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Development of New Gaming Zone Using Web Development

Khushi Banerjee[1], Sumanta Karmakar[2], Sambit S Mondal[3], Avishek Bowri[4], Pragati Kundu[5], Partha Maji[6]

Assistant Professor[123], Student[456]

Department of Electronics and Communication Engineering

Asansol Engineering College

Corresponding Author's Email: - *sumantakarmakar799@gmail.com[2]*

sumanta.karmakar@gmail.com[2]

Abstract

In this era of technology and innovation, human needs are rapidly increasing and new ways to improve the efficiency or to ease the process are constantly being invented. As our inspiration we have taken the most famous and widely played Chrome T-Rex, Run! game or Roll the ball. In the first game, the player controls a character and accumulates points by jumping over obstacles. The controls are simple – press the spacebar or the up arrow to jump up or press the down arrow to duck. The second game the player has to roll the ball into the spaces and avoid touching the surface to keep scoring. We collect data by repeatedly playing the game and feed this data into our algorithms. Then, we experiment between algorithms to determine which one is the highest scoring algorithm. Finally, we analyze our resulting scores to determine the effectiveness of our algorithm and areas of improvement for future iterations.

Keywords: *Web development, Web Assembly, gaming zone, World Wide Web Consortium*

PREFACE

This project has been made by our own effort using Web Development (HTML,CSS and JavaScript).We wanted to make something that is enjoyed and can be played by everyone and learnt doing that from the scratch. In this era of digitalization where we do everything with single click with our fingers we tried to use the technology to put something

together by applying modifications of our own in our project “The Game Zone" . This project was an initial step to gain knowledge on the field of web development. We would like to thank all our teachers for guiding and helping us through the whole process. Through this project we came to know about the importance of teamwork and the role of devotion towards work.

INTRODUCTION

The name of the project is “The Game Zone” and all the other aspects regarding the project are stated below.

Motivation of the Project

While searching for ideas regarding our Mini Project ,we came across the idea of the Google chrome dino game , probably the most played game in today’s world when you don’t have an internet connection . The game inspired us to know more about how it is developed, but taking help of the internet and YouTube we could create something like that on our own. This gave us a further plan to create a webpage where the user can choose between two games and enjoy themselves, so we created another simple and loved game Roll the ball and merged the two on a webpage.

Basic description of the Project

In the very beginning a webpage will appear giving the user option to choose between two games “Jump Jump” and “Roll the Ball” just by clicking any two of the mentioned. If the user clicks on Jump for Life, he/she will be redirected to the game page and can start playing.

In this game, the player controls a character and accumulates points by jumping over obstacles. The controls are simple – press the spacebar or the up arrow to jump up or press the down arrow to duck. Secondly, if the user clicks on Roll the ball , he/she will be redirected to the game page and can start playing. Here the player has to roll the ball into the spaces using the left and right arrow from the keyboard as the game screen gradually keeps moving upwards and avoid the ball touching the surface to keep scoring. Once it touches the surface game over and the player has to start all over again.

LITERATURE REVIEW

General

Computer games are today an important part of most children’s leisure lives and increasingly an important part of our culture as a whole. We often, as adults, watch in amazement as children dedicate hours to acting as football coaches,

designers of empires, controllers of robots, wizards and emperors.

In the past, computer games have been dismissed as a distraction from more ‘worthy’ activities, such as homework or playing outside.

Today, however, researchers, teachers and designers of learning resources are beginning to ask how this powerful new medium might be used to support children’s learning. Rather than shutting the door of the school against computer games, there is now increasing interest in asking whether computer games might be offering a powerful new resource to support learning in the information age. This review is intended as a timely introduction to current thinking about the role of computer games in supporting children’s learning inside and out of school. It highlights the key areas of research in the field, in particular the increasing interest in pleasurable learning, learning through doing and learning through collaboration that games seem to offer. At the same time, the review takes a measured tone in acknowledging some of the obstacles and challenges to using games within our current education system and within our current models of learning. It goes on to propose some ways in which designers, researchers and educational policy makers might draw on the growing body of research in the field to create learning resources and environments that go beyond a sugar-coating of ‘fun’ to the full engagement that computer games seem to offer so many children today.

