DEVELOPMENT EXTENSION BROWSER ON KIDS INTERNET USAGE MONITORING APPLICATION "DODO KIDS BROWSER"

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ABSTRACT

Supervision of Internet use by children parents need to be done. Because in the Internet there are contents negative information such as crime, pornography, rape and drugs. It became an issue that causes especially parents become worried about their children when it is using the Internet to perform tasks or just browsing only. Because not every time parents can monitor their child's internet usage activity. This is due to the parents who have other commitments such as work. In addition, there is no special media to bridge the gap between parents and children are able to control and supervise the activities of internet use by children.

Based on this we need a system that can bridge the gap between parents and children with the aim of helping parents to control and supervise the activities of children's internet usage by using a computer or laptop. Dodo Kids Browser browser extension software is a concept plug-in or extension that is built to be a solution based on the problems that have been described previously. Software Dodo Kids Browser browser extension using the API (Application Programming Interface) is used to bridge the data exchange of data between client and server.

Based on the results of tests that have been done that functional testing and beta testing can be concluded that the software extension browser Dodo Kids Browser has been easier for parents to control and monitor the activities of Internet usage by children who carried out using a computer or laptop and prevent children from information that negative on the internet.

Keywords: Extension Browser, Browser Dodo Kids, Parents child.

1. INTRODUCTION

In this section will explain the background of the problem, goals and objectives, and the basic theory.

1.1 Background of Problem

The number of Internet users in Indonesia each year continues to increase. This led to the development of dissemination of the information obtained will be more diverse. The fact can be seen in the survey that was conducted by APJII (Indonesian Internet Service Provider Association) in 2012 found that the percentage of Internet usage by the people especially those in urban areas in Indonesia reached 24%. It means that as many as 63 million people in Indonesia are actively using the Internet is the greatest dominance of children and adolescents in the age range 12-35 years with a percentage of 60% [1]. Kaspersky Lab added that there are three top positions in the activities of internet usage that chat activity by 67.29%, accessing adult content amounted to 59.56%, and the gambling activity by 26.66% in the same year [2]. Seeing this course the parents will be very worried about the activity is often done by children. Especially when children are doing activities that require an Internet connection either through a smartphone or computer.

Based on this, the researchers built a software that can be used parents to monitor the internet activities of children with the name Dodo Kids Browser. The first time Dodo Kids Browser software is built, there is only one type of platform are implemented ie mobile windows phone. It is intended to help parents control and supervise the child's Internet activities by using a smartphone. However, there is a problem of how if children play on the internet using a laptop or computer. Because parents can not always be present to accompany the child when the child plays with the internet using a laptop or computer, so parents would feel worried if children accessing content either freely case of pornography, violence, alcohol, and drugs. Therefore, if the child is free to access information that is not good on the internet, it is not likely the child will try to do these things.

Based malasah that has been described, obtained the solution is to build a browser extension which is embedded into the internet browser can be used to filter information that will be accessed if there is content to be negative or not. If bersiftat negative then

the search will be immediately terminated. Furthermore, parents will receive a notification that a child is accessing content that is negative, and the parents can give the action provided by the software dodo kids browser on the mobile side windows phone.

1.1 Purpose and Objectives

The intent of this study is to develop a browser extension Dodo Kids Browser which is embedded into the Google Chrome browser with the aim of helping parents to be able to control and supervise the activities of Internet usage by children who carried out using a computer or laptop.

1.2 Browser Extension

Browser Extension is an add-on applications that are used to add functionality or can dikatan extend the functionality that is owned by a web browser. Several major web browsers are already using the technology is a browser extension Google Chrome, Mozilla Firefox, and Internet Explorer. Another term used to refer extension is a browser add-ons and plug-ins. To build a browser extension software is the data used multiple programming languages including HTML, JavaScript, and CSS [3].

1.3 JSON

JSON (JavaScript Object Notation) is a lightweight data interchange format, easily read and written by humans, and easily translated and made (generated) by the computer. JSON itself has a data structure that consists of an array json and json object. Below is an explanation of the two sections:

a. JSON Array

JSON array is a set of values that terurutkan. Array begins with opening square brackets ([) and ends with a closed square brackets (]). Each value / value separated by a comma (,).

b. JSON Object

JSON object is a collection of string and value pair. The object starts with the opening curly brace ({) and ends with a closing curly brackets (}). Each pair of strings and value followed by a colon (:) and the end of each pair are separated by a comma (,). [4].

1.4 Local Storage

Local Stogare or local storage is a temporary data storage area in the form of string available in HTML 5. Before application of HTML 5 appears, the data stored in the cookies includes any data requests to the server. Local Storage itself is already supported by many web browsers such as Google Chrome, Internet Explorer, Mozilla Firefox, Safari, and Opera [5].

