TERM PAPER REPORT

ON

CREATE CALCULATOR

IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF THE DEGREE OF

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In

Computer Science and Engineering

BY

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DECLARATION

Arpit Pandey, student of Btech Computer Science and Engineering, hereby declare that the report entitled on **Create Calculator** which is submitted by me to Department of Computer of Science and Engineering, Amity School of Engineering and Technology, Amity University, Uttar Pradesh in partial fulfillment of requirement for the award of the degree of Bachelor of Technology in Computer Science and Engineering ,has not been previously formed the basis for award of any degree, diploma or other similar title or recognition. The author attests that permission has been obtained for the use of any copyrighted material appearing in the report, other than brief excerpts requiring only proper acknowledgement in scholarly writing and that all such use in acknowledged.

Place - Lucknow

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7th Semester

2021-2025

CERTIFICATE

On the basis of the declaration submitted by Arpit Pandey (Enrollment no: A7605221141) student of B. Tech Computer Science and Engineering. I hereby certify the report entitled **Create Calculator**, which is submitted to the Department of Computer Science and Engineering. Amity School of Engineering and Technology, Amity University, Uttar Pradesh in partial fulfillment of requirement for the award of the degree of Bachelor of technology in Computer Science and Engineering is an original contribution with existing knowledge and faithful record of work carried out by him under my guidance and supervision. To the best of my knowledge of this work has been submitted in part or full for any degree or diploma to this university or elsewhere.

Dr Bramah Hazela
(Faculty Guide), ASET
Lucknow.

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ABSTRACT

This research paper talks about the development of **Calculator web application.** It has an interactive user interface which is developed using cascading style sheets i.e. CSS and one of Its famous framework Bootstrap. This web application is made with the intention to make the calculation easy ensuring ease of use while delivering accurate and efficient calculations and prevent incorrect calculations. It is a robust arithmetic engine capable of handling complex calculations with precision. The web application is totally responsive, to achieve the responsiveness media screen property of CSS has been used. Apart from CSS, other technologies such as HTML and JavaScript have also been used. While developing this application each and every design part is taken into consideration so it looks more interactive. Users specially student can take help from this application for faster calculations and prevent incorrect calculations. This research paper covers the implementation details, challenges faced and the advantages for this project. It also includes applications and future enhancement that can make create calculator a web application. By the end of the project, the calculator will serve as a reliable tool for students ,professionals and anyone in need of accurate mathematical computation enhancing productivity and learning outcomes.

Introduction

In today's digital era, the expansion of the web has enabled seamless global connectivity, created new opportunities and transformed various aspects of human life. Increasing of web networks are creating new challenges for the developer to solve so that new responsive, scalable and user-friendly interface can be developed that is according to the need of the user and satisfy human expectation. Web sites and web applications have created a useful ecosystem which has made human life easier along with saving a lot of time. With the advancement in web development technologies, developers are heading themselves to create innovative and engaging user experiences. Web technologies such as HTML, CSS, JavaScript play an important role in creating rich web applications.

This project fulfills the need for quick and accurate calculations across various fields, from education and engineering to finance and everyday tasks. It will help user to simplify mathematical Operations, improve efficiency and reduce errors. This project is designed with the aim to serve the broader audience including student ,professionals, and general users who require reliable and efficient tools for their mathematical needs. While keeping the needs of people this web app will ensure robustness, scalability and cross-platform compatibility.