Web Games

A web game is a video game that is played via the World Wide Web using a web browser such as Google Chrome, Safari, and Firefox. These games span all genres and can be single-player or multiplayer. They are usually free-to-play.

Some browser games are also available in other forms: as a mobile app, a PC game, or on a console. For users, the advantage of the browser version is nothaving to install the game; the browser automatically downloads the necessary content from the game's website. However, the browser version may have fewer features or inferior graphics compared to the others, which are usually native apps.

The front end of a browser game is what runs in the user's browser. It is implemented with the standard web technologies of HTML, CSS, JavaScript, and Web Assembly. In addition, Web GL

enables more sophisticated graphics. On the back end, numerous server technologies can be used.

In the past, many games were created with Adobe Flash, but they can no longer be played in the major browsers, such as Google Chrome, Safari, and Firefox. Some of these games have been preserved in a dedicated app.

Game Development

Game Development is the art of creating games and describes the design, development and release of a game. It may involve concept generation, design, build, test and release. While you create a game, it is important to think about the game mechanics, rewards, player engagement and level design.

A game developer could be a programmer, a sound designer, an artist, a designer or many other roles available in the industry. Game Development can be undertaken by a large Game Development Studio or by a single individual.

It can be as small or large as you like. As long as it lets the player interact with content and is able to manipulate the game's elements, you can call it a 'game'.

To get involved in the Game Development process, you do not need to write code. Artists may create and design assets, while a Developer might focus on programming a health bar. A Tester may get involved to see that the game works as expected.

To resolve problems that game frameworks had, tools like lib GDX and OpenGL were developed. They helped game development to be a lot faster and easier, providing lots of pre-made functions and features.

However, it was still hard to enter the industry or understand a framework for someone coming from a non-programmer background, a common case in the game development scene.

Languages Used

HTML (Hyper Text Markup Language)

The Hyper Text Markup Language or HTML is the standard markup language for documents designed to be displayed in a web browser. It can be assisted by technologies such as Cascading Style Sheets (CSS) and scripting languages such as JavaScript.

Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia

web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML elements are the building blocks of HTML pages. With HTML constructs, images and other objects such as interactive forms may be embedded into the rendered page. HTML provides a means to create structured documents by denoting structural semantics for text such as headings, paragraphs, lists, links, quotes and other items. HTML elements are delineated by tags, written using angle brackets. Tags such as <img /> and <input /> directly introduce content into the page. Other tags such as <p> surround and provide information about document text and may include other tags as sub-elements. Browsers do not display the HTML tags, but use them to interpret the content of the page.

HTML can embed programs written in a scripting language such as JavaScript, which affects the behavior and content of web pages.

CSS (Cascading Style Sheets)

Cascading Style Sheets (CSS) is a style sheet language used for describing the presentation of a document written in a markup language such as HTML. CSS is a cornerstone technology of the World Wide Web, alongside HTML and JavaScript.

CSS is designed to enable the separation of presentation and content, including layout, colors, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification of presentation characteristics, enable multiple web pages to share formatting by specifying the relevant CSS in a separate .css file which reduces complexity and repetition in the structural content as well as enabling the .css file to be cached to improve the page load speed between the pages that share the file and its formatting.

Separation of formatting and content also makes it feasible to present the same markup page in different styles for different rendering methods, such as on-screen, in print, by voice (via speech-based browser or screen reader), and on Braille-based tactile devices. CSS also has rules for alternate formatting if the content is accessed on a mobile device.

The name cascading comes from the specified priority scheme to determine which style rule applies if more than one

rule matches a particular element. This cascading priority scheme is predictable.

The CSS specifications are maintained by the World Wide Web Consortium (W3C). Internet media type (MIME type) text/css is registered for use with CSS by RFC 2318 (March 1998). The W3C operates a free CSS validation service for CSS documents.

