

Mobile Application for Student Assessment with Android

Afriyudi¹, M. Akbar²

¹Jurusan Sistem Informasi, Fakultas Ilmu Komputer, Universitas Bina Darma Palembang
Jl. Jend A. Yani No.12 Plaju Palembang 30264
Telp. (+62711) 515679, Faks. (+62711) 515582

E-mail: babeyudi@mail.binadarma.ac.id, babeyudi@gmail.com

²Jurusan Teknik Informatika, Fakultas Ilmu Komputer, Universitas Bina Darma Palembang
Jl. Jend A. Yani No.12 Plaju Palembang 30264
Telp. (+62711) 515679, Faks. (+62711) 515582
E-mail: akbartea@mail.binadarma.ac.id, akbartea@gmail.com

ABSTRAKS

Bina Darma University as university-based Information Technology has stepped forward in the vision and mission. One of example is the implementation of Information Technology in the academic process, such as the Academic Information Systems, and E-learning. This system would assist lecturers in teaching and learning activities such as knowing the schedule of teaching, preparing teaching materials and conducting the online grading. This applications will be built is an alternative application that allows lecture to assess student work offline by using the android platform. Previous research has been done by creating a desktop-based desktop applications with converting excel data format that is used to input grade student and then the data will be sent to the academic information system. In the process of development will be an android-based application that allowss implification of the previous application. Applications that will be designed for the lecturer can make an offline assessment to students, a feature that was added to the android app is student attendance records. The methods to be used in the development of this system is the system life cycle. The expected result is the mobile-based application with android platform that can facilitate the entry process of student grade and convert them to academic information system.

Key words : Student grade application, mobile based, Android Platform

1. PRELIMINARY

1.1 Background

Bina Darma University vision is to become the international standards University based on Information Technology. Therefore, University Bina Darma should improve themselves in line with this vision. Some steps have been taken to implement this vision, such as in collaboration with NIIT India, interms of the opening of an international study program and sends lecturers to obtain international certification. Implementation of information systems based Academic Information Technology is one of the another step to support that vision. This Information systems will be developed with a web-based technology that allows users to interact with the system of academic information through the Internet or Intranet. This system would assist lecturers in teaching and learning activities, web-based systems can be provided that can be accessed anywhere with internet connection.

Previous research has been done to solve this problem by making data conversion applications, from excel data format to academic information system format. Applications that have been built very helpful, but there are few weaknesses in terms of usage of this application because its use is limited. Another reason is the application can not be used in all places. Therefore, the application will be developed using the mobile version by using android based mobile applications.

1.2 Problem Statement

How to build Android-based mobile applications that can facilitate the entry process component grades.

1.3 Research Limitation

This research only discusses the following matters:

- a. Build applications that are mobile-based to download and upload component student grades.
- b. Mobile application with java on android platform and application server with php language, database accessed through a web service with SOAP technology.

1.4 Objectives

This research aims to build mobile-based applications that are able to transfer student grade from the server to android-based application or from android-based application to server.

2. LITERATURE REVIEW

2.1 Software

According to Pressman (2010, p.4) software are: 1) instruction (computer program) which when executed can perform certain functions, 2) data structure that can make a program manipulates information, 3) documents describing the operation and use of the program.

2.2 Android

In July 2005, Google acquired Android, Inc., a company specialized in leading edge technology industries based in Palo Alto, California, United States. At the time of acquisition of Android, Inc. is developing a device for mobile phones. This is the first step Google to enter the mobile phone market. Previously Google first joined the Open Handset Alliance (www.openhandsetalliance.com). Open Handset Alliance is a group of software developers and hardware consisting of 47 telecommunications companies (such as Texas Instruments, Broadcom Corporation, Google, HTC, Intel, LG, Marvell Technology Group, Motorola, Nvidia, Qualcomm, Samsung Electronics, Sprint Nextel, T-Mobile, ARM Holdings Plc, Atheros Communications, Asustek Computer Inc., Garmin Ltd., Softbank, Sony Ericsson, Toshiba Corp., Vodafone Group Plc and others) which aims to promote open standards for mobile devices.

Android is the first product of the Open Handset Alliance. Android is an operating system created specifically for mobile devices running on Linux kernel version 2.6. Android was developed for the developers to be able to write code in Java language programs. Android is an operating system that is open source under the Apache license and is available as open source software since October 21 in year 2008. Therefore, Google provides special web site for developers to be able to download the Android source, Software Development Kit (SDK), tutorials, and community that is at the address <http://code.google.com/android>. (DiMarzio, 2008, p.5-17).