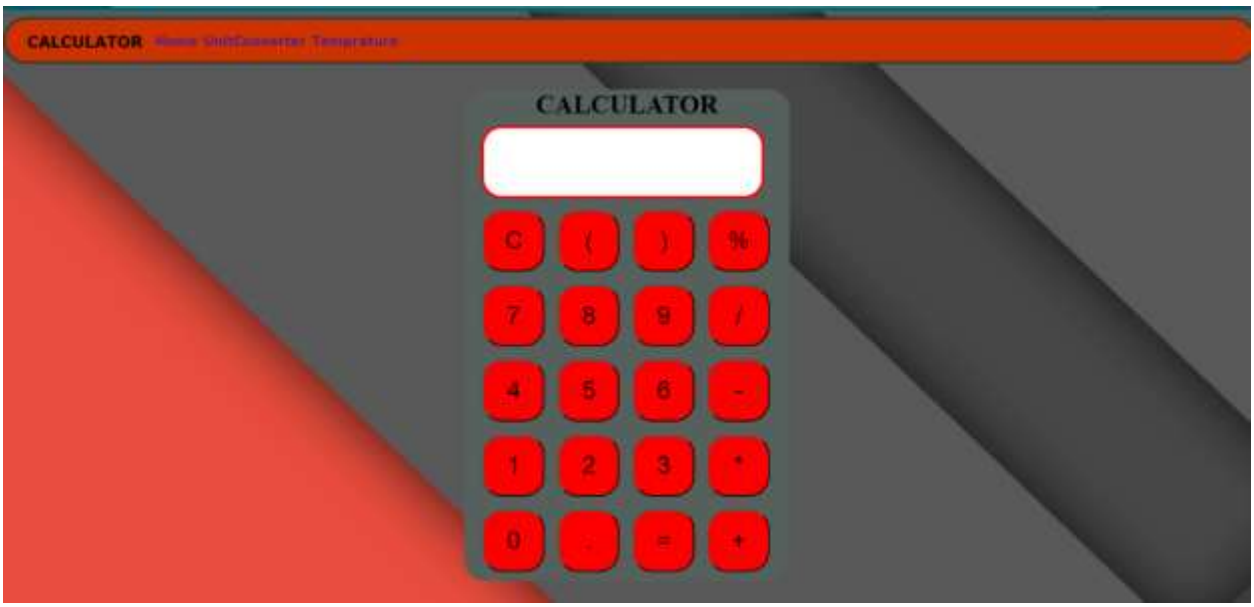
Calculator is something which is required by every working professional in their daily tasks, this web application is light which could be used by anyone easily and efficiently, it does not require any type of downloading ,we can go to the web and directly use it which make it more useful. It is designed in interactive way so that more and more users visit it frequently and make a best out of it. While designing this calculator each and all small things are taken into consideration, from one component to another. Through rigorous testing the calculator demonstrated high accuracy , which makes it a viable tool for use. The motivation behind this project to understand the complexity behind the calculator and to develop a functional prototype which can generate a range of arithmetic operations. From this project one can learn the valuable insight in software development user interface design and hardware integration.

The development of this project included various phases from writing the code for the basic structure to designing to make more user-friendly interface and writing logic for implementation of all types of calculation. This project has lot of learning inside it ,the concept used inside this project is very useful which would be very helpful in developing any other projects. Testing is a very important factor while we are developing any type of project, it ensures the correction of the system which overall increases the reliability. Multiple time testing is done to improve the performance so as to give the best result for any type of calculation, also it can solve long calculations very easily. The subsequent section of research paper includes the information about the tools and technologies used in this project, futuristic approach for the project ,the folder structure and the code work that has been written for developing that project.

