"Analog Clock Using JavaScript"

A MINI- PROJECT REPORT ON

Submitted in partial fulfillment of the requirements

For the degree of

Bachelor of Engineering

In

Information Technology

by

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(Affiliated to University of Mumbai)

(2020)

Ramrao Adik Institute of Technology

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CERTIFICATE

This is to certify that,Mini Project entitled

"Analog Clock using JavaScript"

is a bonafide work done by

Student Names
1.**Jaydev T.Rathod**
2.**Girish Rathod**
3.**Sanket Rohokale**
4.Gopi Pogul

and is submitted in the partial fulfillment of the requirement for the degree of

Bachelorof Engineering
in
Information Technology

to the
University of Mumbai

Supervisor
Prof.Nilima M.Dongre

Project Guide
Nilima Dongre

Head of the department
Dr. Ashish Jadhav

Certificate of Approval by Examiners

This Mini Project report entitled " Analog Clock " is a bonafide work done by Student Names under the supervision of Prof.Nilima Dongre approved for the award of Bacheor Degree in Information Technology, University of Mumbai.

Examiners :

1. . . . . .

2. . . . . .

Supervisors :

1. . . . . .

2. . . . . .

Principal :

. . . . . .

Date :

Place :

Ramrao Adik Institute of Technology

DECLARATION

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, we have adequately cited and referenced the original sources. We also declare that we have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Name and Roll No. of Students **Signature**

1. Jaydev Rathod
2. Sanket Rohokale
3.Girish Rathod
4.Gopi Pogul

Date:

Place:

ACKNOWLEDGEMENT

The project "Ananlog Clock by JavaScript " is creative work of many minds. A proper synchronization between individual is must for any project to be completed successfully. One cannot imagine the power of the force that guides us all and neither can we succeed without acknowledging it.
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Last but not the least we are thankful to our parents and friends for their constant Inspiration, encouragement and well wishes by which we have made a challenging project.

STUDENT- **JAYDEV RATHOD** (**18IT1024**) Signature

PREFACE

We take great opportunity to present this Mini Project report on "**Analog Clock"** and put before readers some useful information regarding our project.

We have made sincere attempts and taken every care to present this matter in precise and compact form, the language being as simple as possible. We are sure that the information contained in this volume certainly prove useful for better insight in the scope and dimension of this project in it true perspective.

The task of the completion of the project though being difficult was made quite simple, interesting and successful due to deep involvement and complete dedication of our group members.

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ABSTRACT

Our project name is Analog Clock game. But the question that comes to our mind is what is exactly Analog Clock?

- WHAT IS Analog Clock?

An analog clock (American) or analogue clock (UK and Commonwealth) is a clock whose display is not digital but rather analog with a traditional clock face. The name is an example of a retronym; it was coined to distinguish analog clocks, which had simply been called "CLOCKS", from newer digital clocks.
It strictly refers to the design of the display,[1] regardless of the timekeeping technology used within the watch movement or module, although its counterpart, "digital clock", usually connotes (in most minds) digital electronics in both. A digital clock is one in which the time is displayed as a series of digits, e.g. "04:32".
An analog clock is one in which the display is not digital, but is indicated (typically) by the continuous motion of one, two, or three rotating pointers or hands pointing to numbers arrayed on a circular dial (the hour hand's movement being analogous to the path of the sun across the sky).

CHAPTER -1

INTRODUCTION

INTRODUCTION

1. INTRODUCTION TO SCRIPTING LANGUAGES

JavaScript was initially created to “make web pages alive”.
The programs in this language are called scripts. They can be written right in a web page’s HTML and run automatically as the page loads.
Scripts are provided and executed as plain text. They don’t need special preparation or compilation to run.

In this aspect ,JavaScript is very different from another language Called Java.

