

## **Design of Desktop-Based Student Learning Style and Personality Quiz Application with Microsoft Visual Basic Net 8.0**

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### **Abstract**

In education, learning style and personality play an important role because they influence how individuals perceive and absorb information. Educators can build more inclusive and successful learning environments by implementing strategies to accommodate a variety of learning styles and personalities. The learning style and personality quiz application was created with Microsoft Visual Basic 8.0. The purpose of this application is to find out the learning style and personality of students. By knowing their learning style and personality, students can understand themselves and make it easier to choose the learning method to use. The method used in designing this application is the waterfall method. The method begins with the analysis, design, coding, testing and maintenance stages. The learning style and personality quiz application has been tested on several students of the Information Technology and Computer Education Study Program, Medan State University for three weeks, the results show that the learning style and personality quiz application can help in selecting effective learning methods and understanding one's own character.

**Keywords:** Education, Learning Style, Personality, Desktop Based Application, Visual Basic, Students



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### **INTRODUCTION**

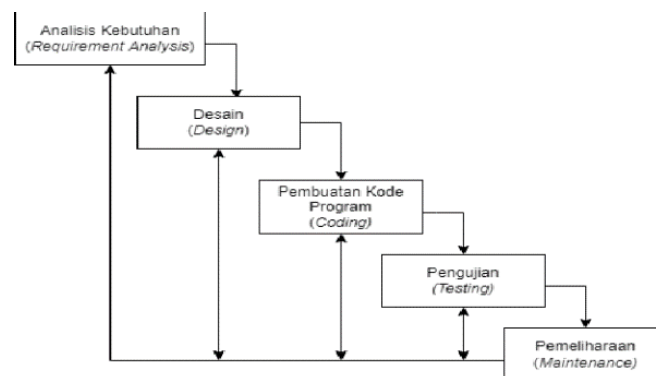
A In education, learning styles and personality play an important role as they influence how individuals perceive and absorb information. Understanding these aspects allows educators to modify their teaching approaches to better suit the needs of their students. Educators can build a more inclusive and successful learning environment by implementing strategies to accommodate different learning styles and personalities. This can increase student engagement, retention, and academic success. In addition, recognizing and accommodating different learning styles and personalities can contribute to a more helpful and positive classroom environment. Finally, considering these variables can help educators build a sense of belonging and empowerment in students, resulting in a more meaningful educational experience for all.

With the development of the technology field, the use of applications to support decision making has become commonplace. Computers are a medium that is widely used in various parts of the world with many functions. There are many programs created today to help humans today. Utilizing existing technology requires every human being to be able to quickly adapt to new changes. Application comes from the word application which is the noun form of the Indonesian verb which means to process. Conceptually, computer applications are a subclass of computer software that uses direct computer functionality to execute user commands. Desktop applications are applications that run locally in a desktop environment and can only be accessed by desktop users. Desktop applications are different from web applications, which

can be accessed from anywhere on your network. Visual Basic is a programming language used to create graphics-based Windows applications (GUI - Graphical User Interface). The Basic language itself was created by Professor John Kemeny and Thomas Eugene Kurtz from Dartmouth College in the mid-1960s. According to Suryokusumo, "Microsoft Visual Basic is a programming language used to create graphical-based windows applications (GUI-Graphical User Interface)". Educators can ensure that all children have the opportunity to achieve academically by using a variety of teaching methods and approaches that appeal to visual, auditory, kinesthetic and other types of learners. In addition, understanding each student's unique personality and preferences can assist educators in tailoring training to suit individual needs and maximize learning outcomes. Educators can develop a sense of community and collaboration within the classroom, creating a safe and welcoming environment where each student feels respected and supported. For example, an educator can use visual aids such as graphs and diagrams for visual learners, group discussions and debates for auditory learners, and practical exercises for kinesthetic learners.

## RESEARCH METHODS

In this study using the software development method is a step that system analysts go through in developing the software they want to make. In developing this software, the model used is Waterfall. According to Ian Sommerville, the stages of the waterfall model consist of five stages. The five stages are as in Figure 1.



**Figure 1. Waterfall Model**

The following is an explanation of the stages of the waterfall model:

1. Requirement Analysis. At this stage is the stage of determining the features, constraints and objectives of the system through interviews with system users. All of this is determined in detail and serves as a system specification.
2. System and Software Design. At this stage, a system architecture will be formed based on the requirements that have been set, identifying and describing the basic abstractions of the software system, and describing the relationships.
3. Coding and Unit Testing. At this stage, the results of the software design will be realized as a set of programs or program units through coding. Each unit will be tested whether it meets its specifications or not.
4. System Testing. At this stage, each program unit will be tested as a complete system to ensure whether the system meets the requirements or not. After that the system will be shared with users.
5. Maintenance. At this stage, the system is installed and operated. In addition, any errors not found during the creation stage will be corrected. System development, including the addition of new functions, is also done at this stage.

