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Whiteboard

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Abstract: *Meetings and classrooms demand the presence of the person in the room if he wants to participate. A tool widely used in such places is a whiteboard. A whiteboard has limited creativity and interactivity options and hence it needs to be replaced with better tools. In this project we develop a web application to increase collaboration without restricting him to any location, operating system platform or device. Our application allow user to interact and share information. Users only need access to web browsers and internet to make use of the application. We have implemented real-time collaborative drawing whiteboard by using HTML5, DOM, JavaScript, CSS, Canvas.*

Keywords: Classroom, Creativity, Collaboration, Whiteboard

I. INTRODUCTION

Today's classroom has undergone many changes even over the past several years. While the chalkboard is still used frequently in many classrooms, other methods of teaching instruction, specifically other forms of technology, are being utilized more and more

Traditional whiteboards and blackboards are extensively used in offices, colleges and schools. It is used to display information on a board using markers and chalks. A person using a whiteboard is free to draw different types of shapes. Physical whiteboard are inconvenient as it does not allow everyone present in the room to present their ideas simultaneously. With the advancement of technology, people are looking for a more interactive and collaborative solution.

With the advance of e-learning an instructor wants to communicate with as many student as possible. These whiteboard also demand the physical presence of all the person who wants to interact and view the data displayed on the whiteboard. They display a computer screen via a projector which can be manipulated by teachers and students using either their hands as a mouse or specialised pens which are included with the software.

They are generally used throughout schools and workplaces. With the advance of e-learning, an instructor wants to communicate with as many students as possible. Often the student views the recordings of a lecture of the professor, but this has not yet bridged the gap as the classroom effect cannot be gained because instant doubt solving facility is not available. This can be solved if a live session is available where there is a two-way interaction between the instructor and the student. These whiteboards also demand the physical presence of all the persons who wants to interact and view the data displayed on the whiteboard. This hampers effective real-time communication if the members are located in different regions. In today's world, it is not feasible for a person to be present physically for each meeting; a lot of time and money is wasted in travelling

In this paper we design and implement a viable alternative, a virtual whiteboard. Computers can provide the interactivity and dynamic behavior that is lacking in a physical whiteboard. In addition, the advent of relatively inexpensive projection equipment for computers makes it feasible to economically project a computer's display in a classroom.

II. METHODOLOGY

2.1 DOM

The Document Object Model (DOM) is a programming interface for web documents. It represents the page so that programs can change the document structure, style, and content. The DOM represents the document as nodes and objects; that way, programming languages can interact with the page.

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A web page is a document that can be either displayed in the browser window or as the HTML source. In both cases, it is the same document but the Document Object Model (DOM) representation allows it to be manipulated. As an object-oriented representation of the web page, it can be modified with a scripting language such as JavaScript.

2.2 HTML5

HTML5 is a markup language used for structuring and presenting content on the World Wide Web. It is the fifth and final major HTML version that is a World Wide Web Consortium (W3C) recommendation. The current specification is known as the HTML Living Standard.

HTML stands for Hyper Text Markup Language. It is used to design web pages using markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. Markup language is used to define the text document within tag which defines the structure of web pages. HTML 5 is the fifth and current version of HTML.