2.3 Web Service

Web Service is a distributed processing across the web, where web access through HTTP protocol, this protocol accept input data in XML format and provides output data in the format of eXtensible Markup Language (XML). Web Service has 4 kinds of protocols that can be used in access web services such as XML, SOAP, Web Services Description Language (WSDL) and remote procedure call (RPC) (SUN, 2004).

SOAP is a method used to access a distributed object by sending XML messages. SOAP works on low-level communication protocol such as HTTP protocol (Ogbuji,2001). SOAP technology was introduced by Microsoft in 1998. Furthermore , in April 2000 DevelopMentor, IBM, Lotus and Microsoft introduced a W3C stadard for SOAP version 1.1. (Gabhart and Gordon, 2002)

3. RESEARCH METHODOLOGY

3.1 Research

The research will be conducted at the University of Bina Darma Palembang, Jalan Ahmad Yani No. 12 Palembang.

3.2 Methods of Data Collection

To complete the research, the necessary data and information required in this study such as

- a. Observation: a data collection technique is performed by conducting direct observations on the object. In this research the object is pengajaran devision in UBD.
- b. Interview: is a technique of collecting data by conducting interviews with relevant parties, the authorities provide information and data needed, and
- c. The study of literature: in completing the writing of this research, the authors conducted a study literature for literature research.

3.3 System Development Phase

According Sutedjo (2002) method or system development life cycle is often called the system (System Development Life Cycle) are:

- a. Planning Phase. This phase is an early step in the development phase of the system,
- b. Phase of Analysis. At this phase, the team will analyse the problem by preparing a feasibility study,
- c. Phase Design System. This activity determines the operation steps in the process of determining the data processing procedures to support the system,
- d. Implementation Phase. This activity is to implement a design that has been prepared using a computer language that is based on two things, first, the ability of programming language to deal with and implement the processes that are designed,
- e. Evaluation Phase. At this stage, perform system testing.
- f. Reporting Phase. At this stage is to report research results from the planning stage to the evaluation stage.

3.4 Analysis

At this stage is to analyze the problem by preparing a feasibility study include:

- a. Technical feasibility is by analysing the availability of hardware, software, and organizations to implement the necessary processes. UBD is a university that was built from a high school-based computer and the users for this application are all lecturers who teach in UBD. UBD is technically feasible to apply this system.
- b. Returns of non-economically is by analyzing the benefits, uses, potential, and benefits that can not be measured financially. Given the benefits of this system to be helpful lecturers jobs and reduce Internet traffic at the time of entry student grades proses.
- c. Law and ethics is to analyze whether the system created will operate with the limits of law and ethics in general. This means that the system is created as an option if a lecturer wants to do an entry student grade with off-line method, the activities can be done with this application.
- d. Operations is to analyze whether the system created can be implemented. This application allows to be applied because of UBD have Internet access facilities. Thus

enabling the application server to implement. When we viewed from the client side is a lecturer, this application is used by some lecturers in UBD has had android -based handphone or Android-based tablet.

3.5 Desain

At this stage, is to develop the system design. There are two stages in the design proses of this application, which covers the algorithm design and system design process. The algorithm is described with a flowchart and the system design process is described by the process flow diagram.

3.5.1 Flowchart Module

At this stage will explain the process of developing an application with flowchart. It can generally be described in six flowcharts.

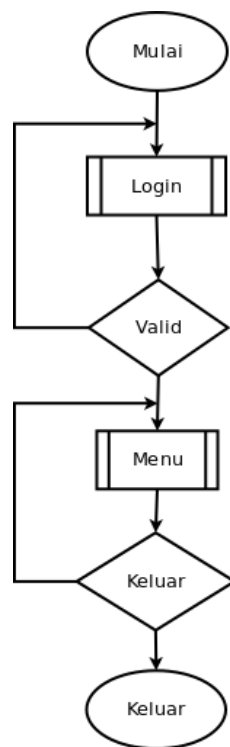


Figure 1 : Main Application Flowchart.

Figure 1 is a flowchart that explains the main application, the first step is the lecturer must login first, if successful then the lecturer can select the menu.

