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# i-JaMCSIIX 2023

# EXTENDED ABSTRACT BOOK

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# i-JaMCSIIX 2023

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**EXTENDED ABSTRACT**


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# The Use of Computer Diagnostic Apps to Assist Computer Troubleshooting

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*Abstract*— **Electric and electronic equipment have become significant tools in modern human life. One of these is the use of computers, which have proven to be capable of simplifying and solving problems faced by people in their daily activities. Electric and electronic equipment may encounter issues when in use or about to be used. The problems encountered may be easy and can be resolved quickly and independently by the user. Self-help troubleshooting methods have been widely applied to assist individuals in attempting to solve problems based on provided instructions, whether in print or digital format. This innovation digitizes the flowchart for identifying and repairing issues that arise during computer usage. This innovation has resulted in a user-friendly application called the Computer Diagnostic App to help computer users attempt to resolve problems they encounter while using their computers. The design of this application are based on a comprehensive flowchart for identifying computer issues, which can be widely accessed on the web and has become a global reference based on Google search engine findings. A research study are conducted among Information Technology Certificate students at Temerloh Community College to obtain feedback and assess the effectiveness of using this application to resolve issues that arise during computer usage.**

***Keywords— computer, computer diagnostic, self-troubleshooting***

## I. INTRODUCTION

A computer is an electronic device that receives input or data from the user (Jibril, 2021) and processes it based on programmed instructions in the form of a combination of software to generate useful and understandable output or information for the user. Additionally, a computer also stores the received input and the produced output for future use. In general, a computer performs four basic functions, namely, receiving data, processing data, generating output, and storing input and output data. Various fields apply the advantages of computer usage, such as engineering, architecture, agriculture, transportation, communication, healthcare, manufacturing, publishing, e-commerce, banking, inventory control, law, military, education, as well as development and research (Jibril, 2021). A computer consists of two main components, hardware and software. Hardware is physical, while software is intangible. Both complement each other to make the computer a highly useful machine for humans.

Computer hardware, such as the mouse, random access memory, central processing unit, hard drive, graphics card, and power supply, may fail at any time due to certain factors. Failures in these hardware components may stem from various factors such as aging, power surges, overheating, unfavorable environmental conditions, unauthorized operations, and so on. For the purpose of problem identification and repair, computer technicians require a combination of knowledge, intuition, and prior experience to identify and resolve computer problems (Rosenthal, 2018). Prior experience usually enables problems to be resolved more quickly. However, knowledge of diagnostic procedures for computer problems should be present in every computer technician to assist in a more systematic and efficient problem-solving process (Adesola, 213).

Computers are the most widely used machines by humans to facilitate daily tasks, whether for personal or professional purposes (Beauvisage, 2009). This situation creates a high demand for computer hardware maintenance and repair tasks. The empowerment of TVET education in Malaysia can produce skilled labor to be offer to the domestic industry (Razali Hassan, 2019).

In the context of Teaching and Learning at Temerloh Community College, the SSK10203 Computer System Architecture and Assembly module provides training to students on identifying and solving problems that arise when using a computer. In the initial content of the module, students also learn theories related to computer architecture. A significant amount of time is allocate in this module for students to carry out the practical installation of a computer until it is complete and functional. During the phase of identifying and repairing computer problems, students are provide with relevant flowcharts to assist them in carrying out this task. Students to increase their knowledge and experience for use in their future work will conduct the process of observing symptoms of damage, diagnosing and repairing, followed by testing. We have developed a flowchart-based mobile application to provide an alternative option to printed flowcharts on paper or displayed on a computer screen. This application can make the process of identifying and repairing computer problems more organized and systematic.

## II. PROBLEM STATEMENT

Regular maintenance of computers, whether at home or in the office, is crucial to ensure they consistently perform at an optimal level and facilitate daily tasks (Turgunbaevna, 2023). Problems that arise can originate from either hardware or software issues and require the correct approach for resolution. Issues faced may recur in the future, making it highly important to document the problems and their solutions (Adesola, 213).

Currently, the concept of Do It Yourself (DIY) has become a common practice in society. People are increasingly comfortable trying to solve problems they encounter on their own as long as they can do it themselves. Many troubleshooting tutorials are available on the internet, with YouTube being a common platform. For computer-related issues, the lack of suitable tools can make it challenging for users to accurately analyze the problems that arise, followed by an effective solution for their computers.

## III. OBJECTIVE

This study was conducted to obtain feedback from students regarding the Computer Diagnostics Application (CDA Apps) developed to assist in solving issues that arise during computer usage. Additionally, this study aims to collect feedback from students on the Teaching and Learning (PdP) sessions conducted for the SSK1023 Computer System Architecture and Assembly module. The specific objectives of the study are as follows:

i. To obtain student feedback on the CDA Apps application.

ii. To obtain student feedback on the PdP sessions for SSK10203.