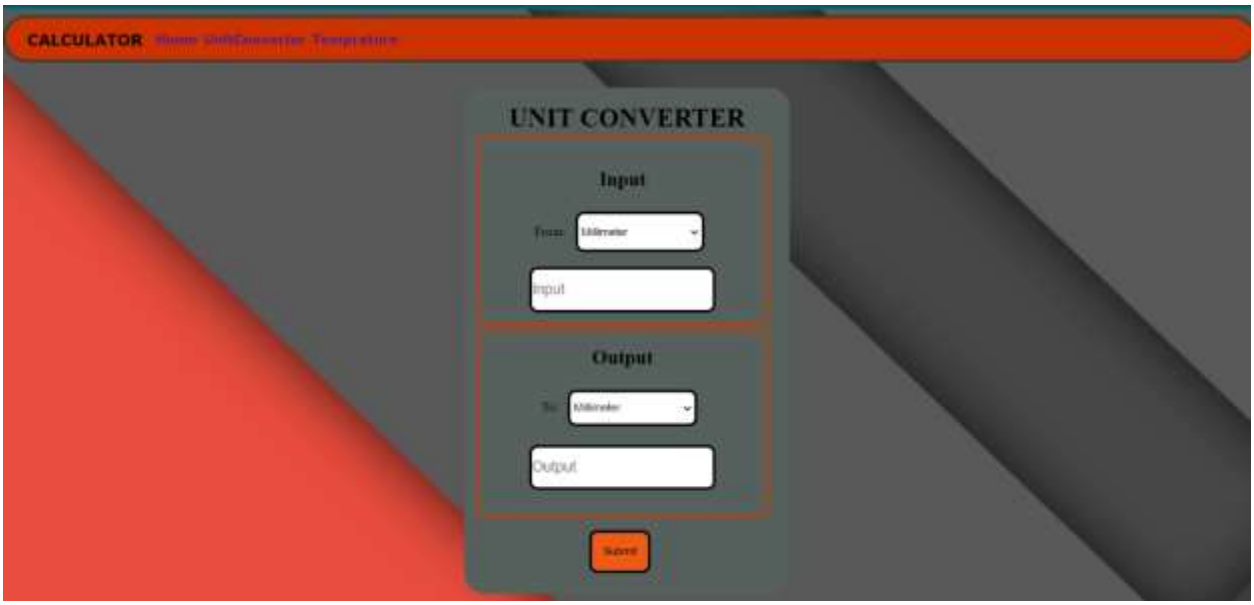
About Calculator

Calculator is web-based application. It provides an interface where users can perform calculation, do conversion of unit and temperature. The web application mainly consists of three sections , the home section which contains calculator, the unit converter section which is used for conversion of on unit to another and last temperature section which includes the conversion of errors. It created to meet the need of users.

For home section as you can see in below diagram that there are twenty buttons for performing different operations . The interface is well designed so that more and more user visit to use this calculator .The button are well designed which make it more interactive. The white color screen is used displaying the result that is performed by the user .The calculator box is somewhat similar to the background. In this calculator even long calculation could be performed easily. Among the twenty button there are ten buttons for number from zero to nine ,then we have ' = ' for computing the result, then we have ' . ' for dealing with decimal numbers ,then five buttons we have performing the mathematical operation such as multiplication, division, subtraction, division and modulus operation, then we have two buttons for bracket that is ' (' and ') ' and at last we have ' C ' button for clearing the screen. For aligning all the buttons CSS grid system has been used. JavaScript event listener , if-else statements operators and loop to handle the user input and perform calculations.