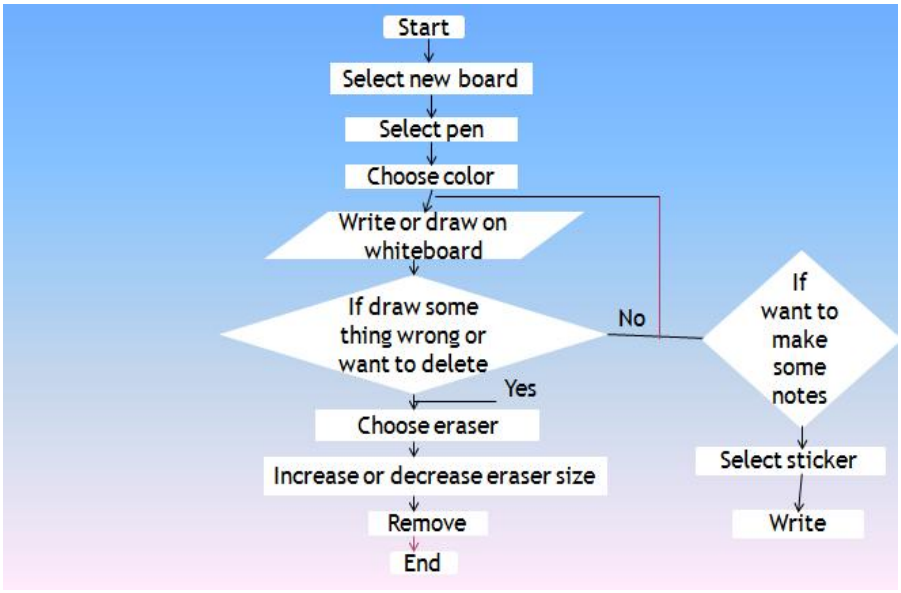
2.3 CANVAS

Our mechanism to render a sketch from a user's canvas to other user's canvas is to capture mouse events. We start capturing events on "mousedown" and create a JSON object containing the details of the event. To create a real time rendering behavior we emit the JSON object to the server via the sockets when the mouse is moved. The server then broadcasts the object to other users. If we save the object in the database and then later broadcast it to the users together, by this we will be wasting time in accessing the database twice (once to store and another time to retrieve the data). So instead of saving the object in the database, we are directly sending it to the users. Only those users will be able to receive the data that are connected in the same room as the sender.

2.4 JAVASCRIPT

It is an object-oriented language where programmers can create and delete their own objects. It can interact with HTML source code, thus enabling sites with dynamic content. It allows us to control the browser. We also have an option to directly embed the JavaScript within the HTML code. Scripts can be easily reused on multiple pages if we place them in separate files using a .js extension. As JavaScript code can run locally in a user's browser, the browser can respond to user actions quickly, making an application more responsive. It can be used to create client-side scripts as well as to write server-side programs.

III. MODELING AND ANALYSIS



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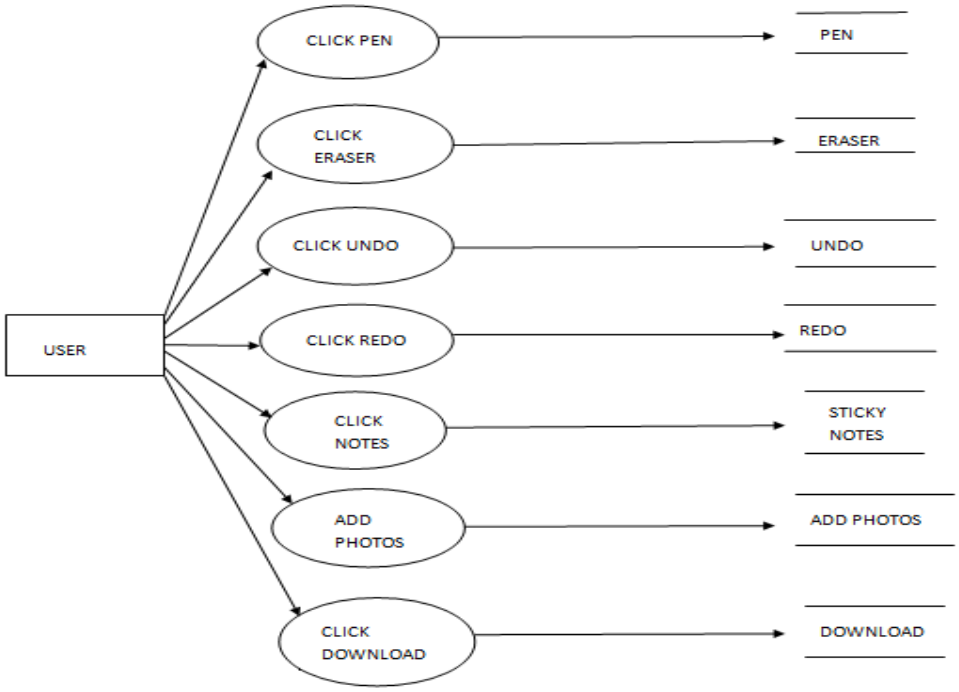
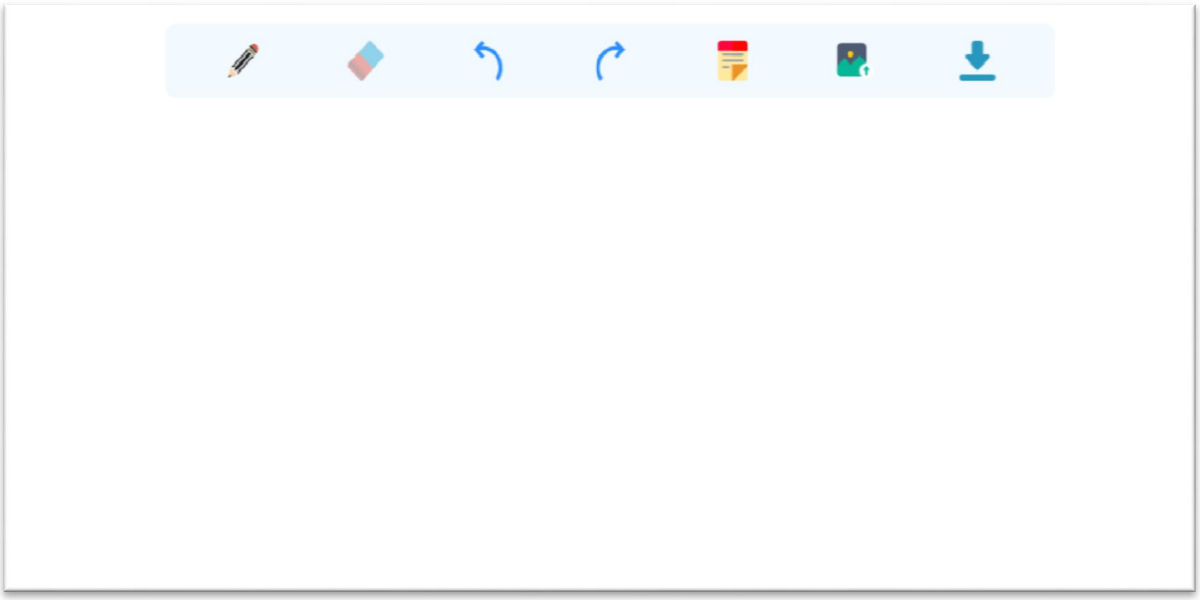
DATA FLOW DIAGRAM OF WHITEBOARD