## IV. SIGNIFICANT

This study aims to gather feedback from students regarding their confidence in solving computer-related problems with the assistance of the CDA Apps application. Additionally, this research can provide insights to educators about students' understanding after completing this module, and this knowledge can be used when identifying and addressing issues that arise during computer usage.

## V. METHOD

This action research is conducted by selecting respondents to answer a questionnaire that has been developed. First, an explanation will be provided to all respondents on how to install the CDA Apps application on their phones. They will also receive instructions on how to use the application once it's installed on their phones. A one-week period is given to all respondents to try using this application. Respondents are also requested to try all the functions available in the application.

After the allotted time period, an online questionnaire using Google Forms will be distributed to the respondents. A session for answering the questionnaire will be arranged to ensure that all selected respondents participate. Additionally, any issues related to the questionnaire can be immediately addressed to the researcher during this session. The data obtained from the questionnaire will be analyzed using SPSS 26 software.

## VI. RESPONDENT

The respondents for this study consist of a total of 31 Information Technology Certificate students from Temerloh Community College who took the SSK10203 Computer System Architecture and Design module during their first semester of study at the college. They comprise 19 students from the SI 2022/2023 intake and 12 students from the SII 2022/2023 intake.

## VII. INSTRUMENT

The questionnaire for this study was adapted from the 1Note STM Application Questionnaire of the Temerloh Community College Information Technology Certificate Program (Mohamad Moha, Othman, & Ismail, 2021). There are 4 sections in this questionnaire, which are information related to the purpose of the research and general information of the researcher in Section 1, Demographics of the respondents in Section 2, Feedback on SSK10203 Learning Outcomes in Section 3 and Feedback on CDA Apps in Section 4. For Sections 3 and 4, a Likert scale is used to record respondent feedback. Score 1 represents a response Strongly Disagree, response 2 represents Disagree, response 3 represents Moderately Agree, response 4 represents Agree, while response 5 represents Strongly Agree. This set of questionnaires was developed online using Google Form to facilitate access and record data. For this study, only the findings for Section 4, namely Question 9 to Question 13 will be discussed.

## VIII. ANALYSIS

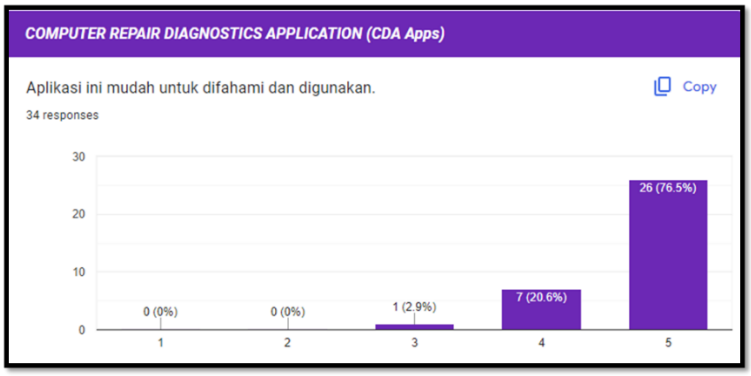


*Figure i*

76.5% of respondents strongly agree that this application is easy to understand and use (M=4.82, SD=0.39). For this purpose, all respondents were given a brief explanation of how to load this application into their smartphones on October 6, 2023. Then they were given a few days to try using this application. The questionnaire was distributed until October 13, 2023. The findings also show that 82.4% (M=4.82, SD=0.39) of respondents strongly agree that this application is used by students taking the SSK10203 Computer System Architecture and Assembly module. The percentage of respondents can be seen as in Figure ii below. An application that is easy to understand and use is important to attract interest in its use.

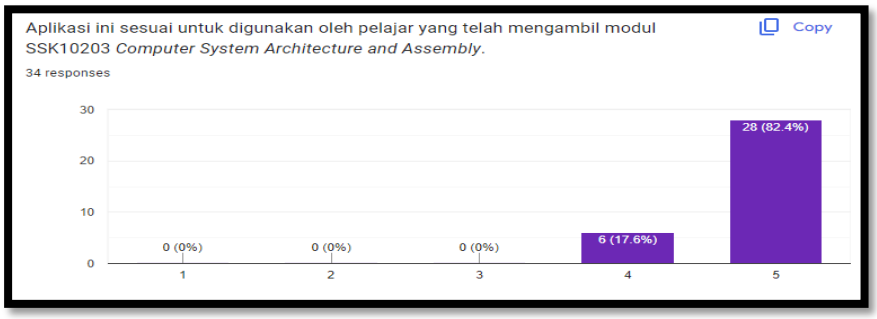


*Figure ii*

Next, the findings in Figure 3 show that 73.5% (M=4.79, SD=0.42) strongly agree that this application helps them identify problems that occur while using the computer. Previously, they only used flowcharts to solve problems that arose while using computers in addition to being guided by previous experiences. 73.5% (M=4.75, SD=0.44) of respondents also strongly agree that their confidence increases when identifying problems that arise with the help of this application as shown in Figure 4. There are 2.9% of respondents that strongly disagree that this application does not help them identify problems that arise.