2. WHY PARTICULAR SCRIPTING LANGUAGE

->JavaScript is a client side language
->JavaScript is an easy language to learn.
->JavaScript is comparatively fast for the end user. ->Extended functionality to web pages.
->No compilation needed.
->Easy to debug and test.
->Platform independent.
->Event-Based Programming language

3. PROBLEM STATEMENTS

->Prone to costly errors, a single mistake can change the command which
might be harmful
->It just takes a lot of time and effort, a lot and I mean a lot more effort than simple HTML/CSS, it’s the first time you have to start thinking like a programmer and getting that new mindset and thought process is going to take time to get used to
-> Slow execution speed if server is not working properly.
->Design flaws within the language syntax or implementation
->if server is not responding well then we"ll have to face problems of running html file on browser.

4. OBJECTIVES

The objective of this project is to:

-> To understand the basic theory behind object-oriented programming, how this relates to **JavaScript** ("everything is an object"), and how to create constructors and object instances.
-> Use the most common HTML tags:

- p, h, ul, ol, li, em, strong, a, img, div, span

->Create a custom-made stylesheet that uses cascading, the box model,etc
->Use cascading style sheets.
->Provide, maintain and upgrade resources for self-access training by doing this project based on JavaScript Language.

CHAPTER -2

LITERATURE SURVEY

2.1 MOTIVATION

This is a clock that runs on purely JavaScript, HTML, and CSS. It takes an SVG as the basic HTML and CSS layout, then uses CSS animations to rotate the hands on the clock. The JavaScript provides the logic to move the hands according to the number of hours, minutes, and seconds there are in the time of the browser.

1.Speed. Client-side JavaScript is very fast because it can be run immediately within the client-side browser. Unless outside resources are required, JavaScript is unhindered by network calls to a backend server. It also has no need to be compiled on the client side which gives it certain speed advantages (granted, adding some risk dependent on that quality of the code developed).

2. Keeping the text involved clear and simple to overcome the language barrier for several employees

3.If any new parameter or field is to be added it can be done easily since the program has been developed with the help of JavaScript language known for being very easy to understand ,modify and is very flexible

4.Rich interfaces. Drag and drop components or slider may give a rich interface to your website

5.Popularity. JavaScript is used everywhere in the web. The resources to learn JavaScript are numerous. StackOverflow and GitHub have many projects that are using Javascript and the language as a whole has gained a lot of traction in the industry in recent years especially.

6.Interoperability. JavaScript plays nicely with other languages and can be used in a huge variety of applications. Unlike PHP or SSI scripts, JavaScript can be inserted into any web page regardless of the file extension. JavaScript can also be used inside scripts written in other languages such as Perl and PH

CHAPTER -3

PROPOSED SYSTEM

3.1 HARDWARE AND SOFTWARE REQUIREMENTS

->>Sublime-Text 3:

Sublime Text is a shareware cross-platform source code editor with a application programming interface (API). It natively supports many programming languages and markup languages such as **JavaScript ,Css and HTML** files. and functions can be added by users with plugins, typically community-built and maintained under free-software licenses.

Command palette" uses adaptive matching for quick keyboard invocation of arbitrary commands.

JavaScript can be accessed by user using this software.ie. Sublime-Text 3

Compatible with many language grammars from TextMate. Sublime-Text 3 supports for Css file , Html file, And JS files as well.So with this compatibility we are flexible to do JavaScript coding with very efficiently.

->>Any Modern Web Browser(Chrome,Firefox,Safari)

____**HTML** consists of a series of short codes typed into a text-**file** by the site author — these are the tags. The text is then saved as a **html file**, and viewed through a **browser**, like Internet Explorer or Netscape Navigator.
With the help of Web browser we are able to see the output of pur code.

Inshort, With the help of browser we can run the HTML files.

->>CSS and HTML are the two important components of our project,as they are most Mandatory files for JavaScript coding.

As u know the CSS stands for the Cascading Sheet Style.

•CSS is a style sheet language which describes the appearance of markup (text with contextual definitions called "tags")

Hypertext Markup **Language** (**HTML**) file is also supported by this Sublime Text 3.

HTML is a way of adding context and structure to text.

HTML code ensures the proper formatting of text and images for your Internet browser. Without HTML, a browser would not know how to display text as elements or load images or other elements. HTML also provides a basic structure of the page, upon which Cascading Style Sheets are overlaid to change its appearance. One could think of HTML as the bones (structure) of a web page, and CSS as its skin (appearance).

