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APPLICATION TO DIAGNOSE INTERNET ADDICTION ON STUDENTS/ HIGHER EDUCATION BASED ON WEB-BASED USING FORWARD CHAINING METHOD

By
Humdiana[1)], Edwin[2)]
[1,2]Program Studi Teknik Informatika, Institut Bisnis dan Informatika Kwik Kian Gie (IBI KKG)
Jl. Yos Sudarso Kav.87 Sunter Jakarta Utara 14350
Email: [1]Humdiana.roelly@kwikkiangie.ac.id, [2]57140379@student.kwikkiangie.ac.id

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ABSTRACT

The rapid development of technology makes everything easier. As time passes, technology is growing and human needs can be easily fulfilled. The problem in technological development that is going faster every day is that the development can not be stopped, but the standard of human need for technology will be higher. Researchers write the meaning of application and internet addiction which is the topic of this scientific work. The researcher is using the Forward Chaining method in the process of making this application and using the Waterfall model as a system development method. Researchers also include the understanding of the internet, and the object that researcher researched, which is college student. Researcher gather information by questionnaires and literature study, collecting information such as student data from various colleges and reviewing for books, journals and websites for reference to this research. This website is created to determine the internet addiction of college students in general so college students and parents can find out the impact and find solutions for those who have Internet addiction. Through the research process and the website development that has been done, the researcher concludes that the website that the researchers has created can be useful for students to determine the level of internet addiction owned by the student.

Corresponding Author:
Humdiana
Program Studi Teknik Informatika, Institut Bisnis dan Informatika Kwik Kian Gie (IBI KKG)
Email: Humdiana.roelly@kwikkiangie.ac.id

1. INTRODUCTION

The rapid development of technology makes everything easier. As time goes by technology is growing and human needs can be fulfilled easily. The problem with technological developments that are getting faster every day is that these developments cannot be stopped, but the standard of human need for technology will actually be higher.

The increasingly developing technology allows users to easily fulfill their daily lives, where everything that is usually done by humans can now be done by a computerized system. Things like examination of sick people can be easily diagnosed using only a *smartphone* application or a web-based *application.*

Nowadays almost everyone can access the *internet.Internet* is a computer network formed by the United States Department of Defense in 1969, through an ARPA project called the ARPANET (*Advanced Research Project Agency Network)*, in which they demonstrated how with *hardware* and *software* UNIX-based computerinfinity over the telephone line. *internet* has various speeds depending on the services provided by the *internet* . Currently, according to inet.detik.com in Indonesia, *internet* has an average speed of 13.38 Mbps for *fixed broadband internet* and 9.73 Mbps for *global mobile internet*. This number will of course increase as technology develops. *internet* can be easily accessed through *gadgets* such as *smartphones*, PCs (*Personal Computers*), or laptops that support the *internet* to be accessed. With the *internet* all information can be easily obtained both from information systems and the world of entertainment.

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With the *internet* we can easily access whatever we want via *a browser*. *A browser* is an application that is used to access *websites.* Not only for searching for information via *a browser*, *internet* can also be used as a way to connect with *online games*, *stream* videos, listen to music, download and upload *files*, and also be able to communicate remotely.

However, the advantages provided by the *internet* make everything very easy and fast. All things needed such as searching for cooking recipes, searching for electronic books that we know as *e-books*, tutorials on making *websites*, long-distance social communication, and knowing a situation in the form of sound and images such as YouTube can be searched and searched using the *internet*.access *internet* given to *internet* users causes *internet* not be able to stand every minute not to access *internet* . As a result they do not realize that they are constantly accessing the *internet* and forget about the time.addiction to *internet* can have an impact on the health of users and their social life.

in *Indonesia* According to APJII (Association of Indonesian Internet Service Providers) in 2016 of 132.7 million internet users , 18.4% were *internet* aged 10-24 years, while 7.8% of 132 ,7 million *internet* are students. However, in 2017 this number continued to rise so that it reached 49.52% of 143.26 million *internet* for those aged 19-34 years, and 79.23% of *internet* rates based on S1/Diploma education levels and 88.24 % for the education level of S2/S3.