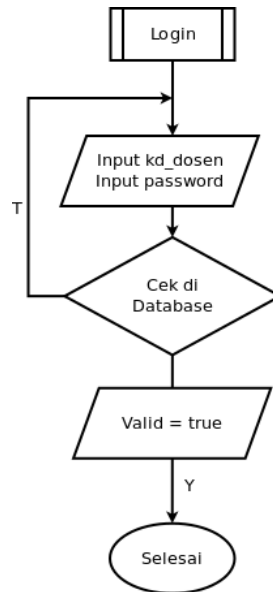


Figure 2 : Login Flowchart .

Figure 2 is a flowchart for the login process, the first lecturer must enter a user name and password, then the system to validate the me and password, if not valid then the lecturer should try to re-validate user name and password, if login is successful then the lecturer can access the next menu.

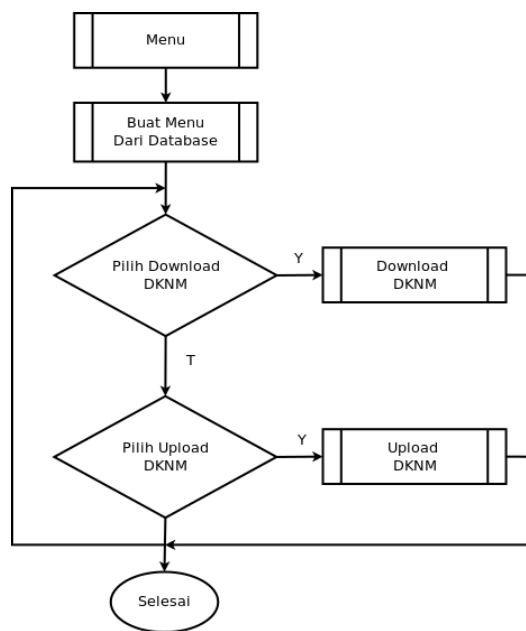


Figure 3 : Flowchart Menu.

Figure 3 is a flowchart for application menu. In this flowchart if the login process is successful, then the lecturer can select the menu to download and upload DKNM.

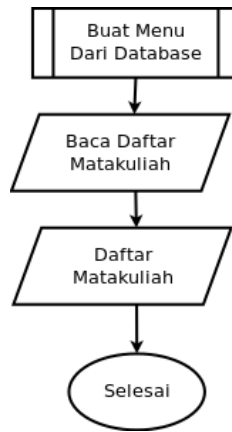


Figure 4 : List of subjects Flowchart .

Figure 4 is a flowchart to display a list of subjects that by the lecturer. List of subjects that appear on the ongoing academic calender.

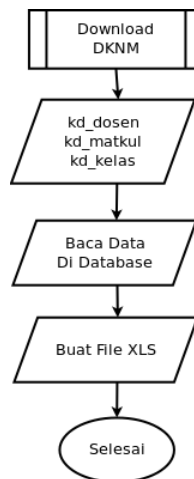


Figure 5 : DKNM download Flowchart.

Figure 5 illustrates the process to download DKNM, the process is to send a parameters such as : kode_dosen, kode_matkul and kode_kelas, then based on these three parameters application will be created excel file format from the database.

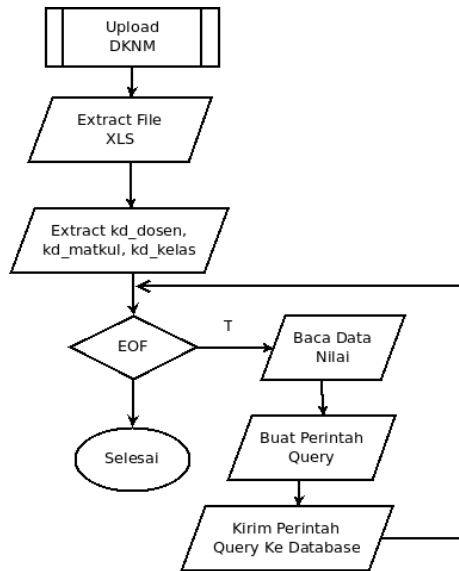


Figure 6 : DKNM upload Flowchart.

Figure 6 illustrates a flowchart for the process of transferring DKNM. The process is to extract an excel format file to retrieve the parameters, such as kode_dosen, kode_matkul and kode_kelas, then based on these three parameters, the excel format file will be sent a query command with these criteria.

3.5.2 Design Proses

At this stage will be explained in general the system process that occurs. The design process is divided in two parts, first is the process on the client side and the second is the process on the server side.