Hence HTML file is mandatory for JavaScript.

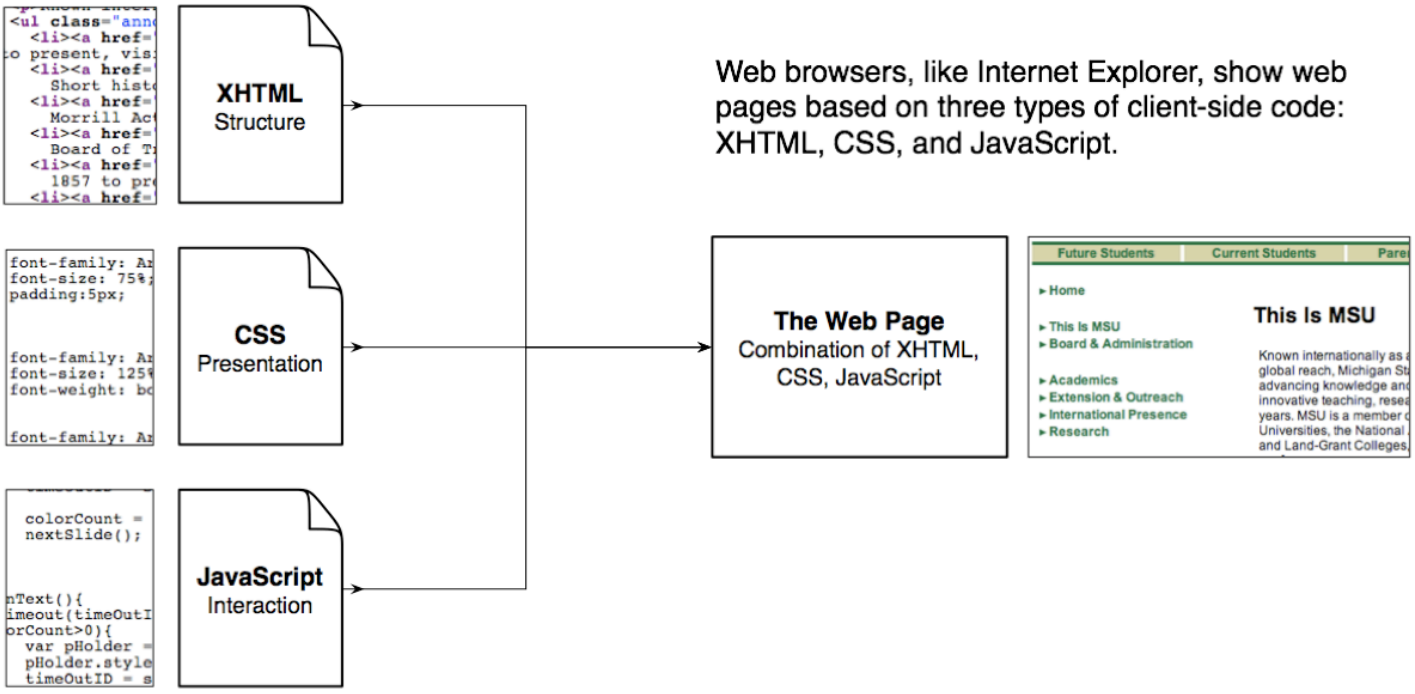
A **JS file** is a text **file** containing **JavaScript** code that is used to execute **JavaScript** instructions in web pages. It may include functions that open and close windows, validate form fields, enable rollover images, or create drop-down menus

On the basis of above information, we can say that the HTML and CSS are the main two components of JavaScript.

CHAPTER –4

IMPLEMENTATION

4.1 SYSTEM BLOCK DIAGRAM



4.2 MODULE DESCRIPTION

This is a clock that runs on purely JavaScript, HTML, and CSS. It takes an SVG as the basic HTML and CSS layout, then uses CSS animations to rotate the hands on the clock. The JavaScript provides the logic to move the hands according to the number of hours, minutes, and seconds there are in the time of the browser.