There needs to be a solution for the increasing growth rate of *internet* every year. Until now there has not been found an application to diagnose *internet* that can be used in general to reduce the intensity of *internet*. Therefore, for the first time there is a need for a diagnostic application

to help not only parents but students to be able to diagnose *internet* that is owned by

2. LITERATURE REVIEW

Applications

According to Vermaat, ME et al (2016:27), applications “consist of programs designed to make users more productive and/or support them with personal work”.

According to Vermaat, ME et al (2016: 28), the application is divided into 3 parts, namely:

1. Desktop application

An application that is stored on a computer.

2. *Web*

Is an application that is stored on a *web server* that can be accessed through a *browser*.

3. *Mobile*

An application that is downloaded from a *mobile device*/ mobile device application store or from other sources that is downloaded to a *smartphone* or other *mobile* .

Internet Addiction

According to Kimberly S.Young (2011: 100), "*Internet* is a broad term that covers a wide range of behavior and impulse control problems and is categorized by five specific subtypes (cybersexual addiction, *cyberrelationship*) addiction, net compulsions, information overload, and addiction. computer addiction).”

In the quote from Kimberly S. Young (2011: 22) there is an understanding of IAT or *Internet Addiction Test.* "This IAT is the first validated instrument to be able to assess *internet*(Widyanto & McMurren, 2004)" The

IAT is believed to be able to measure characteristics in online use. In this IAT addiction behavior is divided into 3 parts, namely mild, moderate, and severe.

Forward Chaining Method Forward

Chaining according to Efraim Turban, Jay E. Arosnon and Ting Peng Liang (2005: 558), is to "find the *IF* of the rules first. After all conditions *IF is* met, the rules are chosen to derive conclusions. If the conclusions reached from the first condition of the search is not the final conclusion, then the conclusion This will be used as a new fact to be matched with *IF* conditions to find more useful conclusions. This process continues until final conclusion is reached.

Understanding *Forward Chaining* according to Efraim Turban, Jay E. Aronson and Ting Peng Liang (2005: 621), is a data-based approach that starts from existing information and then draws conclusions. The system will first analyze a

problem by looking for facts or *IF* so that it finds one or more conclusions.

The definition *Forward Chaining* that can be taken from the quote from Efraim Turban, Jay E. Aronson and Ting Peng Liang (2005:558), is a way to find a desired solution by fulfilling the *IF* first. If all the *IF* have been met, a conclusion will be found only if the *IF* have been met. However, if the conclusion obtained is not the desired conclusion, then the conclusion will be used as a new fact to find the next appropriate conclusion until the final conclusion is reached.

Internet

According to Vermaat, ME et al (2016: 56) is a "network collection in" worldwide that connects millions of

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businesses, government agencies, institutions education, and individuals. Every network on the *internet* provides resources that can be increase the abundance of goods, services, and information that can be accessed through Internet".

Related Objects

1. *Internet Protocol*(IP)

Internet Protocol(IP) according to Vermaat, ME et al (2016: 62) is "a sequence of numbers that uniquely identifies the location of each computer or device connected to the *Internet*. *The Internet* uses two IP addressing schemes: IPv4 and IPv6. Due to the growth of the *Internet*, native IPv4 addresses began to dwindle in availability. The IPv6 scheme increases the number of available IP addresses exponentially. Because long IP addresses can be difficult to remember, *Internet* supports domain names."

2. Domain Name

Domain Name according to Vermaat, ME et al (2016: 63) is "a text-based name that matches the IP address of *the server* that hosts a *website*. *Domain Name* address *web* that is typed in the address bar of a *browser* to access a *website*. The domain name suffix, called a *top-level domain* (TLD), identifies the type of organization the domain is associated with. As shown in Figure 2.1, which is an example of IPv4 and IPv6 addresses along with domain names taken from *website* google

Figure 1. IPv4 and IPv6 addresses along with domain names from the google website

Source: Vermaat, ME et al (2016:63)

3. Domain Name System(DNS)

Understanding the Domain Name System according to Vermaat, ME et al (2016: 64), is a method used to store *domain* and IP addresses obtained from the *server* so that access requests can be connected to the right computer.

4. Internet Service Provider(ISP)

The definition *Internet Service Provider* that can be taken according to Vermaat, ME et al (2016: 61), is an *Internet Service Provider* (ISP), which is a business service providing *internet* that is sold individually or within an organization individually. free or paid by offering various packages such as *internet* based on the desired quality so that users can continue to be connected to the *internet*.