## Data Collection Technique

Initially, researchers conducted library research by collecting reference sources such as books, scientific journals, articles, research reports, theses, dissertations, and relevant online sources. In the library study, researchers also need tools to record and organize the information found, such as reference management software (Notepad, Mendeley, or Zotero). Interview instruments by preparing interview sheets and then conducting interviews with a number of students of the Information Technology and Computer Education study program to collect interview recordings.

## RESEARCH RESULTS AND DISCUSSION

### Research Result

The Waterfall method is used in designing the Student Learning Style and Personality Quiz application which consists of 5 stages including, as follows:

### Requirement Analysis

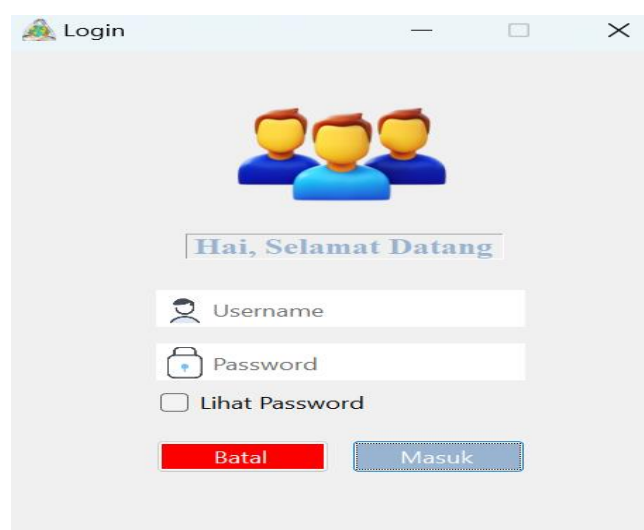
At this stage, an open interview was conducted with several students of the Information Technology and Computer Education study program with 5 representatives. The purpose of this interview is to find out the learning activities and daily activities that are often carried out by students during college. From this information, it becomes the basis for determining what features are in the Learning Style and Student Personality Quiz application.

### System and Software Design

Furthermore, this stage consists of three activities, namely: designing interfaces, designing flowcharts, and implementing interfaces. Can be described in detail as follows:

### Interface Design

The purpose of designing the interface is to provide an overview of the application created so that it can be easily implemented and also facilitate the creation of user friendly applications. The design of the Student Learning Style and Personality Quiz application is in Figure 2.



**Figure 2. Login Interface Design**

The login interface design consists of a username column to fill in the name of the user and a password column to fill in the password of the user who has registered with the system. Then there is also a see password column if the user wants to see it and a button to enter.

**Figure 3. Self Data Interface Design**

After entering the password and logging in, the user can see the personal data display containing name, age, school origin and others in Figure 3. After filling in the personal data, there is a save button to save user data which is later needed for the results of the quiz.

**Figure 4. Quiz Selection Menu Interface Design**

In Figure 4, there is a menu of choices in the selection of quizzes consisting of two, namely learning style tests and personality tests. Users can also read about what learning styles and personalities are, so that users understand the importance of learning styles and personalities to understand what learning methods to use and understanding of self-character.

**Figure 5. Learning Style Question Interface Design**

When the user clicks on the learning style test option, the user will be displayed a learning style question 1 interface containing multiple choices a, b, and c as in Figure 5. Where each choice has its own learning style such as visual, auditory, and kinesthetic learning styles. The learning style will be determined from the answer choices of the user and the learning style question consists of 12 questions.

Nama	Fattah
Asal Sekolah	Universitas Negeri Medan
Umur	19

Tentukan Gaya Belajarmu!  
Dengan Melihat Jumlah Nilai Total Pilihan Gaya Belajar Tertinggi di Bawah ini!  
Dalam Kuis ini Ada Kemungkinan Anda Memiliki Gaya Belajar Lebih Dari Satu Gaya.

Total Gaya Belajar Visual: 5  
Total Gaya Belajar Auditori: 1  
Total Gaya Belajar Kinestetik: 6

[Selesai](#)

**Figure 5. Learning Style Question Interface Design**

In Figure 6, is the result of the user's learning style after answering all questions. By providing a description of the learning style results.