On the client side there are two processes that occur, the process on mobile applications and processes in Office applications. Mobile application is an interface that is used to retrieve data values in xls, furthermore this application is also used to transfer the value that has been filled by the lecturer into the data server. Office applications are already available in the android is an application that can be used for entry student grade according to the mechanism that has been determined by the academic regulations.

On the server side there are 3 applications involved, web service application, database applications and application on server. Web service is the interface that serves the exchange of existing data on the web server to connect to the database.

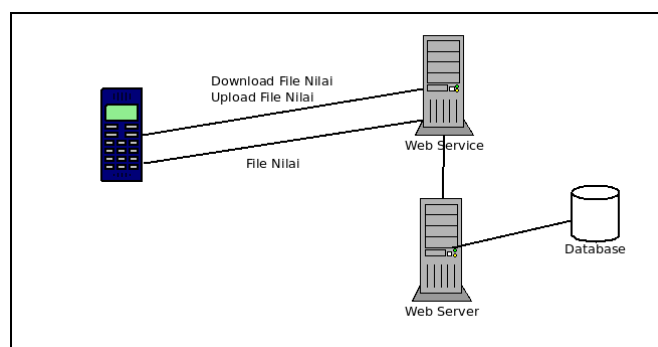


Figure 7 : Main Process

After the process on the system are described in general, the following step will explain in detail the process flow chart from the system of student grade entry. There are 3

parties involved, such as: lecturers, PPM, and academic information systems. First of all lecturers need to download the component of student grade (DKNM) from the academic information systems in the xls file format, furthermore, the student grade component is used as guidance to fill the student grade values.

At the end of the semester, PPM will provide a DPNA file to the lecturer, these files are used as physical evidence that the student has done the final exam. After completed the semester exams lecture will complete the assessment component (DKNM). Then the component value (student grade) is uploaded into the system of academic information.

Moreover, lecturer will print the component value (Student grade) from the academic information system. A hard copy from the the assessment component from the academic information system used to fill DPNA. Finally, both documents are handed over to the PPM as proof that the lecturer had completed entering values (student grade) into the system.

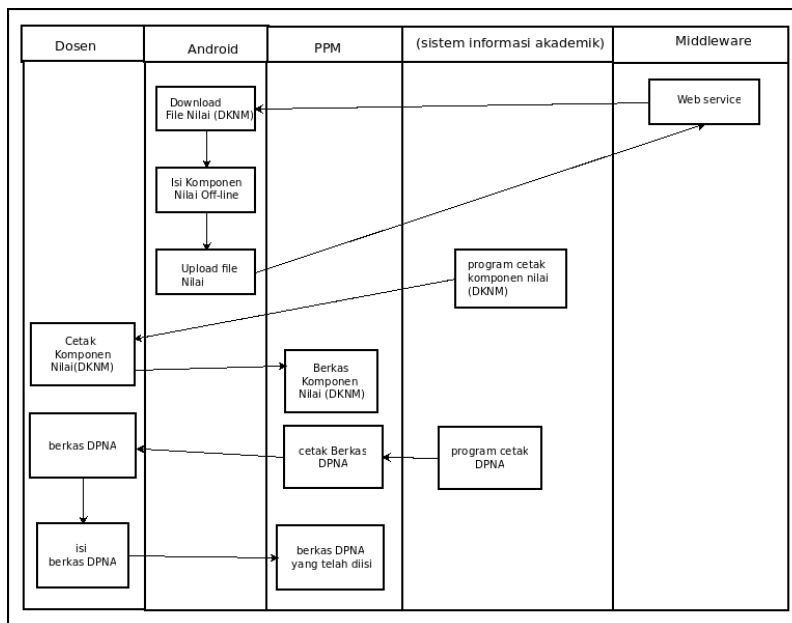


Figure 8 : The process of system being developed.

4. RESULT AND DISCUSSION

4.1 Result

The results from this research are two applications, the first is the application on the client side and the second is the application on the server side. The application on the client side has the task to download the the DKNM file with xls file format and also to upload a DNKM file that has been filled. On the client side will produce a file SIAAndroid.apk This file is created by java programming language and compiled for android. On the server side will produce a web service, web service is created with the programming language php, the file is fileRequest.php and fileTransfer.php.

4.2 Discussion

At this stage will be described several stages in applying programs that have been made. These stages are.