Website

Vermaat , ME et al (2016:65), is " a collection of *web* that are interrelated and associated with things, such as documents and photos, which are stored on *a web server*".

Ongoing System

In newborn disease diagnosis system. It is still very rare to find in the market an application that is given free of charge to the wider community and of course it can be used. Although this application is for diagnosing different diseases, this application uses the same method or way of working as the application that the researcher will design.

In the way of working to be able to consult with this application, the user/customer is not required to register first if you want to use the application.

Customers only need to press the consultation button directly and start the consultation process. Like applications using the Forward Chaining method in general, customers are required to answer/choose the questions given according to the symptoms of the illness so that diseases that match these symptoms can be found. After

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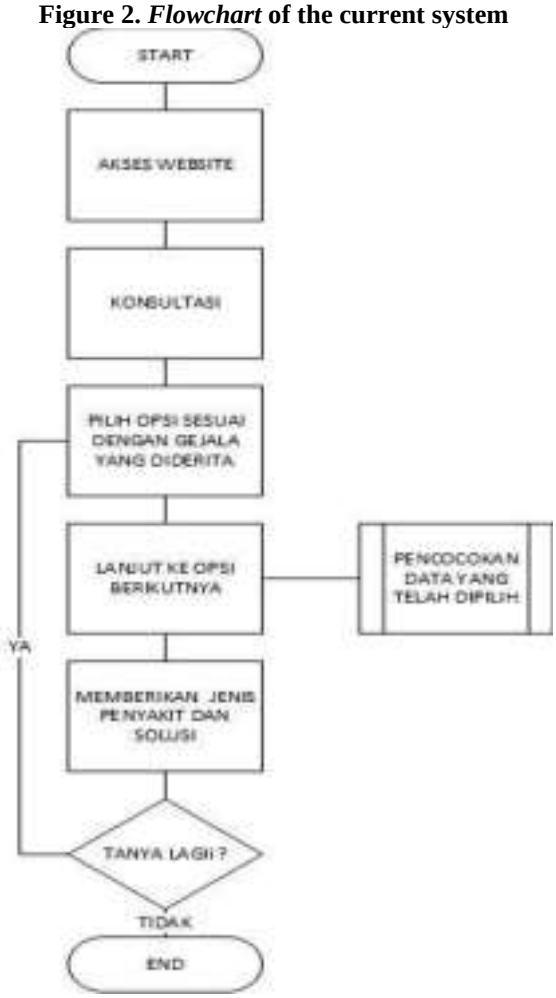
answering/choosing the questions given, the system will match the answers to these questions to the appropriate criteria. Then the system will provide answers in the form of disease results and solutions that are asked to the customer after answering all the questions the system provides. If the customer wants to inquire/diagnose the disease again, the system will give the option to ask again and start the diagnostic process from the question-answer process, otherwise the process will end. The process can be seen as in the *Flowchart* in Figure 3.1

Figure 2. *Flowchart* of the current system



3. RESEARCH METHODOLOGY

In this study, the researchers used the *System Development Life Cycle*(SDLC*) Waterfall Model approach*, because by using this model the quality of the resulting system would be good, due to the process that is carried out in stages, and also this method is appropriate if the needs are needed. is well known. As in Figure 3.2 regarding the stages of the SDLC *Waterfall Model*

Figure 3. *Waterfall*

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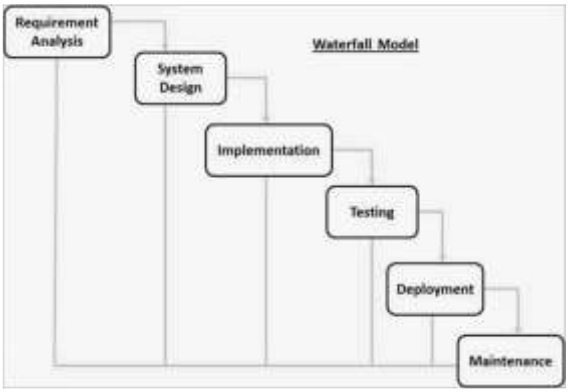

Source: Tutorials Point (2017: 4)

In this study, the initial stage is data collection and analysis, the researcher distributes questionnaires and collects data from various bibliography and *websites* which then proceed to the system design, implementation, *testing*, *deployment*, and *maintenance stages.*

Problem Solving Methods

In his research, researchers used the *forward chaining* to be able to formulate existing symptoms so that solutions could be found as in Table 1

Table 1. *Rulebase forward chaining* addiction *internet*

Rule	IF	THEN
1	G001, G002, G003, G004, G005	A
2	G006, G007, G008, G009, G010	B
3	G011, G012, G013, G014, G015	C

From the results of the bibliography search, the researcher found the rulebase symptoms needed in the journal by Adlin Hasibuan, whose research purpose was also to diagnose internet addiction with the Certainty Factor method. In Table.1 column.