[Kembali](#)

**Biasanya...**

A Saya bukanlah orang yang suka dengan hal yang repot  
B Saya adalah orang yang selalu datang tepat pada waktunya dalam setiap pertemuan  
C Kadang-kadang saya masih tertidur, walaupun saya berjanji untuk mengerjakan sesuatu di pagi hari

**Figure 7. Personality Question Interface Design**

In addition, when the user selects the personality test option, the user will be shown questions about personality. Which consists of multiple choices a, b, and c as in Figure 7. Which where personality questions consist of 7 questions.

Nama	M Fajar Sahendra Chan
Asal Sekolah	UNIMED
Umur	20

Tentukan Kepribadianmu!  
Hasil Menunjukkan Bahwa:

Anda dapat digolongkan orang yang berkepribadian: bertanggung jawab, berdisiplin, dan dapat di percaya.

[Selesai](#)

**Figure 8. Personality Result Interface Design**

In Figure 8, is the result of the user's personality after answering all the questions. By providing information about the personality of the user after the test.

## Flowchart Creation

According to Kendall and Kendall, “flowchart or data flow diagram is a graphical description of data processes, data flow, and data storage in a company system”. Flowchart of the Learning Style and Personality Quiz application as in Figures 9 and 10.

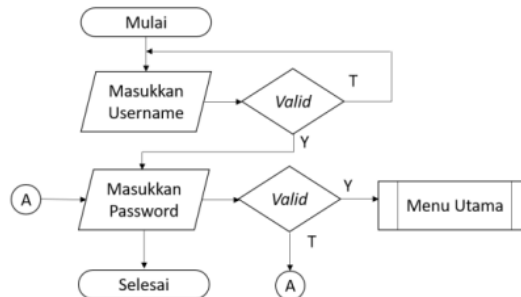


Figure 9. Login Flowchart

The login flowchart starts with the user entering a username and password, if the data entered is valid then proceed to the next process, namely entering the main menu which is personal data, as in Figure 9.

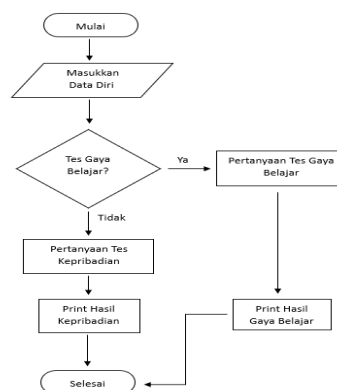


Figure 10. Main Menu Flowchart

Description of the flowchat scheme of the Learning Style and Personality Quiz application program: The first step of the program is run by starting the login, after logging in there is a personal data menu, then the main menu which is the choice including, learning style test and personality test. When the user chooses the learning style test menu, there are answer choices consisting of a, b, and c. If all questions have been answered, the program will count the number of choices and determine the results of several learning styles, namely: visual, auditory, and kinesthetic. When the user selects the personality test menu, there are also answer choices consisting of a, b, and c. Then, if all questions have been answered, the program will determine the results of the user's answer choices to process the personality results of the user.

## Coding and Unit Testing Coding and Unit Testing

The next stage, coding and unit testing are two important aspects of software development. Coding is the process of writing program code that functions according to predefined specifications. Unit testing, on the other hand, is the process of testing the smallest units of code, such as functions or methods, to ensure that each part functions correctly independently. Description of the interface implementation of the login section, where in this login menu users are required to enter a username that has been registered and in this login has 2 access rights, the first as an admin login, the second as a user where users can only be registered by the admin.

## System Testing

The Learning Style and Personality Quiz application is ready to use. This application was tested on several students of the Information Technology and Computer Education study program, Medan State University, for two weeks. This application is then installed on a desktop computer. However, according to the users, this application can still be developed and improved its features. One example is by upgrading from a desktop-based application to a website-based application or even Android-based so that it is more flexible.

## Maintenance

The trial phase has been conducted for two weeks. The next stage is to operate widely in Medan State University. To reach this stage, approval from the university leadership is required. If approved, the university needs to prepare all the implementation and maintenance needs. The Creator Team is still making preparations towards this final stage, including by first registering the Intellectual Property Rights (IPR) of this Application.

## CONCLUSION

Desktop applications are applications that run locally in a desktop environment and can only be accessed by the desktop user running it. In contrast to web applications that are broader in scope, meaning that they can be accessed from anywhere (within the network) via a web browser. However, unlike desktop applications, web applications are not well integrated with desktop applications or desktop environments accessed through a web browser. The Student Learning Style and Personality Quiz Application is a desktop-based application that functions to find out learning styles and personalities. This application is made with the waterfall method with the help of Microsoft Visual Basic software and can be implemented on computers with Windows operating systems. In the next version, this application can be upgraded to be web-based so that it can be accessed using any computer or device. Then, users can register themselves to the system.

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