GANAKA: WEB BROWSER

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Abstract – A web browser is application software for accessing the World Wide Web. When a user requests a web page from a particular website, the web browser retrieves the necessary content from a web server and then displays the page on the user's device.
here we will use GANAKA as interface which is a web browser and it will help have multiple options like file ,edit , bookmark , history , tools , help which will help the user to make thing convenient and handy with the browser

Key Words: Internet, www, HTTP, URL , FTP , hyperlink , Web browser, ISP(internet service provider) ,

1. INTRODUCTION

A Web browser acts as an interface between the user and Web server Software application that resides on a computer and is used to locate and display Web pages. Web user access information from web servers, through a client program called browser. A web browser is a software application for retrieving, presenting, and traversing information resources on the World Wide Web

2. COMPONENTS OF A WEB BROWSER.

User Interface :
This includes the address bar, back/forward button , bookmarking menu etc

Rendering Engine :
Rendering, that is display of the requested contents on the browser screen.
By default the rendering engine can display HTML and XML documents and images

3. DEFINITION AND TERMS:

First thing first we need to understand the basic terminologies which will help us in the rest of paper cause we will encounter them again and again.

• I**nternet** – set of millions of computers worldwide connected into a network with the purpose of exchanging data among users

• **WWW - World Wide Web** – one of the services on the Internet which we use to browse web pages (set of HTML documents connected with hyperlinks)

• **HTTP – Hypertext Transfer Protocol** – protocol (set of rules) that allows transmission of information published on the Web

• **URL – Uniform Resource Locator** - Web address of a particular object (Web pages, images, or Word or PDF document) published on the Internet

• **FTP – File Transfer Protocol** – protocol that allows data transfer between computers over the Internet

• **Hyperlink or link** - part of the text or graphics on a web page; when we activate a hyperlink (click on it), it takes us to: o another part within the same web page o another website

•**Web address elements** –
for example http://www.google.hr

http: - protocol (rules of transmission)
www – a type of service available on the Internet
Google – a domain name (computer)
.**hr** – top–level domain (ccTLD - Country code top-level domain)
Domain: - electronic identification on the Internet
commercial (.com, .net, .biz)
international (.hr, .si, .it, .de…)
non-commercial (.edu, .mil, .gov)

4. Web browser

Software (program) which allows us to browse web pages o the most widely used: Google Chrome, Mozilla Firefox, Opera, Internet Explorer

Web search engine

Contains content categorization of many Web pages
after one enters the desired term, search engine will search the Web and display results (web pages, images,

documents) that are the most relevant for the entered term
www.google.com , www.pogodak.hr , www.yahoo.com, www.bing.com

Cookie - text file stored on our computer by web page to facilitate communication between your computer and the website's server

Cache - a folder on the hard disk which stores all objects visited on the Web o provides: - faster re-loading of pages - reading web pages in offline mode (while not connected to the Internet)

Internet Service Provider (ISP) – a company that provides Internet access for its users (TCom, Carnet...)

Really Simple Syndication (RSS) – facilitates the possibility of information (news, blog entries, etc.) transfer published on a web page in a standardized manner (usually the title, a sentence or two of the article, a link to a page that contains the whole article). Subscribing to site's RSS feed allows users to receive updates from that website without going to the site itself

Podcast - Digital files containing audio or video recording

5. USING GANAKA: THE WEB BROWSER

it is opened in the window with the following elements:

Sizing buttons – minimize, maximize, close the window
Title bar – web page title and the name of the program
Menus:
File
Edit
View
Bookmark
History
Tools
Help
Address bar
Command bar
some commands are hidden, clicking an arrow next to it opens extra options
grayed out commands are currently unavailable
three-dot commands have a sequence of further commands
Scrollbar
Status bar - shows the loading percentage of web page
Home Page = first page loaded by the Internet browser when you click on opening the application

6. GANAJA :Basic Overview

Web browser is one of the most basic applications we can find in a computer and lots of computers are used by lots of employees in an organization.

Apart from the official work the employees do, they also spend time on internet surfing quite a number of things which includes social networking sites too. According to surveys done, it has been brought to notice that most of the employees spend their time surfing internet rather than doing the office work for which they are paid.

This problem is faced by each and every organization and a solution put forward is either blocking particular websites or managing the network to filter such content, for which special servers are setup.

But another solution to this problem is to disable installation of any other applications and making a special web browser as the default and only web browser for everyone.

What is so special in the browser? The web browser will let the user surf the internet and but will store web history in a database which can be on a remote database server. The user who wants to access the web browser will have to login to his/her account.

GANAKA is one such Java based web browser.
It has a easy-to-use GUI for user to login to his/her account and access the web browser. At the time of registering account, the user has to fill up a registration form which

creates an account and a profile of the user and stores the details in a MYSQL database. This database can be accessed by the database administrator only. All browser settings, bookmarks and web history is stored in the database and it makes the browser a many-to-one relation, with many users and one browser.

