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Indonesian Physical Fitness Test Application Assessment Android-Based

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Abstract

TKJI as a test instrument for prospective new students majoring in Physical Education and Health, whose assessment results will be combined with a theory test. However, TKJI's still uses conventional methods or methods, namely the use of Microsoft Excel and Paper. The problem that often occurs is that some trainers mis-define the classification of assessments and values that are often confused. Therefore, the purpose of this study is to create an application that can assist TKJI's order to make it easier for officers to carry out assessments. The system built is based on android and uses the TKJI as the object of research. The research was conducted with the methods of data collection, analysis, design, application development and testing. The test was carried out using the blackbox and testing user satisfaction using a questionnaire instrument. The results of the test using the black box and measuring user satisfaction with the questionnaire method on the TKJI -based android able to assist officers in conducting assessments. The results of the data processing of the distributed questionnaires were 92.28% stated that this system was successful in assisting the assessment of TKJI.

Keywords
assessment application; android; TKJI

I. Introduction

Indonesian Physical Fitness Test (TKJI) is an activity carried out by a person with the aim of measuring the extent of physical fitness abilities so that they know their level of physical fitness (*International Committee on the Standardization of Physical Fitness Test, 2016). TKJI* test, and each stage of the test is carried out sequentially, continuously and should not be interrupted by paying attention to the speed of movement in each stage of the next test in 3 minutes. It should be understood that the stages of the test in *TKJI* are standard and cannot be reversed.

TKJI is one of the test instruments for prospective new students majoring in Physical Education and Health, whose assessment results will be combined with a theoretical test. However, *TKJI* still uses conventional methods or methods, namely the use of Microsoft Excel and *Paper*, even the classification of *TKJI* often forgotten by some trainers. The problem that often occurs is that some trainers incorrectly determine the classification of assessments and values that are often confused, this will have a bad impact on *TKJI*. Loss of files, confused assessment results or incorrectly determining the norms of the assessment instrument are *human errors* that affect the results of the *TKJI assessment.* With an *android* it can reduce *human errors* that occur, because the value recap will be done automatically and can make it easier for officers.*Android* is an operating system for *mobile* -based *Linux* that includes an operating system, *Android* provides a *platform* for developers to create their applications. While what is meant by the *Android Development Kit* or *Android* SKD or *tools* API *(Application Programming Interface)* needed to start

developing applications on *the platform Android* uses the Java programming language. Android is *a subset* of software for mobile phones including a middleware operating system *of* a *virtual dalvik, integrated browser* media. *Framework consisting of supporting* participants *TKJI*. The research is expected to help the problems described above and can shorten the time of the assessor.

1.1 Identification of Problems

Identification of problems in this study, namely:

a. assessment *TKJI* still uses conventional methods
b. The results of *TKJI* are often confused
c. Some officers incorrectly determine the norms of the assessment instrument
d. The process of recap values takes a long time

1.2 Problem Formulation

Based on the background above, the problems discussed in this study are how to change the conventional assessment method or method to digital?

1.3 Purpose

The purpose of this study is to create an application *TKJI* that can assist officers in the assessment process for *TKJI*.

1.4 Limitation of the Problem

The discussion of the problem in the assessment so that it is not broad in scope, it is necessary to limit the problem in the study. The limitations of this study are:

a. Applications made to assess *TKJI*
b. Provide information on the number of *TKJI*
c. *TKJI* used in the Department
d. *TKJI* includes:
   1. Throw catch the ball against the wall
   2. Jump straight
   3. Sit Up Test 60 seconds
   4. Push Up Test
   5. Agility Test
   6. Run 1600 M

II. Review of Literature

2.1 Android

Android is an operating system for *mobile* -based *Linux* that includes an operating system, *Android* provides a *platform* for developers to create their applications. While what is meant by the *Android Development Kit* or *Android* SKD or *tools* API *(Application Programming Interface)* needed to start developing applications on *the platform Android* uses the Java programming language. Android is *a subset* of software for mobile phones including a *middleware* consisting *of a framework, virtual dalvik, integrated browser* and supporting media.