IV. RESULT



V. ADVANTAGES AND DISADVANTAGES

5.1 Advantages

For Teachers:

- Improves teacher presentations and demonstrations by drawing upon wide variety of materials including multimedia, notes, drawings and the internet

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- Allows teachers to introduce constant ICT learning in an ever increasingly technological world
- Provides the easiest ways for teachers to teach a class from a single computer.

For Students:

- They allow for increased collaborative learning and interactivity which is particularly valuable for 'hands on learners
- There is less demand for note taking allowing for increased concentration and participation of all students
- They provide a visually enhancing and stimulating type of learning
- Evidence suggests that the Interactive Whiteboard "increases enjoyment of lessons for both students and teachers through more varied and dynamic use of resources, with associated gains in motivation" (Levy, 2002).

5.2 Disadvantages

- Motivation can wear off in students once used to the Interactive Whiteboard
- Interactive Whiteboards tend to be PC friendly not MAC friendly
- Problems with too many wires in the classroom
- Students interfering with and being attracted to playing with visible wires
- Clutters the classroom
- Takes a lot of time to pack away when needed

VI. Conclusion

In this project, we design and implement a new method to build collaborative web applications. This application can be successfully used on mobile, tablets and desktops. This gives the users the freedom to select a device of their choice. HTML5 feature like canvas has provided a graphical interface to users, thereby making the website more interactive. No user is prohibited or blocked from interacting with the application while other user is interacting. The outcome derived from testing this application has shown that the response delay is extremely low. As the delay is in few milliseconds, the user experiences an instant display of information and hence high level of synchronization is attained.

Acknowledgement

First of all, we extend our deepest gratitude guide Dr. A. D. Raut for providing immense support and guidance. We are beholden for guiding us at every step within the project. he has most honestly guided us throughout; never leaving us unanswered for any of our doubts. It was his constant persuasion, encouragement, inspiration and able guidance that helped us in completing our Project successfully.

Future Scope

- In future, we plan to analyze the effect on memory consumption. We would also like to allow users view and edit documents and presentations online.
- Increase the level of engagement of learning between teachers and student
- In future we add ppt files presentation
- Online audio video chat

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