IF column in *Rulebase Forward Chaining* Addiction *Internet* has the following definition:

G001: Objects to not being able to play on *internet* anymore.
G002: When there is a problem, preferring to rest at home, rather than playing on the *internet*.
G003: Can stop when doing *internet*.playtime *internet* .
G005: Happy even though I can't play *internet* anymore.
G006: Likes to mumble to myself like procrastinating if you want to stop playing the *internet*.
G007: Often do not do assignments because they are too busy playing the *internet*. G008: Likes to be angry, if not given permission to play the *internet*.
G009: The desire to play on *internet is* too strong so that the desire to play always arises even though it is determined not to play again

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G010: Often comes home late because of playing *online.* G011: Feeling dizzy when not playing on *internet*.
G012: Feeling anxious when you can't do *internet* and that feeling disappears when you can *internet* again.
G013: Prefers to spend a lot of time playing *internet* than going out with other people.
G014: *Internet* keeps increasing.
G015: Always think about *internet* even when you are not on *internet.*

Meanwhile, in the THEN column in Table 1 the researchers found impacts and solutions according to the level of *internet*, in which there are different impacts and solutions according to the level *internet* suffered such as *mild*, *moderate*, and *severe* . Each letter in Table 1 has the following definition:

A :
Level of addiction : Light user
Impact :
1. Inability to regulate emotions
2. Frequent feelings of sadness, loneliness, anger, and shame
3. Fear of leaving
4. High family conflict

5 Have low self-esteem so that it interferes with social life 6. Ignoring the responsibilities of a student

Solutions :
1. Start by completely banning technology for a certain amount of time
2. Create a regular daily schedule
3. Reduce the amount of time allocated each week
4. on a full technology fast
5. Find a new hobby
6. Take non-technology scheduled classes
7. Make technology inaccessible to yourself

B :
Addiction level : Moderate User
Impact :
1. Inability to regulate emotions
2. Frequent feelings of sadness, loneliness, anger, and shame
3. Fear of leaving
4. High family conflict
5. Having low self-confidence so that it interferes with social life
6. Indifference to one's responsibilities Student

Solutions :
1. Start by completely banning technology for a certain amount of time
2. Create a regular daily schedule
3. Reduce the amount of time allotted each week
4. Go on a full technology fast
5. Find a new hobby
6. Take classes on an unrelated schedule technology
7. Making technology inaccessible to oneself

C :
Level of addiction : Heavy User
Impact :
1. Becoming an antisocial person
2. Increase the risk of juvenile delinquency
3. Can plunge children into criminal acts
4. Increase high blood pressure
5. Cause headaches and body aches

Solutions :
1. It is recommended to seek professional help immediately
2. Intervene in controlling *internet* related to daily user behavior

From the *forward chaining* addiction *for internet* (Table 3.1), rules can be made, including:

1. If you experience symptoms such as objections if you can't play the *internet* anymore and if there is a problem, more both choose to rest at home instead of playing the *internet* and can stop when playing *internet*

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and are happy if the *internet* reduced and happy even though they cannot play *internet*addiction *internet* accompanied by an impact in the form of an inability to regulate emotions and often feel s feelings sad, lonely, angry, ashamed and afraid to go out and high family conflicts and have low self-confidence so that it interferes with social life and is indifferent to responsibilities as a student accompanied by solutions in the form of starting by completely banning technology for a certain amount of time and creating regular daily schedule and reduce the amount of time allotted each week and go on a full technology fast and find a new hobby and take classes on a schedule that doesn't involve using technology and making technology inaccessible to oneself.