Following are the files you should use as building blocks for creating an Analog Clock
1. HTML Document having the SVG of the clock.
2. CSS file containing styling details of the clock SVG
3.Making the JavaScript file:
Before making the script, lets see how we can make the hands of clock move just by using CSS.
For this, open the html file in browser and also the browser console. (I am using Google Chrome).
The original clocks looks like this now:

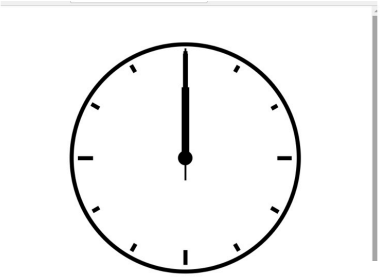


Fig 1: Clock image after opening the .html file.

Now, in the console, hover your mouse pointer on minute ID. Add the following statement:

```
transform: rotate(60deg)
```

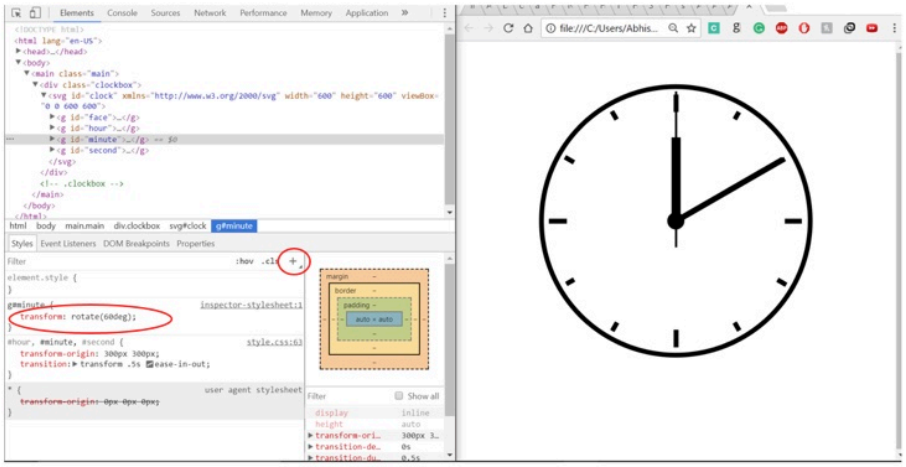


Fig 2: Upon clicking + (Circled in red), add the transform method specifying the degree of rotation. The minute hand then moves as desired.

However, we can't keep doing this procedure manually. Hence we will create a JavaScript, which will do this procedure for us automatically. Following are the steps to do the same.

Step 1:
Declare the constants that we shall never ever change.
Step 2:
Using Date() object, get the value for current hour, minute and seconds.
Step 3:
Now that we have the time values with us, we need to move the hands of the clock based on those values.
Given some time value, the position of hands in an analog clock can be estimated using some basic math formulas. Lets leverage them directly.
Step 4:
Now that we have the positions of each hand, lets move the clock using following statements.
We are still not done. The script we made till now, just presents us with a static clock. It still doesn't move like a conventional analog wall clock, as we would have desired. To have the desired output, lets put the script we made till now into a function and call that function every second to execute.

After making the function, lets call it after every second (1000 ms) using setInterval.

The output on the browser screen is an analog clock as we expected that we"ll able to see .