It gives every user a personal touch to the browser and its settings by loading the personal settings, bookmarks and web history for every registered user after successful authentication.

Since the browser is based on Java it is completely platform independent and requires only Java to run on any Java supported platform.

The current version of GANAKA supports only HTML and CSS and not JavaScript. But we plan to add new features including JavaScript in the later versions

7.GANAKA:Requirement specification

To run, modify and debug the project the following requirements should be fulfilled:
Java 7
Eclipse IDE
MySQL
XAMPP (Recommended)
Linux or Windows

For only running the project the following requirements should be fulfilled:
Java 7
MySQL
Linux or Windows

8.FEASIBILITY STUDY

The internet access available in most of the organisations and colleges, with easy accessibility by every employee and student has reduced the productivity and focus level of both in their respective jobs.
The reason for increased time spend on internet carrying out personal work rather than official work is because of easy accessibility of internet using any web browser and easily bypassing the filter mechanism implemented by the administrators.
A number of solutions are available to restrict internet access by the users. Two most popular yet easy to bypass are:
Block particular websites
Filter web content
Since the mechanisms are not full proof. We provide another solution which is to force user to use a special browser to restrict internet access and monitor all activity from a remote monitoring system.
Technology and System feasibility:
For proper functioning of the application (GANAKA) it requires Java 7 (tested) to be installed on to the computer and a database management system (MySQL) to be setup on a remote system. Since Java is platform independent and GANAKA does not use any of the OS specific functions it can also be used on any platform that Java supports without installing anything else except Java. The stability of the application is no issue at present as it requires a limited amount of memory and disk space to run and does not conflict with any other applications.
Operational Feasibility:
The proposed software is "GANAKA" a Java based web browser. What the browser gives is a free access to internet but all the user activity and everything done on the web browser is stored on a remote system which stores all the data in a database (here MySQL).
The users are allowed to create a user account to access the web browser. After which they can login using their username and password combination. The browser can be fully customized by the user and all browser settings are stored in the remote database. In addition to that the user activities on the internet i.e web activity are instantaneously uploaded in the database. So the administrator can easily monitor the activity of each and every user with ease.
Economic Feasibility:
The cost of setting up the database in a system and installing the browser along with disabling the permissions for installing any other application is very low as compared to the benefits the application can provide. By using GANAKA the productivity of the organisation can be increased to quite a high level as it can easily restrict the user to spend more of their time surfing internet instead of doing their official work for which they are paid. The same can be used in colleges to restrict the students in spending more of their time on internet esp. at lab times.
Schedule Feasibility:
The current version of GANAKA does not restrict the internet access of its users and free access to "Spy Browsing". Also lacks support for Javascript. But both will be supported in the coming version of GANAKA. Current version only showcases the concept of many-one relation of the application and describes the implementation areas of the application, with ease of setup and usage.

9. SOFTWARE DESIGN

The web browser GANAKA has been developed using Oracle's Java and uses MySQL as its DBMS to store all data related to the browser and its users.

The major advantage of using this browser is that it utilizes the very popular feature of Java i.e. platform independence.

The different modules of the project have been shown in the figures below.

