Text editor application to automate the format of writing a final project based on java programs

Masjudin* and D E T Lufianawati
Electrical Engineering, Faculty of Engineering, University of Sultan Ageng Tirtayasa, Jl. Jenderal Sudirman Km 03 Cilegon, Banten, Indonesia 42435

*E-mail: masjudin@untirta.ac.id

Abstract. Final project is a prerequisite that must be taken by students to get a Bachelor or Master Degree. Final project contains the results of research made in a specific format as reporting the research process to the institution. Each institution has a standard format for the final project or thesis writing rules which are usually written in the instructions for writing a thesis. Institutions usually provide writing templates to follow, but because the templates only make a number of important parts and are still manual, the format of student writing often changes and is not uniform with other students or some are deviant and not in accordance with the standard written format. This study designed a text editor application to help students or researchers so that it was not too problematic in the writing format. This application is based on a graphical user interface, making it easier to operate. The rules in the program are made to automate the writing entered to produce written output in accordance with the format specified by the institution. With this system, student or researcher will be easier in writing the script according to the standard of writing and get a final project or thesis report in a uniform format.

1. Introduction
Final project is a research report or case study that is made through supervision of a final project lecturer, which runs in the laboratory, government, and private institutions [1]. Writing the final project itself has been determined by the rules of writing set by each university by inserting the characteristics of the college. The provisions of writing are outlined in the form of a final project writing guidebook. It is done to get a standard and uniform writing format.

Some universities have published Latex for auxiliary programs to write the final project. However, Latex uses more of the Character User Interface (CUI) or Command Line Interface (CLI) where we have to type lines that contain characters to use with the application. Latex has a GUI (Graphical User Interface) based program such as TeXworks default by MiKteX [2], but it is not too familiar so that basic knowledge of programming is needed to be able to use Latex.

In this paper, described the framework as a final project writing auxiliary program with easier in setting up the writing format automatically and GUI based so that it is very easy to operate for all users without having to know programming. This is inversely proportional to Latex Program.

2. Framework, Graphical User Interface (GUI), and Java Programming
2.1 Framework
The application of framework consists of a framework that is used by software developers to implement the standard structure of an application [3]. The framework can also be interpreted as a collection of scripts that can help developers / programmers handle various problems in programming so that the
work of developers is more focused and faster in building applications. Framework is a programming component that is ready to be reused at any time so that users do not have to make the same script for the same task. In sketchily, framework is a collection of functions (libraries) so that a programmer does not need to make functions from the beginning and is usually called a collection of libraries. Programmers only call a collection of libraries or functions that already exist within the framework, which is certain how to use those functions that have been determined according to their respective rules. By using the framework, an application will be structured and neatly arranged [2].

2.2 User Interface
To simplify the execution of programs that have been created, it can be done by creating an interface or (user interface). The user interface can receive or provide information through an interaction process. Through this process programs and users can interact for the benefit of the user. There are several interactions that generally occur, including:

- **Direct manipulation.**
  Direct manipulation is direct interaction with objects on the screen so that activities will be carried out by the computer when the user provides direct instructions on the computer screen. For example, delete a file by entering it into trash, drag and drop, and so on. This interaction has advantages such as short user learning time because it is easy to understand and remember, and use more fun. The disadvantage is that this interface requires many facilities on a computer system and visual depiction of an operation or object.

- **Menu selection**
  The menu selection type gives several choices to the user in the form of a menu list which contains commands to implement the program in accordance with the menu listed, for example the copy, paste, generate, and others menu. The advantage is that the user does not need to remember the name of the command because it is already listed on the menu, minimizing typing (especially in the form of program syntax) so as to minimize the error rate. The disadvantages of this type are slower than the command language because the memory space used to run is greater.

- **Form fill-in**
  Form fill-in is a way for a system to request data or information from a user by giving instructions to the user to fill in areas and complete data on the categories and parts that have been provided by the form. this model has advantages such as simply in inputting data and easy to learn by users to reduce misunderstandings.

- **Command language**
  Command language is the interaction between humans and computers by writing commands that have been specified in the program. Users must remember the name and syntax for the correct and appropriate commands to be able to run the program. This model has advantages such as fast and efficient because it does not take up a lot of memory resources. But the disadvantage is recurring typing for syntax if there is a new project, remembering the name and sequence of syntax, making it more difficult to learn and requires basic programming knowledge. Text editor applications such as Latex are still done by typing syntax to create tables or organize images, but the advantages of Latex being powerful and flexible.