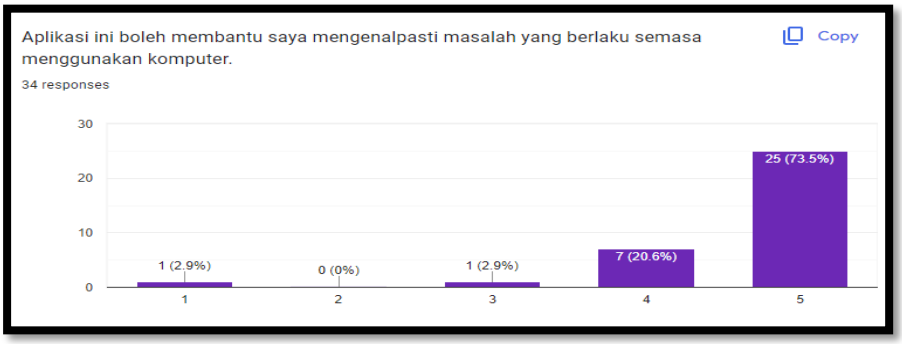


*Figure iii*

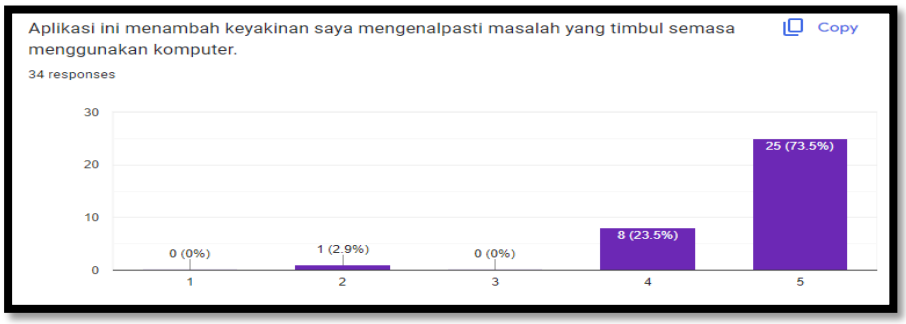


*Figure iv*

The questionnaire also wants to get the views of respondents as students who have taken the SSK 10203 Computer System Architecture and Assembly module as to whether this application is suitable for use by all levels of computer users. 79.4% (M=4.79, SD=0.42) of respondents Strongly Agree this application is suitable and can help users implement simple solutions that can be tried on their own first before getting expert help if the problem cannot be solved. The results are as shown in Figure 5 below. There is 1 respondent who strongly disagrees the application is used by all levels of computer users. 6 respondents representing 17.6% of the respondents also gave feedback Agree that this application is suitable for spreading to all levels of computer users.

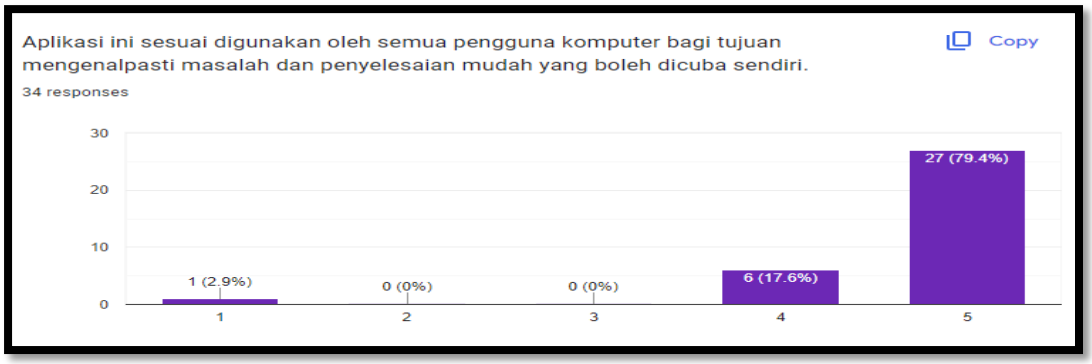


*Figure v*

## IX. CONCLUSIONS

Problems will surely arise when people use computers for various purposes. The problem may be easy and sometimes requires expert help to solve it. Accessible, easy-to-understand and user-friendly applications can help computer users at all levels of experience try to solve problems that arise. A complete and organized guide can increase their confidence in solving computer-related problems.


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