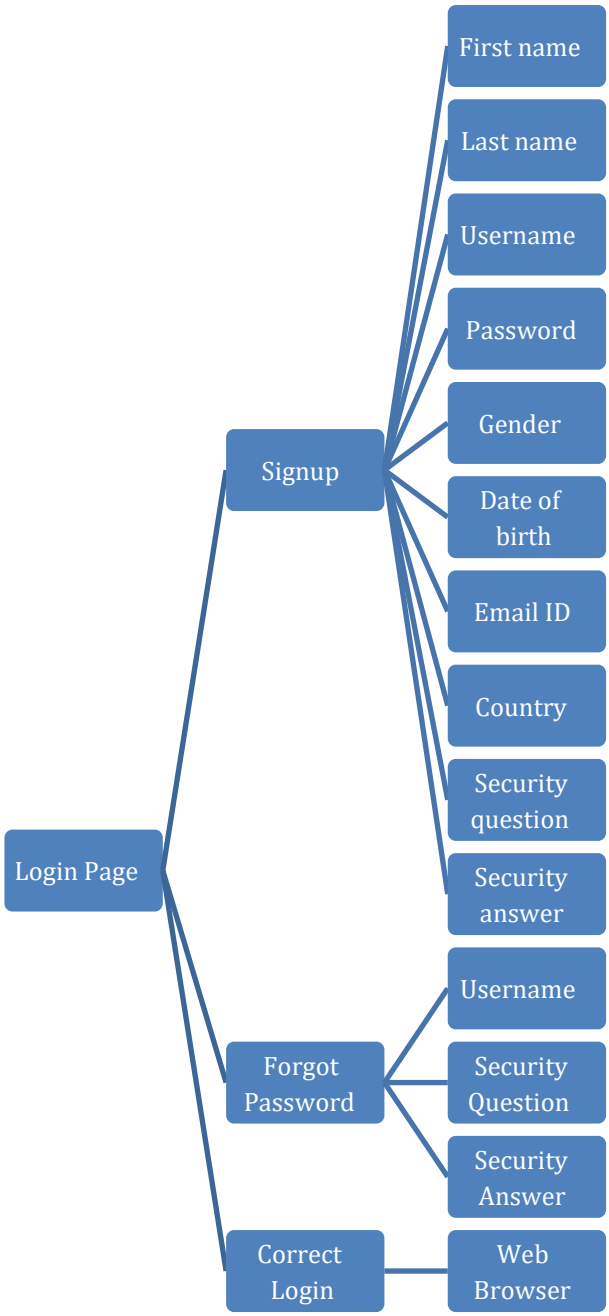

FIGURE 1:LOGIN PAG

The modules are majorly divided into two sections:

1. Pre-authentication
2. Post-authentication

Figure 1 shows the modules in pre-authentication.
Figure 2 shows the modules in post-authentication.
First window to be displayed when the application is run.
User can choose either login or signup or forgot password.
A successful login loads the web browser module.

Sign up

An un-registered user can sign up for an account using this application which creates a user account and registers it in the database.
The required fields in sign up are: first name, last name, username, password, gender, date of birth, email address, country, security question, security answer.

Forgot Password

A registered user can use this feature to recover his/her password.
The required fields for password recovery are: username, security question, security answer.

Web Browser

The web browser loads when the authentication is successfully completed.
The web browser supports HTML and CSS.
The user is presented with all basic features as in any other web browser like tabs, print, back & forward button, address bar, downloader, settings, etc.
In addition to the above mentioned features GANAKA also includes a new feature which enables the user to store all bookmarks, settings, web history and user's profile securely in a database which can be accessed by the database administrator only.
The user can update settings, add bookmarks, edit profile and search for other users easily using a easy-to-use GUI frontend.

Spy Browsing

1. Spy browsing can be used to delete all web history when the browser exists.
2. This mode is available only if the user has been successfully authenticated.

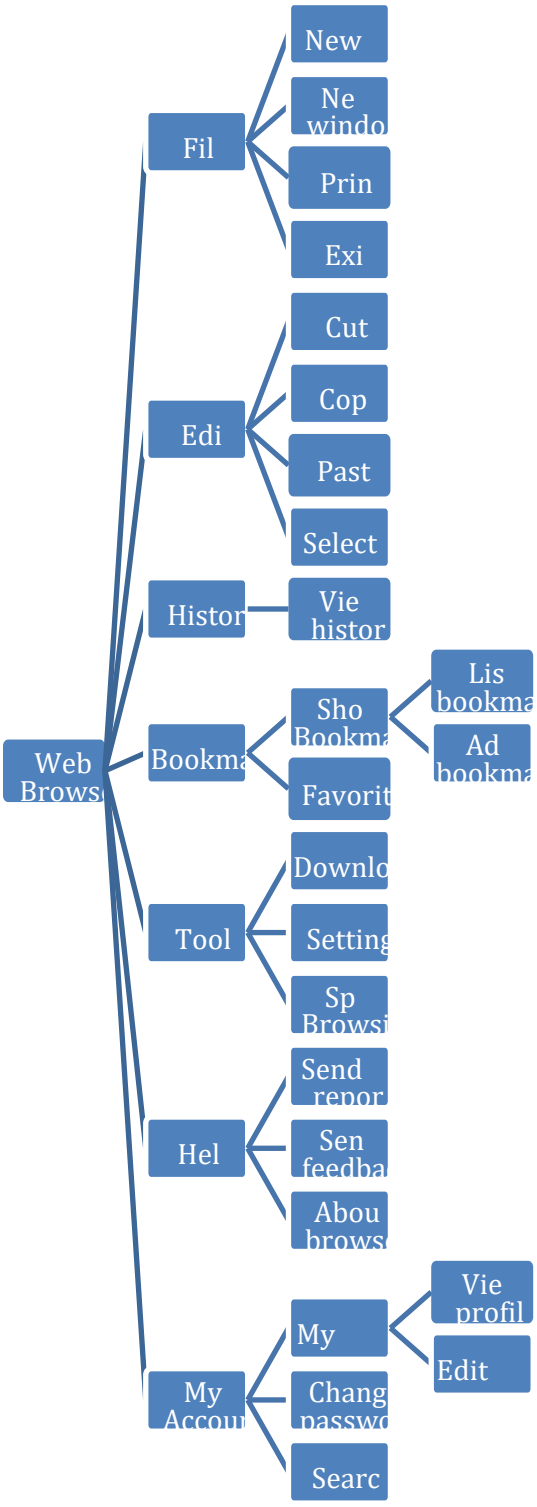

FIGURE 2 WEB BROWSER

10.DATABASE DESIGN :