2.2 Android Studio

Android Studio IDE *(Integrated Development Environment)* official *Android* and is *open source* or free. The launch of *Android Studio* was announced by *Google* on May 16, 2013 at *eventGoogle input/output Conference* for 2013. Since then, *AndroidStudio has* replaced *Eclipse* as the official IDE for developing *Android*.[3]

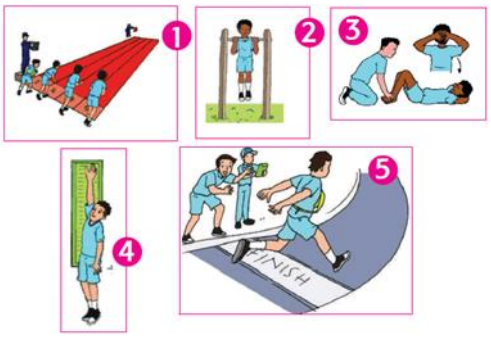
Android studio itself is developed based on IntelliJ IDEA which is similar to Eclipse accompanied by the ADT *plugin (Android Development Tools)*. Android studio has the following features:

a. Projects based on *Gradle Build*
b. *Refractory* and *bug* fast
c. *Linf* A new tool called "*"* is claimed to be able to quickly monitor the speed, usability and compatibility of apps.
d. Supports *Proguard And App-signing* for security.
e. Having a GUI application *android* is easier.
f. Powered by *Google Cloud Platform* for every application developed.

2.3 Firebase Realtime Database

Firebase as a BaaS (Backend as a Service) is a service that provides facilities and infrastructure for the development of website, desktop, and mobile applications for Android and iOS. Development is a change towards improvement (Shah et al, 2020). Software developers can take advantage of Firebase features implemented in their app products. Real Time data processing allows app users to receive data updates automatically. As an example of a chat application, users who are connected to each other will receive information updates after other users make changes, so that the changes can be felt directly by the related users in relatively the same time. One database that is capable of storing and synchronizing data in real time is the Firebase realtime database. Firebase realtime database is a NoSQL (Not Only SQL) database, so data is stored in JSON (JavaScript Object Notation) form. The database is referred to as real time because the speed of synchronized data across users is close to real time taking into account the physical limitations of transmitting data over internet and wireless connections.

2.4 Indonesian Physical Fitness Test



A healthy person is not necessarily fit, but a fit person is certainly healthy. To determine the state of a person's fitness is determined through tests. The number of tests that exist in the world of sports is an option to suit the times and the consistency of the test results and the characteristics of the sport. There are many kinds of sports tests, the basis of which is a fitness test. The physical fitness test that is available and enforced by the government through the ministry of sports is the Indonesian Physical Fitness Test (TKJI).

From the TKJI test series, there is a separation of the levels of test takers according to age. The ages listed in the manual are TKJI aged 6-9 years, TKJI aged 10-12 years, TKJI aged 13-15 years and TKJI aged 16-19 years.

The contents of the series of physical fitness tests for each age are almost the same. Each test has five sets of tests. Each series of tests has a classification number and is converted into a score value. Each series of tests will each issue a score. And in the end, each score will be combined and given a standard norm according to the score obtained. The classification of each norm is used as a benchmark to determine which level a person taking the TKJI test is at. The binding regulation on the TKJI test series is that the test process is required to be completed in one day.

2.5 Assessment

The weight of the assessment for the motor skills area is 60%, while the academic field (written test) is 40%, using a score range of 0–100. [7]

a. Health Health assessment if it does not meet the health requirements that have been determined then the participant is declared a failure. Recommendations from health team officers are healthy and unhealthy.
b. Motor Skills Assessment of motor skills of prospective students is obtained from six test items with the provisions or categories of norms and score weights as stated in the explanation above.
c. Final Score of Skills Test in Sports The final score of skill test participants is entered in the form downloaded from the 2015 SBMPTN page. In MS Excel format, in the form of a list in 5 (five) columns, namely: Serial Number, SBMPTN Exam Number, Participant Name, Score Participants (in the range 0-100) and Description. The list is arranged in order from the participant with the highest score to the lowest score.

