University or not. If the lecturer is doing an External Service, then taking photos can be used as proof that the lecturer is not on the campus of the National University. Then for location (location) is also the standard location of the mobile used by the lecturer.

4. Conclusion

From the results and discussion above, it can be concluded as follows:

a) The attendance system using finger print or manual has the potential to facilitate the spread of covid-19, because all lecturers touch the finger print machine so that if there is a virus in one person, the virus has the potential to spread through the finger print machine.
b) The attendance system via mobile phone by logging in using email address and password then absent sign in or absent back home. The application eliminates attendance which requires touching the finger print machine. Thus reducing the potential for the spread of covid-19 on the National University campus.

5. Reference

[1] Noverius Laoli, About 90% of Corona Virus Spread Through These Three Things, quoted fromhttps://nasional.kontan.co.id/news/waspadai-s around-90-pebarebar-virus-corona-through-tiga-hal-ini on May 24, 2020
[2] M Allen (2017), Online Designing Asynchronous Information Literacy Instruction Using the ADDIE Model. Available from: ScienceDirect
[3] Skersys Tomas, Danenas Paulius, Butleris Rimantas(2018), Extracting SBVR Business Vocabularies and Business Rules from UML Use Case Diagrams. Available from: ScienceDirect
[4] Between, I Made Hari, Darmawiguna, I Gede Mahendra, and Pradnyana, I Made Ardwi, "Development of Mobile Crowdsourcing applications," 2019 ISSN
[5] Medium 2015, Introduction of Flutter.io For React Developers, Accessed on September 6, 2018, from https://medium.com/skyshidigital/flutter-io-416c63020732.
[6] Faizi, a. S., & albarda. (2015). Designing Gis Monitor Road Conditions Utilizing Twitter Social Media. Journal of information technology education and research (Jepin), 81-84.
[7] Lestari, Fujianti (2015) ACADEMIC INFORMATION SYSTEMS IN THE DEPARTMENT OF INFORMATION MANAGEMENT IN STATE POLYTECHNIC OF SRIWIJAYA (DATA OF AUTHORITY AND STUDENT ABSENTIAL DATA).