MySQL has been used as the core database storage. It stores the entire browser and user related data.
Database name:
register

Tables:
bookmarks
history
settings
signup

Table name: bookmarks

Column Name	username	bookmark_title	bookmark_url	favorite
Data type	varchar(50)	varchar(100)	varchar(1000)	boolean

Description:
This table stores the bookmarks a user adds and can also mark them as favourite to add it into the favourite bookmarks menu.
"username" is a unique field and specifies the user to whom the particular bookmarks belongs to.
"bookmark_title" stores the title/name of the bookmark.
"bookmark_url" stores the web address/URL of the bookmark.
"favorite" if selected at the time of bookmark creation will add the bookmark to favourites menu.

Table name: history

Column Name	username	url_visit	date_visit	time_vist
Data type	varhcar(50)	varhcar(1000)	varhcar(30)	varhcar(30)

Description:
This table stores the date, time, URL and username of the user currently logged in in the web browser.
"username" stores the user name of the currently logged in user.
"url_visit" stores the URL of the website viewed (if not spy browsing mode).
"date_visit" stores the date on which the particular website was accessed.
"time_visit" stores the time at which the particular website was accessed.

Column Name	Data Type	Description
First_name	varchar(30)	First name of the user
Last_name	varchar(30)	Last name of the user
Username	varchar(30)	Username of the user
Password	varchar(30)	Password of the user
Gender	varchar(1)	Gender of the user
Date_of_birth	varchar(30)	Date of birth of the user
Security_Question	varchar(100)	Security question written by the user
Security_Answer	varchar(100)	Answer of the security question
Email	varchar(50)	Email address of the user
Country	varchar(30)	Country of the user

Table name: signup

Description:
This table stores registration details of all the registered users.

Column Name	Data Type	Description
Username	varchar(50)	Username of the user
GANAKA_starts	varchar(50)	Open home page/blank page
Home_page	varchar(50)	Choose home page
Download_window	varchar(50)	Show/hide downloads
Download_close	varchar(50)	Close on download
Warning_close_multiple_tabs	varchar(50)	Warning on closing multiple tabs
Always_show_taskbar	varchar(50)	Show tabs
Remember_history	varchar(50)	Remember history or not

Table name: settings

Description:
This table stores the browser settings for every user in different records. The browser loads the browser settings for a particular user by fetching settings for that user from this table only.

11. FUTURE SCOPE :

The web browser "GANAKA" is based on Java and requires MySQL to store the user and browser related data. It is a web browser different from its kind available in cyber space right now with some advantages and disadvantages.
GANAKA is built keeping in mind the excessive usage of web browser by the employees of an organization or company for more of personal use rather than official work.
At present the web browsers available for free let the users completely access the settings of the browser in addition to that everything ranging from web history to personalized settings and bookmarks are accessible to all users using that computer and web browser.
GANAKA uses a different approach and stores web history, settings and bookmarks in a database which is accessible to the database administrator only. In addition to that every user who wants to access the browser has to register for an account using an easy to use GUI helping in the registration process.
Current version of GANAKA v1.0.0 supports only HTML and CSS. Which means it lacks the support for some of the important features like Javascript and proxy.

Key features in current version:

Many-One relation (Many users One browser).
Complete privacy of web history, browser settings and bookmarks for every user.
Platform independent.
All requirements to run it are freely available.
Easy monitoring of user's activity over the web by the administrator.

Features to be added in the next version:

Support for Javascript.
Support for proxy settings.
Built-in text editor.
Remote-access for admin
GANAKA can be used in an organization to monitor the internet usage of its employees and keep a track of their activities. It can also be used at home having quite a number of computer users. Every user can register his/her account and have personalized browser experience and absolute privacy protection.

REFERENCES :

1. The Complete Reference Java 7th Edition by Herbert Schildt
2. Official Java website: http://www.java.com/
3. http://stackoverflow.com/
4. O. Hallaraker and G. Vigna. Detecting malicious JavaScript code in Mozilla. In Proc. IEEE Conf. on Engineering of Complex Computer Systems, 2005.
5. M. Johns. SessionSafe: Implementing XSS immune session handling. In Proc. ESORICS, 2006.
6. Open Web Application Security Project. The ten most critical Web application security vulnerabilities. http://umn.dl.sourceforge.net/sourceforge/ owasp/OWASPTopTen2004.pdf, 2004.
7. Same origin policy. http://en.wikipedia.org/wiki/ Same origin policy, 2007