4.3 CODE

1)indexnew.html

```
<!DOCTYPE html>
<html lang="en-US">

<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1">
    <title>A Digital Analog Clock</title>
    <link rel="stylesheet" href="stylenew.css" type="text/css"
media="all">
    <script src="scriptnew.js" defer></script>
</head>

<body>
<main class="main">
    <div class="clockbox">
        <svg id="clock" xmlns="http://www.w3.org/2000/svg"
width="600" height="600" viewBox="0 0 600 600">
            <g id="face">
                <circle class="circle" cx="300" cy="300" r="253.9"/>
                <path class="hour-marks" d="M300.5 94V61M506
300.5h32M300.5 506v33M94 300.5H60M411.3
107.8l7.9-13.8M493 190.2l13-7.4M492.1 411.4l16.5 9.5M411
492.3l8.9 15.3M189 492.3l-9.2 15.9M107.7 411L93 419.5M107.5
189.3l-17.1-9.9M188.1 108.2l-9-15.6"/>
                <circle class="mid-circle" cx="300" cy="300" r="16.2"/>
            </g>
            <g id="hour">
                <path class="hour-arm" d="M300.5 298V142"/>
                <circle class="sizing-box" cx="300" cy="300" r="253.9"/
>
            </g>
            <g id="minute">
                <path class="minute-arm" d="M300.5 298V67"/>
```

```
            <circle class="sizing-box" cx="300" cy="300" r="253.9"/
>
          </g>
          <g id="second">
            <path class="second-arm" d="M300.5 350V55"/>
            <circle class="sizing-box" cx="300" cy="300" r="253.9"/
>
          </g>
        </svg>
    </div><!-- .clockbox -->
</main>

</body>

</html>
```

2)scriptnew.js

```
const HOURHAND = document.querySelector("#hour");
const MINUTEHAND =
document.querySelector("#minute");
const SECONDHAND =
document.querySelector("#second");

   var date = new Date();

   let hr = date.getHours();
   let min = date.getMinutes();
   let sec = date.getSeconds();
```

```
  let hrPosition = (hr*360/12 + (min*(360/60)/12)),
minPosition = ((min*360/60) + (sec*(360/60)/60)),
secPosition = sec*360/60;

function runTheClock() {

  secPosition += 6;
  minPosition += (6/60);
  hrPosition += (3/360);

  HOURHAND.style.transform = "rotate(" + hrPosition +
"deg)";
  MINUTEHAND.style.transform = "rotate(" +
minPosition + "deg)";
  SECONDHAND.style.transform = "rotate(" +
secPosition + "deg)";

}

var interval = setInterval(runTheClock, 1000);
```

3)stylenew.css

```
/* Layout */
.main {
  display: flex;
  padding: 2em;
  height: 90vh;
  justify-content: center;
```

```
  align-items: middle;
}

.clockbox,
#clock {
  width: 100%;
}

/* Clock styles */
.circle {
  fill: none;
  stroke: #000;
  stroke-width: 9;
  stroke-miterlimit: 10;
}

.mid-circle {
  fill: #000;
}
.hour-marks {
  fill: none;
  stroke: #000;
  stroke-width: 9;
  stroke-miterlimit: 10;
}

.hour-arm {
  fill: none;
```