- a. Download and Upload DKNM file

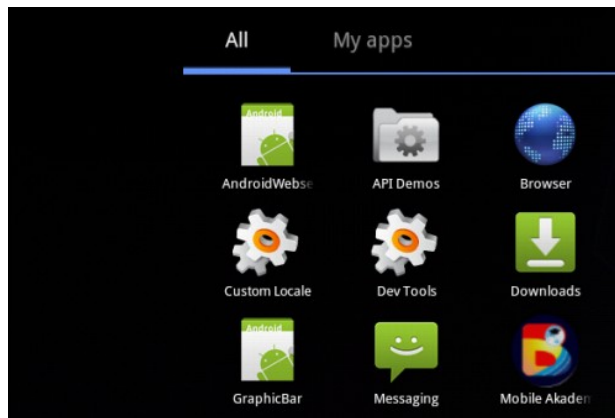


Figure 9 : Academic Mobile-Application

Then the user login form will appear as below.

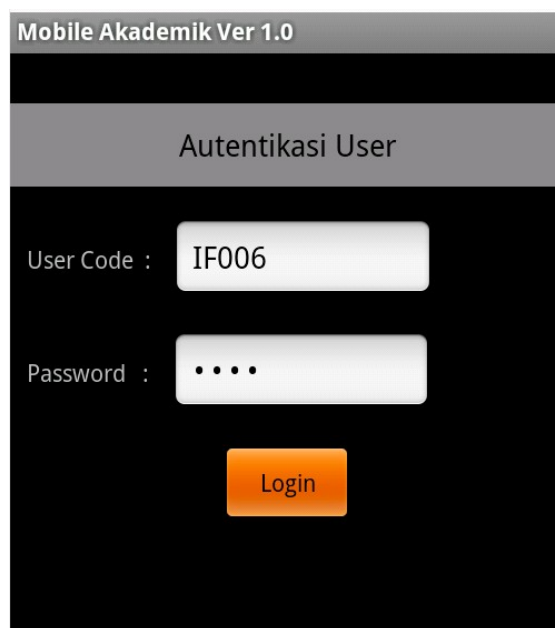


Figure 10 : Login form

Enter the lecturer username, for example, IF006, and then enter the password. If a username and password is correct, then it will go to the main menu.

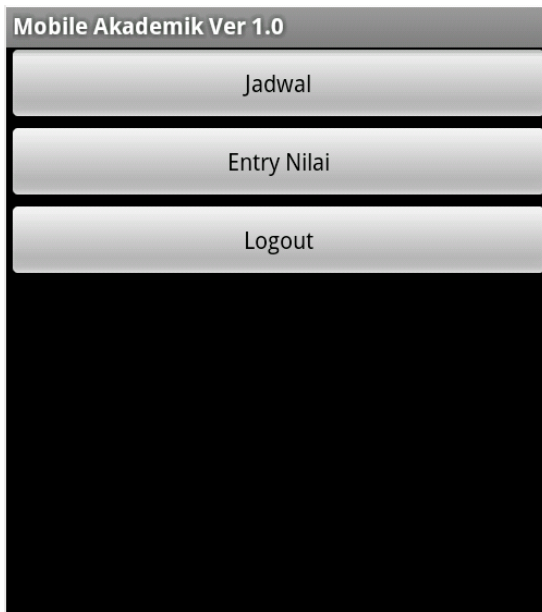


Figure 11: Main Menu

Select Menu "Entry Nilai", and then will appear a list of courses/subjects.

