Electronic practicum assessment system based on android at politeknik ATI makassar

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Abstract. The Practicum assessment conducted conventionally is gradually replaced with an Android-based system. It aims to support the government program of Making Indonesia 4.0. In this research, the electronics practicum assessment is designed using the App Inventor application. The attendance assessment and initial assignment are designed to obtain an objective grade. Attendance assessment is conducted by making a standard assessment form, determining points obtained by looking at the time of arrival. Assessing the initial task was done by making ten multiple-choice questions for each experiment. The initial assignment assessment form was created in Microsoft Excel to make it easier to import, export data to .csv (comma separated values) to enter the database system. The results obtained from 6 types of initial assignment assessment experiments conducted using the application. There were 5 trials that were successfully run, and there was still one error trial.

1. Introduction
Assessment is an important component of teaching. With the assessment, lecturers can measure the ability of students. Practical assessment using a manual system is sometimes ineffective and not yet objective. This is because the preliminary tasks given when entering the practicum are still in the form of oral questions. As technology develops, there are many ways to assess students. One of them is by using an application on Android [1]

The design of the appraisal using an android application can be made using android studio software or the inventor app. App Inventor is an open-source web application originally provided by Google, which is currently managed by the Massachusetts Institute of Technology (MIT). It makes it possible to create software applications for the Android operating system (OS) [2]. The MIT version was launched in March 2012. On December 6, 2013, MIT released App Inventor 2, renaming the original version of "App Inventor Classic". App Inventor 2 makes it easy for teachers who are not programming specialists or lack programming experience to be able to develop Android applications in the teaching process [3–5].

App inventor is block-based programming, which means programmers don't have to remember code or syntax, and more importantly, users don't have to worry about syntax errors [6]. App Inventor 2 has a user interface with component designer components and block editors. Component designers are visual objects in the display to adjust and change the size and color and general appearance of the application. The block editor determines what application is created and manages the application under certain conditions [3,5].

From the description above, this research discusses practicum assessment using an android application with Inventor 2 app software on the electronics practicum at the ATI Makassar polytechnic.
2. Methods
In designing the electronic practicum assessment, the steps taken before the planning system are the analysis of laboratory conditions when the electronics practicum is taking place. The electronics practicum in its grading system uses a control card. Students before entering the laboratory must print a control card. When entering the practicum, the lecturer fills in the attendance column. After that, giving the questions as preliminary tasks carried out in writing or orally. Students answer the preliminary questions, and the lecturer grades the preliminary assignment column contained on the control card. The attendance assessment and this preliminary task will be made by the android application to make it easier for the lecturer to assess.

2.1. Planning System
The planning in this system can see in figure 1.

![Figure 1. Planning of system](image)

2.2. Design System
Design the system using App Inventor. The initial step is to create a database on Microsoft Excel. Then imported into .csv, the system database can be seen in Figure 2
3. Result and Discussion

3.1. System Analysis

System analysis is performed when students use the practicum assessment application found on smartphones. Attendance assessment is done by selecting the key icon on the application, then scanning the barcode available on the laboratory computer. The results obtained there were no errors in the attendance assessment; this was seen when observing students scanning barcodes and all data stored in the database. Assessment of the initial task in 6 experiments, there was one trial that error was the initial task in the transistor experiment.

Figure 2. Design of system

Figure 3. Application Display
3.2. Problem Analysis
In attendance assessment, when students scan barcodes, there are students who have difficulty when scanning barcodes, this is because the position of the smartphone is not parallel to the position of the computer laboratory. Next assessment of the initial task error that occurs when working on the problem, when you want to proceed to the next problem, there is an error warning, so it needs to be checked again in the App Inventor software.

![System Implementation](image)

**Figure 4. System Implementation**

3.3. Discussion results
In its application in electronics practicum, this application still uses the localhost. Student smartphones still need to be connected to the wifi signal available in the laboratory, so it is less efficient.

4. Conclusions
In designing an Android-based practicum assessment still needs development. This design still uses the localhost network. So that future development requires a system that already uses the internet network and is able to integrate with the campus academic information system.

References
[1] Setiadi B R, Setuju S, Ratnawati D, Suparmin S, Sugiyono S and Widatmoko A 2018 E-Monitoring in The Vocational Process-Based Assessment *Int. J. Eng. Technol.* 7 78–81
[2] Singh A, Pal A and Rai B 2015 GSM based home automation, safety and security system using android mobile phone *Int. J. Eng. Res. Technol.* 4
[3] Kang H, Cho J and Kim H 2015 Application study on android application prototyping method using app inventor *Indian J. Sci. Technol.* 8 1
[4] Harinath R and Santhi S 2015 GSM based Home Automation System using app-inventor for android mobile phone *Int. J. Comput. Sci. Mob. Comput.* 4 158–67
[5] de Moura Oliveira P B 2015 Teaching automation and control with App Inventor applications *2015 IEEE Global Engineering Education Conference (EDUCON)* (IEEE) pp 879–84
[6] Tharishny S, Selvan S and Nair P 2016 Android based smart house control via wireless communication *Int. Journall Sci. Eng. Technol.* 323–5