

***APPLICATION DESIGN TEACHING MATERIAL PROGRAMMING ALGORITHM 1  
USING ANDROID-BASED IDEAL PROBLEM SOLVING (PAMULANG  
UNIVERSITY CASE STUDY)***

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**Abstract**

*Education in the digital era demands the development of applications that support the learning process, especially in the discipline of computer programming. Programming Algorithms 1 is a fundamental course in information technology education at Pamulang University. Therefore, this research aims to design an Android-based application that provides interactive teaching materials for the Programming Algorithms 1 course using ideal problem solving methods. The ideal problem solving method is a systematic approach that facilitates the application development process by determining the best solution based on a deep understanding of the problem to be solved. This application is designed to help students understand the basic concepts of programming algorithms through various interactive features such as material explanations, practice questions, and relevant case studies. Apart from that, this application will be equipped with additional features such as discussion forums to facilitate interaction between students and lecturers, as well as learning evaluations that can help students monitor their learning progress. By using the Android platform, this application can be easily accessed via mobile devices, allowing flexible and practical access for users. A case study was conducted at Pamulang University to test the effectiveness and usefulness of the designed application. It is hoped that the results of this research can make a positive contribution to improving the quality of Programming Algorithm 1 learning at Pamulang University, as well as being an inspiration for the development of similar applications in various other educational institutions.*

**Keywords:** *Programming Algorithm 1, Ideal Problem Solving, Android*

## 1. INTRODUCTION

Education in the digital era places new challenges for educational institutions to adopt technology in the learning process in order to increase the effectiveness and quality of education. One of the courses that has an important role in information technology education is Programming Algorithms 1. This course equips students with a basic understanding of programming logic which is the foundation for software development.

Pamulang University as an educational institution that focuses on information technology needs to continue to innovate in providing relevant and interactive teaching materials for students. Using Android-based applications can be the right solution to

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facilitate the learning process, considering that the majority of students have easy access to mobile devices.

Previous research has shown that the ideal problem solving method is effective in application development because of its systematic approach and focus on the best solution to the problem at hand. Therefore, this research aims to design an Android-based Programming Algorithm 1 teaching material application using an ideal problem solving approach.

With this application, it is hoped that Pamulang University students will be able to gain a more interactive and in-depth learning experience regarding the basic concepts in Programming Algorithm 1. Apart from that, this application is also expected to help lecturers in providing more effective learning and monitoring student learning progress effectively. more structured.

Through case studies conducted at Pamulang University, it is hoped that the effectiveness and usefulness of the designed application can be concretely evaluated. It is hoped that the results of this research can make a positive contribution in improving the quality of education in the field of information technology, as well as becoming a basis for developing similar applications in other educational institutions.

## 2. MATERIALS AND METHODS

IDEAL problem solving modeling for the programming algorithm 1 course in higher education has been carried out and the results are (a) students' problem solving abilities reach completeness. (b) there is a significant influence of process skills and motivation on problem solving abilities. (c) The problem solving ability of the class applying the maple-based IDEAL problem solving model of learning is better than the class before treatment. (Eko Andy Purnomo, 2014). The problems that exist in IDEAL problem solving are found in Ali Muhson's research entitled "Application of the Problem Solving Method in Advanced Statistics Learning" which found that the application of the problem solving method in the programming algorithm 1 course was able to increase students' interest in learning. The indication is that the learning process is quite enjoyable, able to increase students' active role and student independence.

### 2.1. Luther Multimedia Software Development Method

According to Luther, multimedia system development is carried out based on six stages, namely concept, design, material collecting, assembly, testing, and distribution (Sutopo, 2003). The stages of the multimedia development methodology do not need to be sequential. The six stages can exchange positions but still start from the concept stage and end with the distribution stage. Of Luther's six stages, starting with the Concept and ending with the Distribution stage. Meanwhile, the Material Collecting stage can be carried out in parallel with the Assembly stage. Luther's version of the stages are explained in Figure 2.1 below:

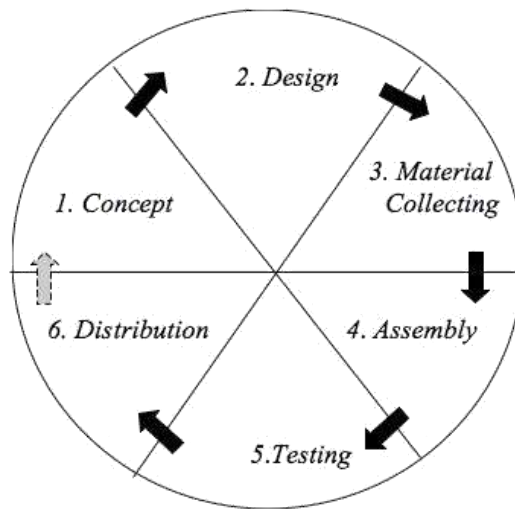


Figure 2.1. Multimedia Development Model

a. Concept (Concept)

The concept stage is the stage for determining the goals and who the users of the program are. Apart from that, determine the type of application (presentation, interactive, etc.) and the purpose of the application (entertainment, training, learning, etc.). Basic rules for design are also determined at this stage, for example application size, targets, etc.

b. Design

Design is the stage of making specifications regarding program architecture, style, interface appearance and material requirements for the program. The specifications are made as detailed as possible so that at the next stage, namely material collecting and assembly, new decision making is no longer needed. This stage usually uses a storyboard to provide a description of each scene, including all multimedia objects and links to other scenes. Flowchart to describe the flow from one scene to another. This stage suggests that the specification work be carried out in as much detail as possible because it will have an impact on the next stage.

c. Material Collection

Material Collecting is the stage where materials are collected that suit the needs of the multimedia product being worked on, such as images, text and audio. This stage can be carried out in parallel with the assembly stage. In some cases, the Material Collecting stage and the Assembly stage will be carried out linearly, not parallel.

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#### d. Manufacturing (Assembly)

Assembly is the stage where all multimedia objects or materials are created. Application creation is based on the design stage, such as story boards and navigation structures.

#### e. Testing

Testing is carried out after completing the assembly stage by running the application and seeing whether there are errors or not. This stage is also called the alpha testing stage, where testing is carried out by the manufacturer, after which a beta test is carried out involving end users. The function of this stage is to see whether the results of making the application are as expected or not.

#### f. Distribution

The stage where the application is stored on a storage medium for distribution to end users or clients. At this stage, if the storage media is not sufficient to accommodate the application, compression is carried out on the application. At this stage an evaluation will also be carried out as input.

### 3. ANALYSIS AND DISCUSSION

#### 3.1. Use Case Diagrams Learning Module

Based on the framework above, a use case design can be obtained to determine the application to be created as shown in Figure 3.1 below:

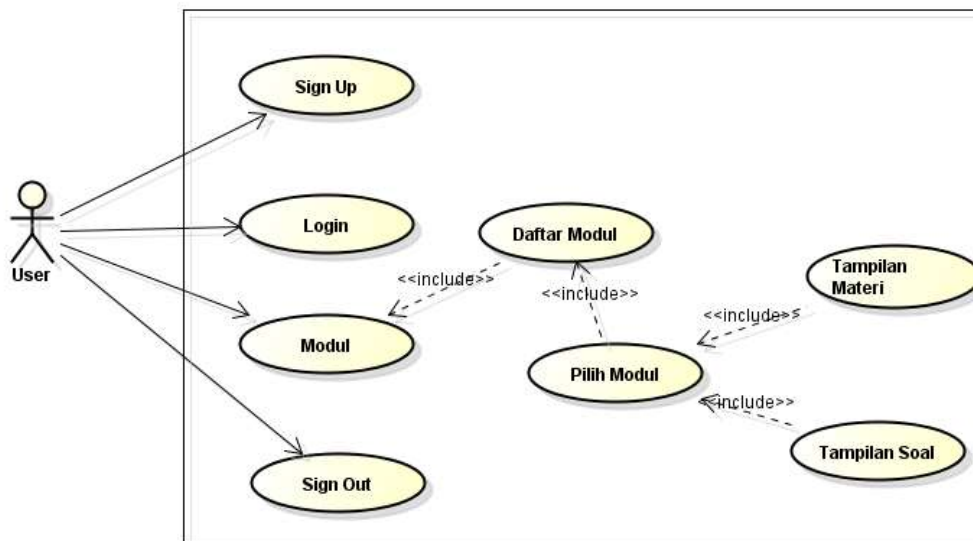


Figure 3.1. Learning Use Cases

Figure 3.1 is a use case image of a learning application for an informatics logic course. The image consists of one actor, namely the user, as explained in table 1 below.