2.3 Java Programming
Java programming was developed by the team in sun microsystems. Java has become popular and its development is very fast. Acceptance among users can be traced from the design characteristics. Java has many features and is a common programming language that can be used to develop high-level applications. Java programming is versatile programming. Java can be used to develop applications on desktops and servers, even for mobile or mobile devices. Java is a powerful programming language and is proven reliable on many applications. There are three editions of Java, namely java SE (Java Standard Edition) which are widely used to develop applications on the client or applet side, Java EE (Java
Enterprise Edition) that can be used to develop applications on the server side, and Java ME (Java Micro Edition) which can be used to develop applications for mobile devices such as mobile phones. Java programming language has many advantages [3], including:

- Easy to develop further
- It's multiplatform or universal, so that it's easy to run on different operating systems
- Easy for compiling the script
- High performance with a fast compilation process

3. Research Method

The design of the application uses various rules arranged in the form of program syntax. This program listing is arranged to condition input data so that the output is in accordance with the conditions of the standard final project writing format. The syntax of this program will be run based on commands from the user which are manifested in buttons with labels that are easy to understand or represent the desired part of the output, so the user does not need to know or deal with the program syntax, but simply click the buttons. In general, the design process of this application can be described as follows:

![Flowchart of the research.](image)

4. Discussion and Result

The scheme of this research is the development of a framework in the form of a text editor application for a final project with a graphical user interface using a Java program. Some of the things that are the focus of development in this application and are expected to be a differentiator with the text editor application with other specific objectives are as follows:

- Security protect
Final project reports are very important for students. Final project file is highly recommended for backing up. There have been several cases where the final project file was accidentally opened and its contents changed without permission from the creator. In this application program when first run it will ask for authentication in the form of a username and password, so that only those who have the right can enter and make changes to the script.

- Simple and precise user interface
  Simple and easy to understand User Interface will provide a pleasant experience for application users. The improper interface will cause several disadvantages, such as the gap in interaction between software and humans, loss of information presented, stressing of users, and even user rejection. In this application program, which is currently limited for final project writing, using the interface in the form of a GUI, namely in the form of menu, and form fields. Giving menu labels is simplified and is a summary of the target format. For example, the main menu is labeled "Title Page" which indicates the output target to be given the writing format according to the standard final project is the title page. When the user presses the title page menu, the next window will appear which contains a more detailed menu in the form of inputting the required information on the title page.

- Efficient use of data resources
  Repeated writing for the same thing manually has the potential to cause errors or at least differences and inefficient in terms of time. The development of this program aims to overcome this. For example, on the title page, final project authenticity statement sheet, validation sheet, and so on, there are repeated data such as final project titles, student names, student parent numbers, majors, and faculties. In this application data that will appear repeatedly will be stored in the database and the program script has been set to appear in the part that requires the data, so that the user does not need to re-enter the data. This can avoid mistakes or differences for data that should be the same and make work more effective and efficient. Likewise, for typical characterization data such as the writing "Universitas Sultan Ageng Tirtayasa" will appear on every page automatically according to the form of the specified writing format.

- Automatic writing format
  This framework application has the main purpose for setting up the writing format automatically. From the several cases encountered, some students still made mistakes in applying the standard format of final project writing that was specified in the final project manual book. This is certainly
not effective and quite disturbing, because students should be able to focus more on the contents of the final project report. The development of this application adopts the writing format that has been determined by the Sultan Ageng Tirtayasa University (and is still being developed to be used universally).

Figure 3. Menu for Data Input 1.

Figure 4. Result for Data Input 1.

Figure 5. Menu for Data Input 2.

Figure 6. Result for data input.
Users only need to click on the main menu according to the part that they want to set the format, then the user will be displayed in the sub menu in the form of the form. Users only need to type or copy-paste into the form if the report has been typed before the application of another word processor. The program will adjust the writing format automatically after the user presses the Generate File button. So the user only needs to focus on the contents of the report while the writing format will be arranged by the program/application. Likewise for table of contents, list of images, table lists, and bibliography will be generated automatically by the application in accordance with the predetermined format.

5. Conclusion
This text editor application can help the student to make easy in making final project report because it has some advantages. This text editor can protect final project report with username and password. It has a simple and precise user interface, efficient use of data resources so that user do not need to input same data for several times and Automatic writing format. User only type in user interface, system will automatically create final project report as the format. This text editor is still prototype, so that still need many improvements in menu, create table, formula, customization, and so on.

6. References
[1] Editor Team 2017 *Pedoman Penulisan Skripsi Fakultas Teknik Universitas Sultan Ageng Tirtayasa* (Cilegon: Universitas Sultan Ageng Tirtayasa)
[2] Bayu Kanigororo and Jurike V. Moniaga 2010 *Latex Sebagai Alternatif Aplikasi Untuk Penulisan Jurnal Comtech* 1
[3] Adam Mukharil Bachtari and Firman Nizammudin Fakhirul 2018 *Pemrograman Berorientasi Objek Menggunakan Java* (Bandung: Informatika)
[4] Dr. Eng. RH. Sianipar 2018 *Dasar Analisis dan Perancangan Pemrograman Berorientasi Objek Menggunakan Java* (Yogyakarta: Andi)
[5] Yudho Yudhanto and Prasetyo H A 2019 *Mudah Menguasai Framework Laravel* (Jakarta: PT Elex Media Komputindo)