III. Research Method

The research methodology is a technique for making *TKJI* that begins with collecting data, analyzing systems, designing, making systems and testing.

a. Data collection
   Data collection is carried out in several ways, namely:
   1. Literature study
   This method is used to collect theories and research materials that have been carried out previously about similar assessment applications. The method of collecting data using the *study* is done by searching and exploring the library by searching and exploring the library in the form of books or *files* obtained through *internet* and research reports that have to do with the problem to be discussed.
   2. Interview
   Collecting data by means of interviews and direct question and answer to the trainers/lecturers assigned to give grades to *TKJI*
b. Analysis
   This method is carried out to analyze the system requirements to be created and become the basis for designing the *TKJI*
c. Planning
   The application design is carried out after analyzing and designing the system. The design uses DFD and Flowcharts.

d. Making Applications
   Making assessment applications in accordance with the analysis and application planning that has been determined. Using the Android Studio application
e. System testing
   The testing stage is one of the stages that must exist in a software development cycle. Testing is done after the application is made. Testing the *TKJI* carried out by:
   1. Blackbox *testing* software testing method that focuses on the functionality side, especially on application input and output (whether it is in accordance with what is expected or not).
   2. Measurement of system accuracy is done by comparing the amount of correct data by the system with the amount of test data.
   3. Questionnaire/questionnaire, a data collection technique that is done by giving a set of questions or statements to other people who are used as respondents to be answered.

Framework of Thoughts

The following is a framework that explains the logical flow of a research study, which can be seen in Figure 1.

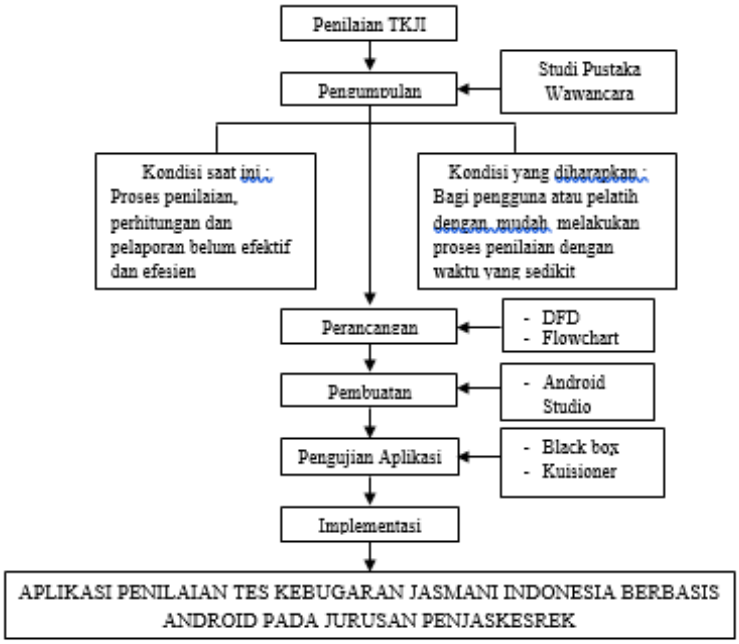


Figure 1. *Framework*

IV. Results and Discussion

Assessment *TKJI* -based *Android* to assist officers in inputting practice values and can reduce *human errors* that often occur in the process of inputting values.

Facilities - the facilities contained in this application:

a. System

Home Page This page is the page that appears the first time when the system is opened. Where on this page there is a *Username* and *Password* that must be filled in to login as an *Admin* or *User*.

b. User Main Menu

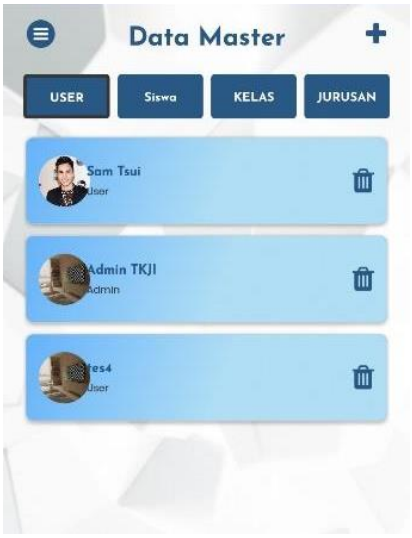
Test series menu *TKJI* can choose *users* to evaluate the participants.

c. Admin Main Menu

Test series menu *TKJI* can choose *admin* to conduct an assessment of participants and can see the test results of participants. There is also a menu to add a series of *TKJI*.