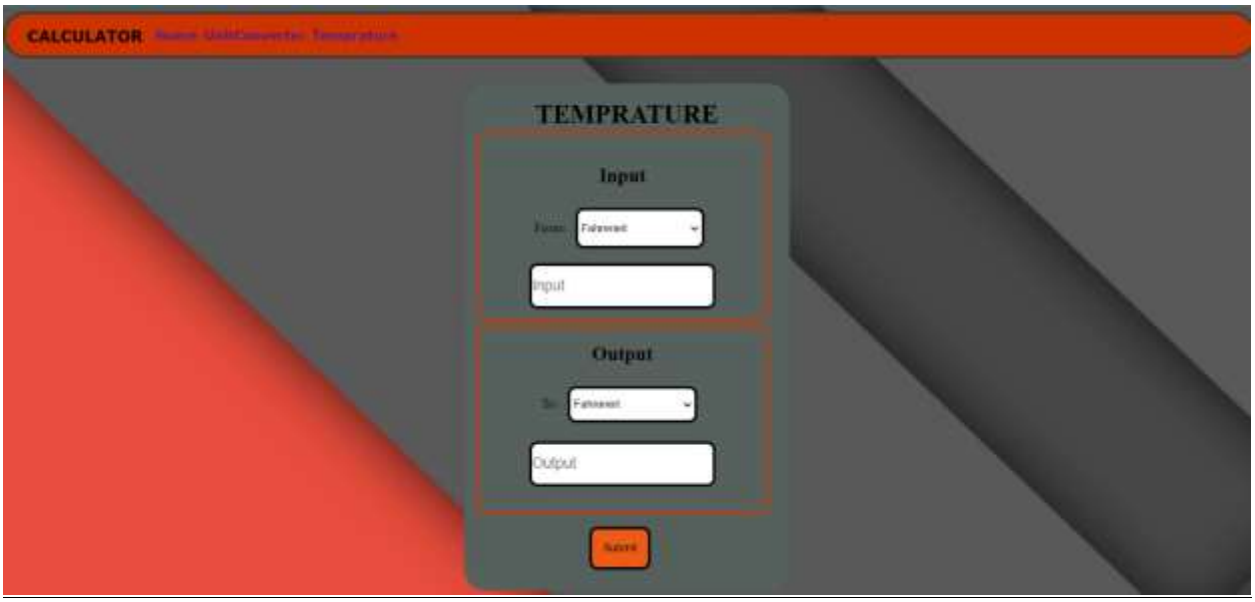


For the unit converter section, it is mainly designed so that the user can make a conversion from one unit to another. This feature will be very beneficial for specially for students and field workers. For designing this feature mainly twelve units are taken into consideration that are millimeter, centimeter, decimeter, meter, kilometer, mile ,yard ,foot and Inch. User can do conversion from any one unit to any other unit. It has been tested several times which will be helpful in reducing the error.



For the temperature section , it is mainly designed to convert one temperature to another temperature. It is very useful when we need the conversion of temperature from Celsius to Fahrenheit or Fahrenheit to Celsius.
Basic formula for conversion

[Celsius= 9/5 * Fahrenheit +32]



Tool and Technology

TOOLS USED: -

VS Code: - It stands for Visual Studio Code. It is free editor with amazing Extensions which help to write your code easily. It is developed by Microsoft and it is a cross-platform tool which makes it possible to run on any platform whether it is Windows, MacOS or Linux. There is integration of Git and GitHub in VS Code. It has several advanced features as compared to other tools. It also includes debugging extension which makes debugging easier and faster. While debugging you can inspect the variable, you can even set breakpoints to fix the issues. It increases productivity of developer by providing customization in their editor and flexibility in their coding experience.

TECHNOLOGY USED: -

HTML: - It stands for Hyper Text Markup Language. It is used to provide basic structure to the web pages acting as a backbone. It contains various tags and attributes which are designed for specific purposes. It is a markup language not the programming language. Knowledge of HTML helps in developing visual and create accessible web experiences. It works in conjunction with other technologies.
Example of tag and attribute: -

```
<p aligns=" left">Namaste</p>
```

Here: - p is a tag Name.
align=" left" is an attribute.
Some of the general-purpose attributes are ID and class.

CSS: - It stands for Cascading style sheets. It is used for design purposes. The visual appearance on the web is the result of the CSS. It saves a lot of work by controlling web pages all at once. For applying style to any element there is multiple method such as inline style, internal stylesheet and external stylesheet. CSS can also be used for providing animations. CSS has amazing features such as transition and animation. It plays very important role in responsive design.
For ex: -
Styling the h1 tag.

```
h1{
  color: purple.
}
```

Bootstrap: -It is an open-source framework that provides collection of prebuilt HTML, CSS and Java Script component. These components can easily be fitted on the Web page preventing the developer starting from scratch. The component is responsive making it easier to adapt on table, smartphones and desktop. There are JavaScript component also present in Bootstrap which a user can include or exclude based them the need in their projects. The framework has detailed documentation with a variety of examples making it easier for developers to get started and find solutions to common problems. While creating Text Formatter app, we have included several components such as Navbar, alerts, button, input box from the bootstrap.

JavaScript: - JavaScript is a high-level language. It is commonly used on Client-side web development. It is browser compatible and supports the Object-oriented programming. JavaScript has dynamic data type due to its dynamic nature. The community for JavaScript developer is very large with a variety of resources present on the web for learning. Some of the popular frameworks of JavaScript is React, Angular and Vue. The author of react is Meta whereas author of Angular is Google.