In addition to HTML, other markup languages support the use of CSS including XHTML, plain XML, SVG, and XUL.

JavaScript

JavaScript is high-level, often just-in-time compiled, and multi-paradigm. It has curly-bracket syntax, dynamic typing, prototype-based object-orientation, and first-class functions.

Alongside HTML and CSS, JavaScript is one of the core technologies of the World Wide Web. Over 97% of websites use it client-side for web page behavior, often incorporating third-party libraries. All major web browsers have a dedicated JavaScript engine to execute the code on the user's device.

As a multi-paradigm language, JavaScript supports event-driven, functional, and imperative programming styles. It has application programming interfaces (APIs) for working with text, dates, regular expressions, standard data structures, and the Document Object Model (DOM).

The ECMA Script standard does not include any input/output (I/O), such as networking, storage, or graphics facilities. In practice, the web browser or other runtime system provides JavaScript APIs for I/O.

JavaScript engines were originally used only in web browsers, but they are now core components of other software systems, most notably servers and a variety of applications.

Description:

In the Home Page of our website the player will get options to choose between two games “Jump Jump” and “Roll the Ball”.

Jump Jump

If the player clicks on “Jump Jump” game, he/she will be redirected to the Jump Jump game page and can start playing. The player accumulates points by jumping over

obstacles. Keep avoiding the obstacles as long as possible to get the highest score.
Once the player collides with the obstacle the game will be over and he/she needs to start all over again. The score is displayed on the top left corner of the screen which increases as many times you jump over the obstacles. So to score the highest one has to keep jumping over the obstacles.

Controls:

Press the spacebar or the up arrow to jump up or press the down arrow to duck.

Roll the Ball

If the user clicks on Roll the ball, the player will be redirected to the Roll The Ball game page. Here the player has to roll the ball into the holes and have to stay as low as possible, as the game screen gradually keeps moving upwards and avoid the ball from touching the top surface to keep scoring.

Once it touches the surface the game is over and the player has to start all over again. Score is displayed on the top left corner which increases constantly with time. To score the highest one has to keep rolling the ball for the maximum time.

Controls:

Press the left and right arrow key from the keyboard to move the ball in the respective direction.

Testing

Test methodology

1. **Tested on different devices**
    a. Computer
    b. Mobile phone
    c. Tablet

2. Tested in different browsers

a Google chrome (Version 92.0.4515.107)
b Mozilla Firefox 83.0
c Microsoft Edge (Version 92.0.902.55)

3. Test Result

4. Result of different devices

a Computer - Design and working of the website is user friendly.
b Mobile phone - Functioning as expected
c Tablet - UI(User Interface) and working as it was built to be.

5. Result in different browsers

a Google chrome (Version 92.0.4515.107): Working completely fine.

b Mozilla Firefox 83.0: Functioning as expected.

c Microsoft Edge (Version 92.0.902.55): Functioning as expected.

Discussion

In future our project can expand its hand towards mobile applications. We can make a gaming mobile app for our project which can have extra facilities such as competing and comparing one's score with different players all over the world, changing the theme of the application and many more.

It is forecasted that the gaming industry will generate great opportunities for game developers over the next two years.

The gaming industry has grown its presence over various platforms – mobile, console, PC, online gaming and the industry is growing really fast along with the presence on all these platforms. Increase in the use of internet and the consumption of digital content over various devices, are some of the reasons that would give significant growth to the gaming industry in India. With the increase in the growth of gaming industry in India and in the world, won't you like to develop a gaming site?

CONCLUSION

- It provided a very good opportunity to obtain both the theoretical knowledge and practical experience.
- Creating game projects from scratch is very fun and doing all the design by ourselves is very rewarding.
- End product is a fun playable game that can be played and enjoyed by everyone.
- We all got to learn and do playful modifications with the animations and the character of our game.

Project Link

Website Link - https://partha123-byte.github.io/Gaming_Arena/frontpage.html

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