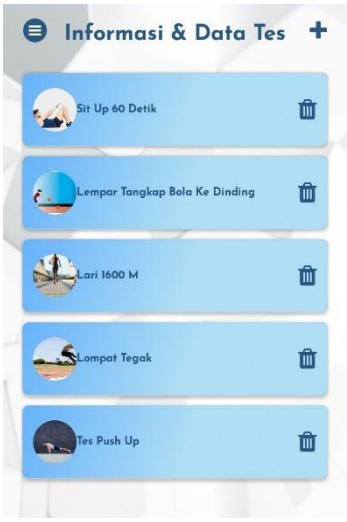
d. Master Data Menu

In this menu there is user data, student data, classes and majors. From all existing data, admin can delete and add user and student data from this menu.



e. Information & Test Data

Menu this menu contains a series of *TKJI*. Admin can delete and add *TKJI* through this menu.



f. Menu Reports & Test Results

In this menu there is a table of the results of the recapitulation of the *TKJI* all participants. Admin can also export this file into *Microsoft Excel.*

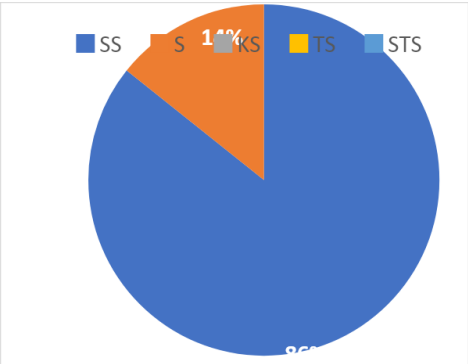
Questionnaire

This questionnaire has 10 questions that become the assessment criteria for this application, namely:

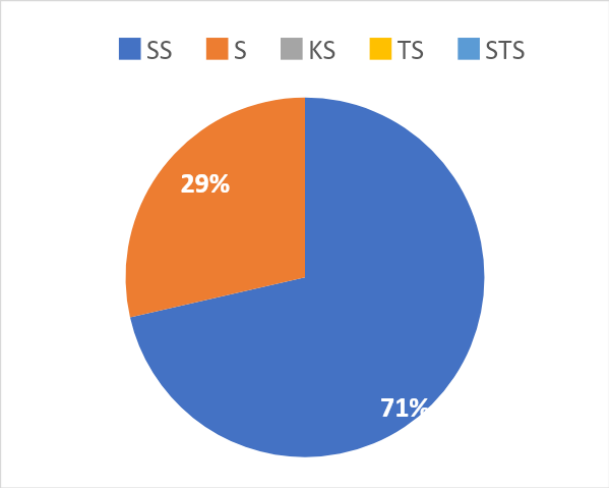
The information provided by this application is easy to understand, The use of menus or features of this application is easy to understand, The application is comfortable to use, Overall the use of this application is satisfactory, This application meets the needs, Applications can be easily learned, applications are easy to operate, can easily avoid errors in using applications, applications are useful for users, applications have capabilities and functions as expected.

Using a rating scale questionnaire as the final assessment of the scores obtained on the questionnaire with the criteria SS (Strongly Agree), S (Agree), KS (Disagree), TS (Disagree), STS (Strongly Disagree). Distributed to 7 *TKJI* to fill out the questionnaire.

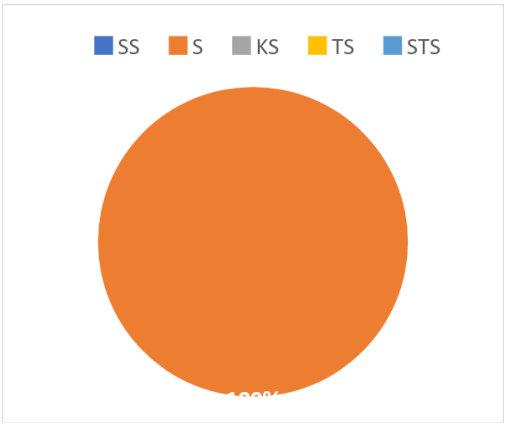
1. The information provided by this application is easy to understand.



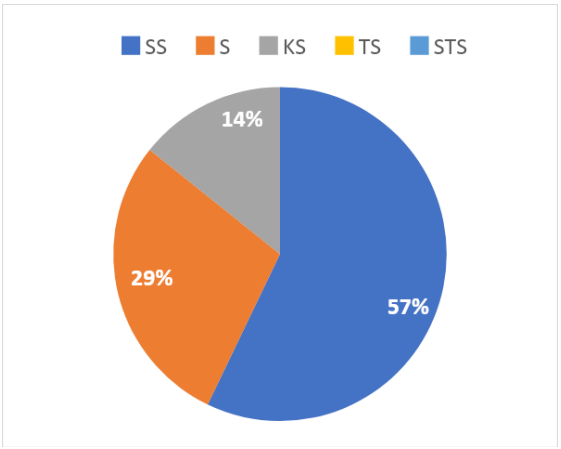
2. The use of the menu or features of this application is easy to understand