2. If you experience symptoms such as being angry if you are not given permission to play on *internet* and the desire to play on the *internet is* too strong so that the desire to play always appears even though you are determined not to play again and often come home late because you enjoy playing *internet*, then it is concluded that you haveaddiction *internet* of mild users is accompanied by an impact in the form of an inability to regulate emotions and often feel feelings of sadness, loneliness, anger, shame and fear of leaving and high family conflicts and have low self-confidence so that it interferes with social life and is indifferent to responsibilities as a student who accompanied by a solution in the form of starting by completely banning technology for a certain amount of time and creating a regular schedule every day and reducing the amount of time allotted each week and doing a full technology fast and finding new hobbies and taking classes on a schedule that does not involve using technology as well as make technology inaccessible to oneself.
3. If you experience symptoms such as feeling dizzy when you don't play on *internet* and feeling anxious when you can't do *internet* and that feeling disappears if you can go *internet* and prefer to spend a lot of time playing the *internet* games *internet* even thoughyou are not active on *internet*, it is concluded that you have a severe level of addiction accompanied by the impact of being someone who is antisocial and increases the risk of juvenile delinquency and can plunge children into criminal acts and increase high blood pressure and cause headaches and body aches accompanied by solutions in the form ofrecommended to immediately seek help from professionals and intervene in controlling *internet* regarding daily user behavior.

4. ANALYSIS AND DESIGN

Implementation of the System

following is an explanation of the application for diagnosing *internet* for college students which includes a usage guide, as well as the results of the test.

User Guide

Addiction diagnosis application *internet* can be used anywhere via *internet*, at the initial stage all *users* must access *website* addiction diagnosis application *internet* -based *web* . Which will then be directed to the main page where the *user* will be briefly introduced to *internet*

a. Pages *User*

Figure 4. Main Page

Figure 5. Main Page Introduction

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Figure 6. User List Page

Figure 6. is the starting page when a user accesses a web-based internet addiction diagnosis application