Table 1. Guide to using Learning Use Cases

No.	User	Description
1.	Actor: User <i>Use Case: Sign Up</i>	Users must register first if they don't have an account
2.	Actor: User <i>Use Case: Login</i>	Users can access if they already have an account
3.	Actor: User <i>Use Case: Login</i>	Users can choose the programming algorithm material module 1 Pamulang University Engineering Department
4.	Actor: User <i>Use Case: Log Out</i>	User can close the application

### 3.2. App View

Figure 4.2 below is the main page which consists of several chapters where each chapter will go into material and questions. The material contained in programming algorithm module 1 consists of number processing programs, text data processing (String), List, Dictionary, If, For, While, Basic Data Acquisition & OOP, Sorting & Searching, Stack, Queue, Tree, Graph Theory , Expert System: Decision Tree, Expert System: Applied Linear, Regression. This application is also accompanied by examples of questions, material, conclusions and related journals.

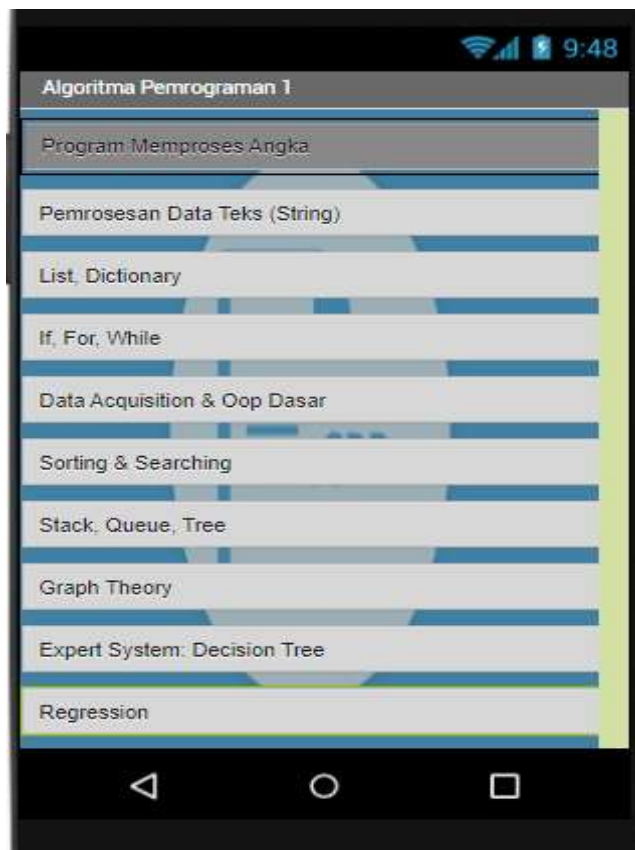


Figure 3.2 Module Page Image



Figsure 3.3 second page of the application

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#### 4. CONCLUSION

Based on the analysis and design of Android-based programming Algorithm 1 teaching materials, the author concludes as follows:

- a) This application can be useful and help students to increase their interest in learning, especially for the Programming Algorithms 1 course
- b) this application can be used as an innovative learning medium because it is based on Android and is supported by smartphones so it is more practical to learn anywhere and anytime.

#### REFERENCES

- Asmono, Cahya Rizki. 2013. Perancangan Aplikasi Belajar Hijaiyah Pada Android Menggunakan Metode Rectangles Collision Detection. Skripsi. Medan Universitas Sumatera Utara.
- Binanto, Iwan, 2010. Multimedia Digital - Dasar Teori dan Pengembangannya. Yogyakarta: Penerbit Andi
- Fowler, Martin. 2004. UML Distilled Edisi ke3: Panduan Singgat Tentang Bahasa Pemodelan Object Standar. Yogyakarta: Penerbit Andi.
- Safaat H, Nazarudin. 2012. Pemrograman Aplikasi Mobile Smartphone dan Tablet PC Berbasis Android. Yogyakarta: Penerbit Andi.
- Indriyani RW (2016) dengan judul Penerapan Model Pembelajaran Ideal Problem Solving dalam Menyelesaikan Masalah Matematika pada Materi Keliling dan Luas Persegi Panjang dan Persegi Bagi Siswa Kelas VII SMP. Jurnal Ilmu Pendidikan Matematika: 2301-9085.
- Winarno, Edi., Zaki, Ali., dkk. 2012. Membuat Sendiri Aplikasi Android Untuk Pemula. Jakarta: PT Elex Media Komputindo.