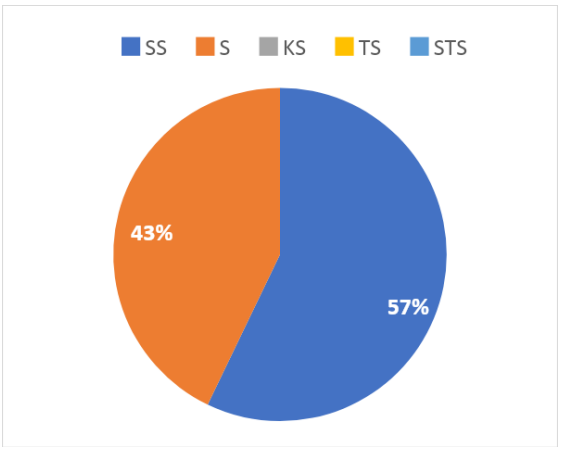
3. Comfortable to use

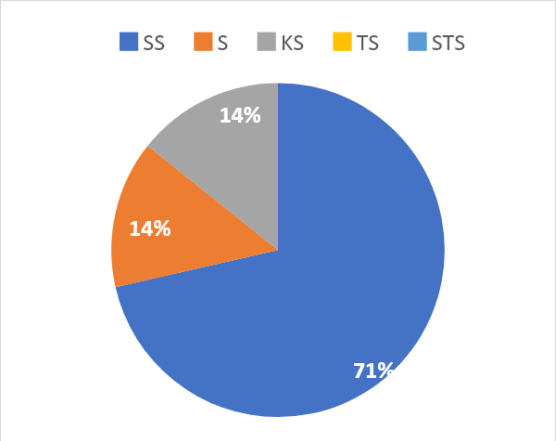


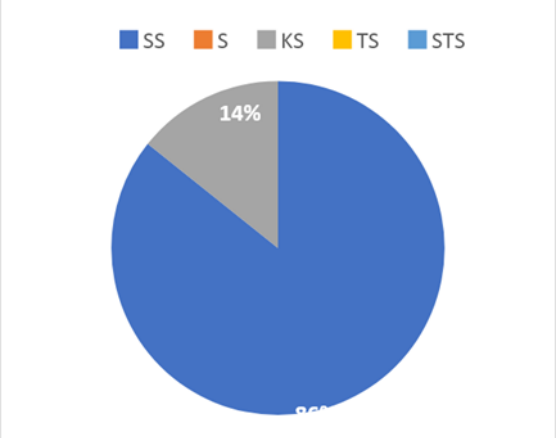
4. Overall, the use of this application is



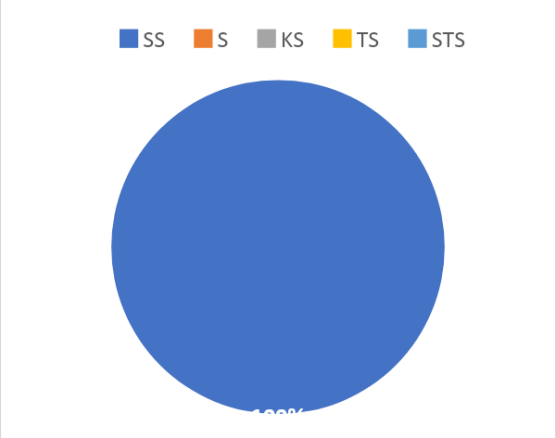
5. The application satisfactory







6. The application has the capabilities and functions as expected.



V. Conclusion

After going through the testing stages using the *black box* and measuring user satisfaction with the questionnaire method on the *Android* at the Department of Physical Education, it was concluded as follows:

1. The application can calculate the test assessment Indonesian Physical Fitness.
2. Applications can help solve problems that often occur

3. Applications that have been made successfully help officers to calculate the *TKJI*. Based on the questionnaire, it was found that 92.28% (agree) stated that this system was successful in helping in calculating the *TKJI* at the Department of Physical Education and Health, Musamus University.

Suggestion

For the Android-based Indonesian Physical Fitness Test Assessment Application are still using *Android* as a medium for using the system. It is hoped that for further development this system can be developed again to combine *TKJI* and Theory Tests which are carried out for the selection of prospective students of the Department of Physical Education, Musamus University.

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