1.5 Testing Black Box

Black-box testing focuses on functional requirements of software. This testing system enables analysts to obtain a collection of input conditions that will be working throughout the program functional purposes [6]. The purpose of black box testing are as follows:

1. To determine the function is wrong or missing
2. To determine the error on the interface
3. To determine the errors in the data structure or database access
4. To determine the error performance
5. To determine the initial and final destination

2. CONTENTS OF RESEARCH

2.1 Analysis and system design

Here is an explanation of the analysis and design of systems built.

2.1.1 Problem Analysis

Safe use of the internet is something that is desperately needed. Especially when internet users are children. At this time, the children are using smartphones for browsing on the internet. This, if done continuously without the supervision of parents feared it would be wrong to dig up the information sought. Therefore, to solve these problems Dodo Kids Browser app mobile version of windows phone comes as a solution. However, parents should still faced with a problem. The problem is what if the child playing with the internet using a laptop or computer without any supervision from parents.

2.1.2 Analysis of Data Inquiry

Data delivery (Post) that exist in the software consists of three requirements. Such data is the user login, logout users, and content filter search data.

1. Login

At the user login process, there are two values that are sent by the software is that the email data and passwords. The data is sent to the database in order to gain access to the right software. The response given in the form of database data in JSON. Examples of the process of data send (post) user login can be seen in Table **1.**

Tabel 1 *Value* User Login

No	Send Component	Value
1	Email	mama.vira@outlook.com
2	Password	12345
3	URL	http://dodo-cl.azurewebsites.net/apis/getlogin.php

The response given by the database when the user login process successfully can be seen in

Table 2 Response login data in the form of JSON

```
{
        "result": "sukses",
        "id": "4",
        "email": "mama.vira@outlook.com",
        "status_code": 201
```

}

1. User Logout

On user logout process, there are two values that are sent by the software is a data prangkat email and password. The data is sent to the database in order for the user to get out of the software. The response given in the form of database data in JSON. Examples of the process of data send (post) logout the user can be seen in Table 3.

Table 3 Value Logout Logout

No	Komponen Kirim	Nilai	Keterangan
1	Email	mama.vira@outlook.com	Data email diambil dari localStorage *web browser*
2	Password	12345	-
3	URL	http://dodo-cl.azurewebsites.net/apis/getlogin.php	-

The response given by the database when the logout process is the same as the login process. The response results are shown in Table 4.

Table 4 Response logout of data in the form of JSON


```
{
        "result": "sukses",
        "id": "4",
        "email": "mama.vira@outlook.com",
        "status_code": 201
}
```


1. Content Filter Data Search

In this process the system will perform filtering on informai / keyword search for information made through the web browser. Each keyword that is cutting into the shape perkata, will then be made to match with the data dictionary containing the words negative. If in those keywords containing the words are negative, then the system will transmit the values into the database with the status of 'bad'. Values are transmitted consists of two that user id and content. Examples of the process of data send (post) for the data that has been through a filtering stage can be seen in Table 5.

Table 5 Data Send Content Keyword Search...

No	Send Component	Value	Description
1	Id User	4	Data id_user diambil dari localStorage *web browser*.
2	Content	https://www.google.co.id/search?q=sexy+girl&oq=sexy+girl&aqs=chrome..69i57.3848j0j1&sourceid=chrome&es_sm=93&ie=UTF-8	Data konten ini berasal dari alamat URL yang akan di proses oleh sistem, sehingga yang diambil hanya kata kunci yang akan diproses pada tahap selanjutnya.
3	URL	http://localhost/dodo_project/apis/postreport.php	-

The data that are sent to the server will be directly stored into the database. After that, the software will get a response from the database in the form of data in JSON if the search is successful the content is stored into the database. Response JSON data can be seen in Table 6.

Tabel 2 Respon data filter dalam bentuk JSON


```
{
      "result": "sukses",
       "msg": "Insert Data Sukses",
       "status_code": 201,
       "status_search": "Bad",
       "id_post": 14772,
       "id_notif": 1881
}
```

2.1.1 Data Analysis

Analysis of the data used in this research is to use an ORM (Object Relational Mapping). ORM mapping to database tables owned by an entity class in object-oriented programming language.

To be able to do that, it takes the form of data in the form of JSON connector to connect ORM with database on the server. The structure of the JSON data format is divided into three, namely data objects, the data arrays, and null data.

1. Data Object

Structure JSON object data is data received from the server is a single data or in the form of an object can be seen in Table 7.

Table 7 Data Objects

Struktur Data Objek

{
 “key” : “value”,
 “key” : “value”,
 “key” : “value”
 }

1. Data Array

JSON array data structure is a data received from the server is a single data or in the form of an object can be seen in Table 8.