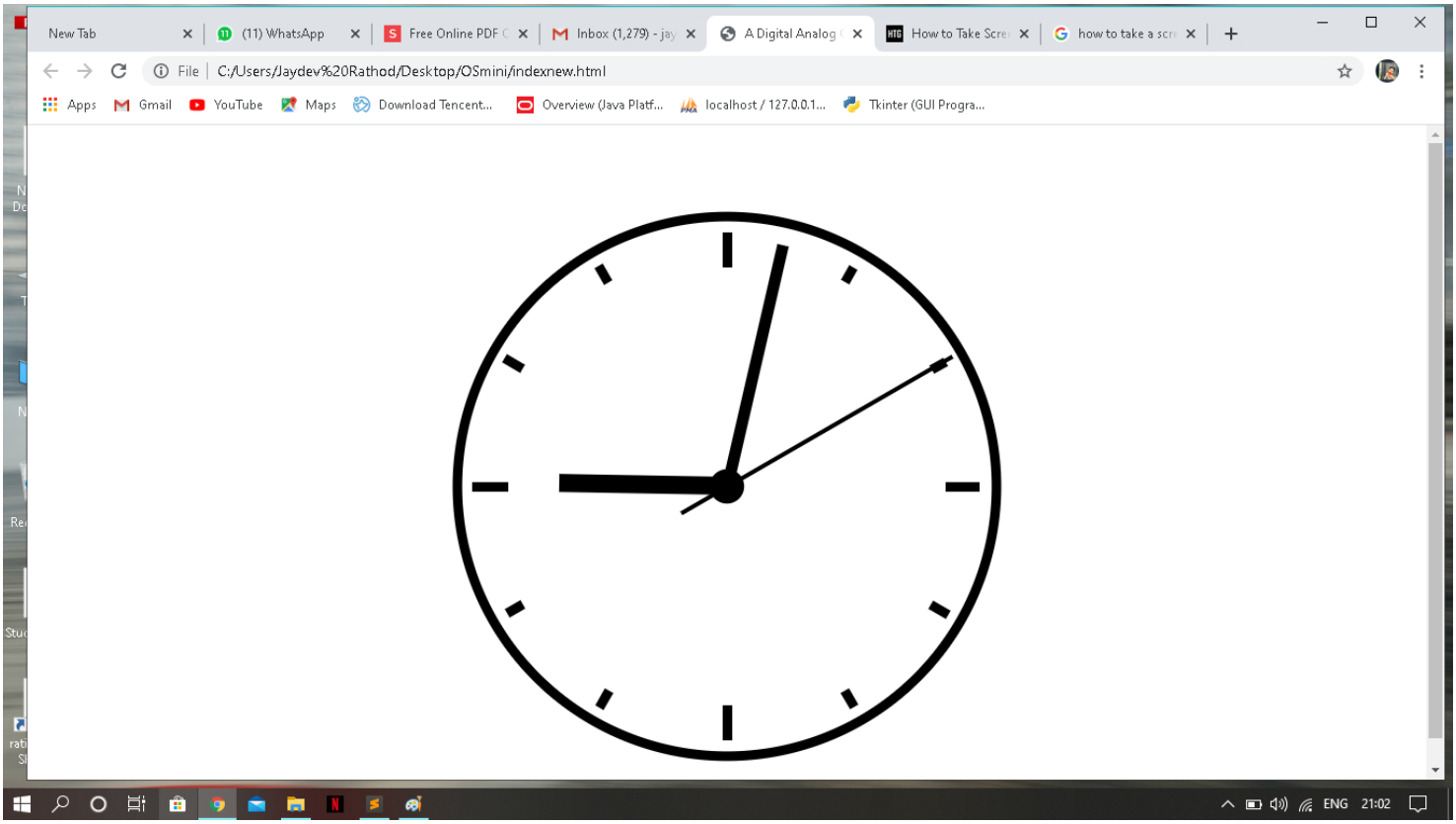
```
  stroke: #000;
  stroke-width: 17;
  stroke-miterlimit: 10;
}

.minute-arm {
  fill: none;
  stroke: #000;
  stroke-width: 11;
  stroke-miterlimit: 10;
}

.second-arm {
  fill: none;
  stroke: #000;
  stroke-width: 4;
  stroke-miterlimit: 10;
}

/* Transparent box ensuring arms center properly. */
.sizing-box {
  fill: none;
}

/* Make all arms rotate around the same center point. */
/* Optional: Use transition for animation. */
#hour,
#minute,
```

```
#second {
  transform-origin: 300px 300px;
  transition: transform .5s ease-in-out;
}
```

CHAPTER –5

RESULT

Output Snapshot of working Analog Clock:



CHAPTER –6

CONCLUSION AND FUTURE SCOPE

Conclusion:

In the end, we would like to conclude that our aim was to make Analog Clock using JavaScript . By doing this project we will be able to know that how to use css and html .Css and HTML how are beneficial to JavaScript that we understood by doing this project.

Future scope:

It's easier to ready analogue display, especially when it comes to evaluating the change since last reading.

With digital displays basically have to do math every time you want to know how much time elapsed from the time event x occurred .Our brains aren't naturally inclined to do that.When the information is an encoded in analog way(a stick moving continuously across a dial)it's much easier for us to process that.

Hence ease comes on an analogue display rather than digital one.

6.3 REFERENCES

- www.google.com
- www.wikipedia.org
- www.tutorialpoint.com
- www.w3schools.com
- www.youtube.com