Figure 7. Login Page

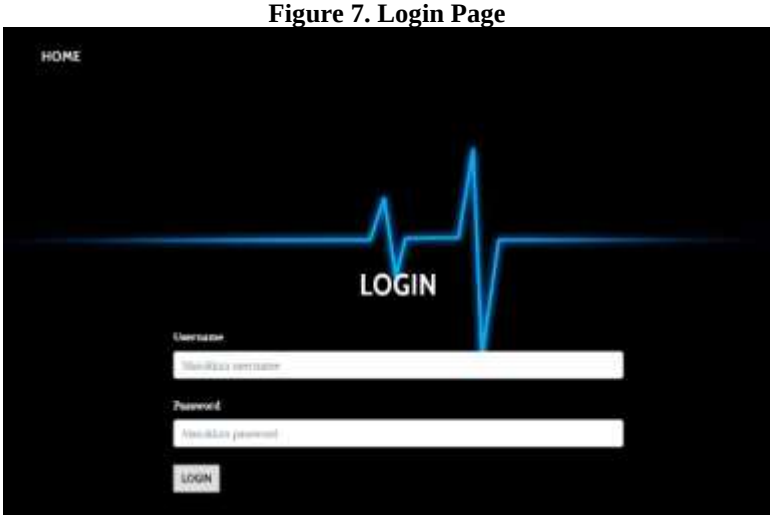

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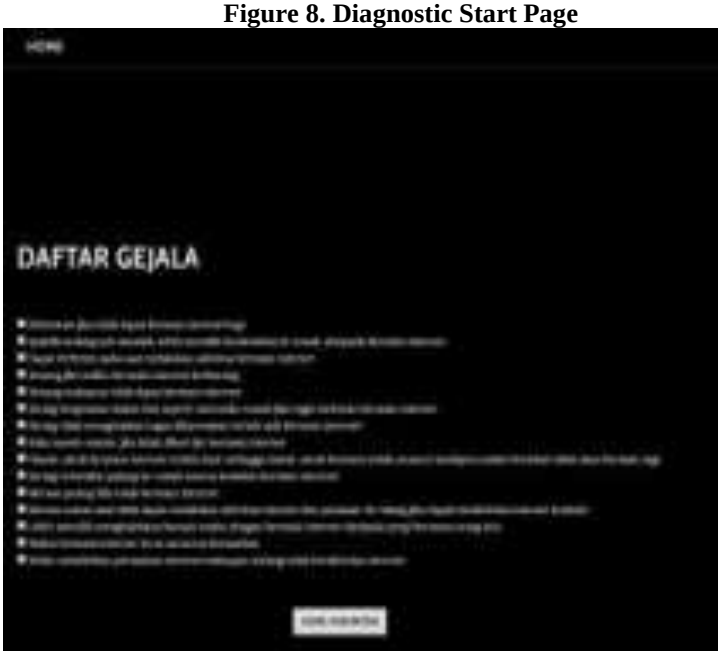
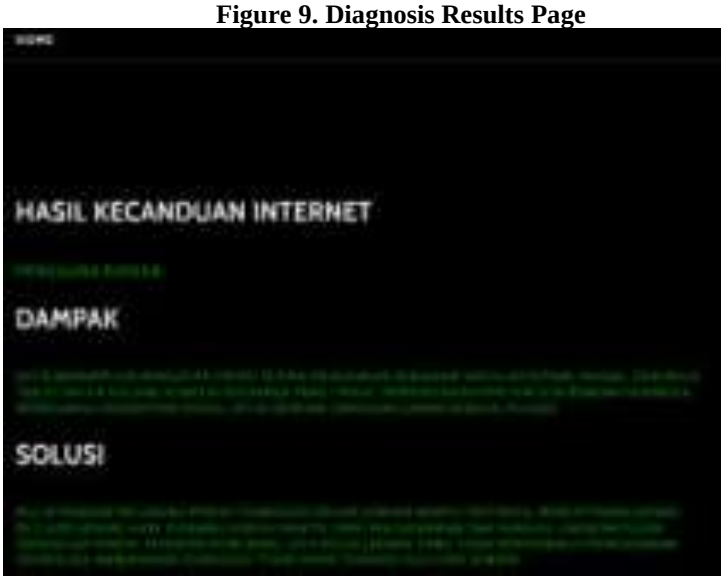
Figure 8. Diagnostic Start Page



When the *user* has successfully logged in, *user* will be shown *menu* diagnostic start *user* presses the diagnostic start button, a list of *internet* addiction *internet* and must fill in according to the symptoms suffered by the *user*.

Figure 9. Diagnosis Results Page



On this page the *user* given results in the form of *internet*, impacts, and solutions according to the symptoms the *user* has filled.

b. Admin Page

This is the start page when the admin is successfully logged in

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. The following is a brief explanation of the available menus:

(1)**account** : *menu* is a *menu* that can manipulate *users* and admins registered in the system such as add admin, delete admin, list *users*, and delete *users*

(2)**symptoms** : *menu* is a *menu* that can manipulate existing symptoms such as adding symptoms, *updating* symptoms, and removing symptoms

(3)**addiction level** : *menu* is a *menu* that can manipulate existing addiction levels such as adding addiction levels, addiction level update, and remove addiction level.

(4)**causes** : *menu* is a *menu* that can regulate the cause and effect of a result of existing symptoms such as adding causes and removing causes.

(5)**logout** : *menu* button *logout* to remove admin from the system.

System Evaluation Results

Researchers evaluated the system by distributing questionnaires to 10 questionnaire respondents at the data collection stage who were willing to take their time to fill out questions after they used *website* to diagnose *internet* the researchers had designed.

In the evaluation results obtained, respondents responded that the program is useful for those who have not or are aware of the dangers of *internet* that exist in them so that the impact that occurs does not visit more serious things in an era where everything can be easily done with the *internet.*. Respondents also considered *the website* that had been created to be less visually appealing, such as the lack of images, dark colors and black and white monotony.

5. CONCLUSION

Based on the results of the research conducted, the researchers can draw the following conclusions:

1. With the application to diagnose *internet* based *on the website*. Students are helped to realize the risks/impacts of their *internet* .
2. To be able to provide an application to be able to determine the level *internet* of student *forward chaining* based on questions, and literature studies obtained from various *websites* and similar journals. With this website-based application

6. SUGGESTIONS

There are several things that are still lacking in this research, for that the researcher recommends suggestions for further system developers as follows:

1. The display of dark colors is replaced with lighter ones.
2. Adding insight and lack of information about *internet addiction.*
3. Changing the appearance *user interface* to be more attractive.
4. Adding options and solutions accompanied by pictures to further clarify the *user* to find out what the *user* facing and what the *user* do.
5. Provide a more effective method in order to reduce addiction to the *internet.*
6. Adding expert information that can be met directly for discussion.

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