Table 8 Data Array

Struktur Data Array

{
 “result” : “value”,
 “item” : [
 {
 “key” : “value”,
 “key” : “value”,
 “key” : “value”
 },
 {
 “key” : “value”,
 “key” : “value”,
 “key” : “value”
 }
 ]
 }

1. Data Null

JSON array data structure is a data received from the server is a single data or in the form of an object can be seen in Table 9.

Struktur Data Null

{
 “result” : “value”,
 “message” : “value”
 “status_code” : “value”
 }

2.1.1 Functional Requirements Analysis

Here is the use case diagram of the device lunK built can be seen in Figure 1.

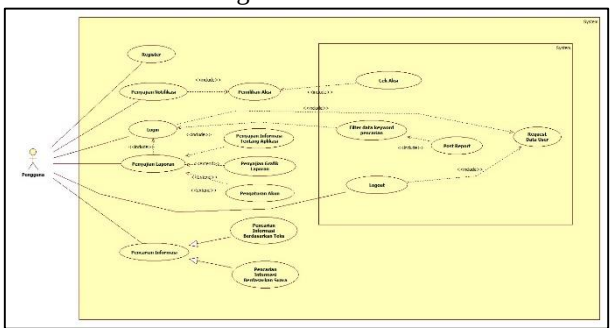


Figure 1 Use case

2.2 Implementation and Testing System

Implementation environment is a description of the software and hardware specifications where this system will be implemented. Here is the implementation of a development environment software:

Environment 2.2.1 Implementation

Implementation environment is the implementation and testing of software systems developed.

1. Hardware Environment

Here are the hardware specifications in the development of this software:

Table 10 Implementation Environment Hardware

No	Item	Spesifikasi
1	Processor	Pentium(R) Dual-Core CPU T4400 @ 2.20Ghz 2.20 Ghz
2	Harddisk	320GB
3	Memory	3GB
4	VGA	256 MB
5	Monitor	14 inch
6	Mouse	Optical Logitech
7	Keyboard	QWERTY Creative
8	USB port	2 buah
9	Koneksi Internet	Ada

1. Hardware Environment

Here are the hardware specifications in the development of this software:

Table 10 Implementation Environment Hardware

1. Environment Software

The software used in the development of this software are as follows:

1. Operating System Windows 8.1 Pro 64 bit.
2. Node JS Programming Language.

3. Integrated Development Environment (IDE) using Sublime Text 3.
4. The exchange of data is done by using JSON.

2.2.2 Interface Implementation

Here is an implementation of the interface of the software being developed.



Figure 2 Popup



Figure 3 Login



Figure 4 Logout



Figure 5 Advice Action



Figure 6 Angry Action

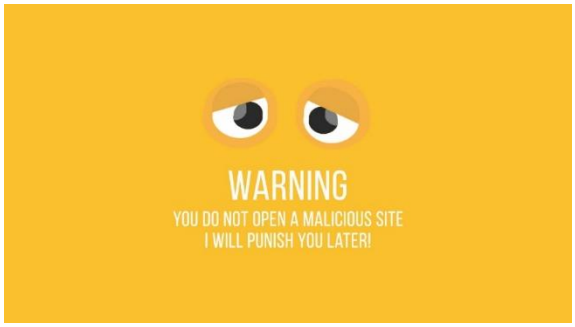


Figure 7 Warning Action

2.2.2 Testing

Tests conducted on this software uses black-box method. Black-box testing focuses on the requirements owned fungsionall.

1. Testing Plan

Functional testing plan that will be done is by using black-box.

2. Scenario Testing

Software functional test scenarios can be seen in Table 11.

Table 11 Scenario Testing Software Browser Extension

Proses name	Testing point	The type of testing	The type of testing detail

Login	Isi data *login*	*Black Box*	*Equivalence Partitioning*
	Validasi *field login*	*Black Box*	*Equivalence Partitioning*
Logout	Isi data *logout*	*Black Box*	*Equivalence Partitioning*
	Validasi *field logout*	*Black Box*	*Equivalence Partitioning*

1. Evaluation Tests

Based on the results of testing functionality and beta testing has been done it can be concluded that:

1. In the software functionality testing Dodo Kids Browser browser extension, applications built with the expectation has been running both in terms of the validity and the process of handling errors from human error or system.

In the beta testing of the software development Dodo Kids Browser browser extension has reached the initial goal of the development of this software. The goal has been achieved based on the results of beta testing has found that helping parents to be able to control and supervise the activities of Internet usage by children who carried out using a computer or laptop

3. CONCLUSION

Based on the results of software testing Dodo Kids Browser browser extension can be obtained keseimpulan as follows:

1. Software Dodo Kids Browser browser extension has been built to facilitate parents to supervise and control the activities of children's internet usage is done by using a computer or laptop.
2. Software Dodo Kids Browser browser extension has been built to facilitate the parents when the parents are out of the house to continue to supervise the activities of children's use of the Internet because it has been integrated with the application Dodo Kids Browser mobile version.

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