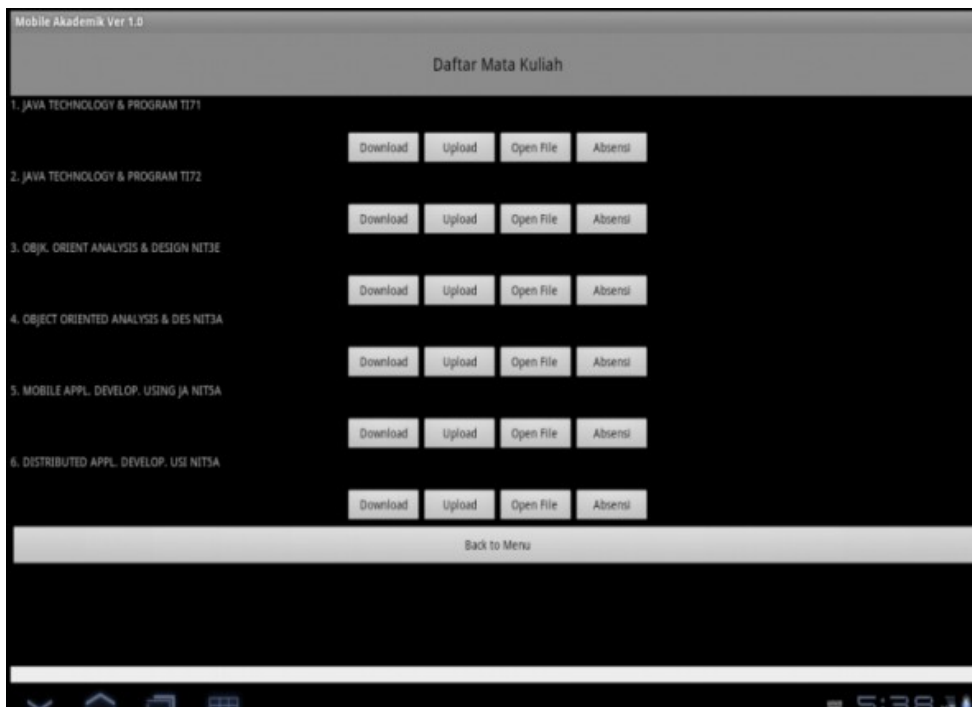


Figure 12. Subjects List Menu

To download the DKNM file, click on the download button, and then the application will create a file with xls extension. Once the DKNM file has been filled, then to transfer the data value, click the upload button. Meanwhile, to display the file click open xls file

b. Filing the DKNM file.

After files have been downloaded, the next step is to fill the DKNM file. Press the Open File button to perform the entry value.

Kode_dosen													
A	B	C	D	E	F	G	H	I	J	K	L		
1	Kode_dosen	JF006											
2	Kode_Matkul	142-1603											
3	Kelas	TI71											
4	Nilai Kuis	15	***** nilai input =	0	s/d	100	Nilai A =	85	s/d	100	Nilai B =	75	
5	Nilai Tugas	15	***** nilai input =	0	s/d	100	Nilai C =	55	s/d	74.99	Nilai D =	35	
6	Nilai Mid	30	***** nilai input =	0	s/d	100	Nilai E =	0	s/d	34.99			
7	Nilai Semester	40	***** nilai input =	0	s/d	100							
8	No	Nim	Nama	Tugas (15%)	kuis (15%)	mid (30%)	Semester (40%)	Nilai Angka	Nilai Huruf				
9		109142146	AAN SAPUTRA	0	0	0	0	0	0				
10		208142270	ANDI AFRIANGGA	0	0	0	0	0	0				
11		308142389	ANGGA PELANI	0	0	0	0	0	0				
12		407142239	ARIES HAKIM AL KAITSAR	0	0	0	0	0	0				
13		508142042	ASLIMYADI	0	0	0	0	0	0				
14		609142335	BAYU ARDIAN	0	0	0	0	0	0				
15		707142057	DEDI RAHMAN	0	0	0	0	0	0				
16		807142172	DENI SUGIANTO	0	0	0	0	0	0				
17		908142141	DENI YULIANSYAH	0	0	0	0	0	0				
18		1008142342	DERI INDRA PRATAMA	0	0	0	0	0	0				
19		1107142263	DES JULIUS SAFUTRA	0	0	0	0	0	0				
20		1209142074	EFRADI SUSANTO	0	0	0	0	0	0				
21		1308142376	FEBI CINDO	0	0	0	0	0	0				
22		1409142055	HARRY PURMANTASJAGIAN	0	0	0	0	0	0				
23		1508142018	HENDRA FITRIANDI	0	0	0	0	0	0				
24		1609142258	JEFRI	0	0	0	0	0	0				
25		1708142172	M. HAFIZ	0	0	0	0	0	0				
26		1807142034	M. LULIL AMRI	0	0	0	0	0	0				
27		1907142282	MUHAMMAD DAVID	0	0	0	0	0	0				
28		2006142136	MUHAMMAD IKHSAN	0	0	0	0	0	0				
29		2108142148	MUHAMMAD IRFAN HAKIM	0	0	0	0	0	0				
30		2208142078	NOPRY OKTARY ARISANDY	0	0	0	0	0	0				

Figure 13. Filing Student grade

5. CONCLUSION

This application provides the facility to download and upload DKNM file, this application is another alternative for lecturers to entry student grade of off-line method. This application is an alternative application means the possibility of lecturer using other applications based desktop. Based on this desktop user group, then the assessment of student files that are used in android application can also be used for desktop applications. The existing file of student assessment in desktop applications can also be used in android application.

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