Folder Structure and Code Work

Folder Structure

The folder structure for script file of Calculator web app is as follows:

i)iscript.js
ii)unit_converter.js
iii)temperature.js

The code work for each file is given below:-

Code Work

Script.js

```
let screen=document.getElementById("screen");
let button=document.querySelectorAll('button');
let screenValue;
for(let element of button){
    element.addEventListener('click',(element)=>{

        let buttontext=element.target.innerText;
        console.log("text is",buttontext);
        if(buttontext=="="){
            screenValue=eval(screen.value);
            screen.value =screenValue;
        }
        else if(buttontext=="C"){
            screenValue=" ";
            screen.value=screenValue;
        }else{
            screenValue=buttontext;
            screen.value +=screenValue;
        }
    })
}
```

unit_converter.js

```
function CalculateLength(){
    var frominput=Number(document.getElementById("frominput").value);
    if(ValidateinputConverter(frominput)){
      //start Calculation
      var Fromunit=document.getElementById("Fromunit").value;
      var Tounit=document.getElementById("Tounit").value;
      var toinput=document.getElementById("toinput");
    }
   var  ans=ConvertLength(frominput,Fromunit,Tounit);
   toinput.value=Number(ans).toFixed(2);
  // alert(ans);
}
//creating a function for conversion
/*Step1:- make our fromLength as Millimeter*/
/*Step2:- make Millimeter to our target unit;*/

function ConvertLength(frominput, Fromunit, Tounit){
   /*Step1:- make our fromLength as Millimeter*/
   /*Step2:-make Millimeter to our target unit*/
   x=Number(frominput);
   var inMillimeter=0;
   var makeThisMillimeter=0;
   var result=0;

   switch(Fromunit){
      case "Millimeter":
        makeThisMillimeter=1;
        break;
      case "Centimeter":
        makeThisMillimeter=10;
        break;
      case "Decimeter":
        makeThisMillimeter=100;
        break;
      case "Meter":
          makeThisMillimeter=1000;
          break;
      case "Kilometer":
          makeThisMillimeter=1000000;
          break;
      case "Foot":
          makeThisMillimeter=304.8;
          break;
```

```
      case "Inch":
        makeThisMillimeter=25.4;
        break;
      case "Mile":
        makeThisMillimeter=1609344;
        break;
      case "Yard":
        makeThisMillimeter=914.4;
       break;
    }
    inMillimeter =x*makeThisMillimeter;

    switch(Tounit){
      case "Millimeter":
       result=inMillimeter;
       break;
      case "Centimeter":
       result=inMillimeter/10;
       break;
      case "Decimeter":
       result=inMillimeter/100;
       break;
      case "Meter":
        result=inMillimeter/1000;
        break;
      case "Kilometer":
        result=inMillimeter/1000000;
        break;
      case "Foot":
        result=inMillimeter/304.8;
        break;
      case "Inch":
        result=inMillimeter/25.4;
        break;
      case "Mile":
        result=inMillimeter/1609344;
        break;
      case "Yard":
       result=inMillimeter/914.4;
       break;
    }
    console.log(result)
  return result;
}
```

```
//Create a function to validate form
function ValidateinputConverter(frominput){
   if(frominput<=0){
      alert("Please enter the valid value");
      return false;
   }
   return true;
}
```

temprature.js

```
function CalculateLength(){
   var frominput=Number(document.getElementById("frominput").value);
     //start Calculation
     var Fromunit=document.getElementById("Fromunit").value;
     var Tounit=document.getElementById("Tounit").value;
     var toinput=document.getElementById("toinput");
  var  ans=ConvertLength(frominput,Fromunit,Tounit);
  toinput.value=Number(ans).toFixed(2);
  //alert(ans);
}
function ConvertLength(frominput,Fromunit,Tounit){
  x=Number(frominput);
  if(Fromunit==="Fahreneit" && Tounit==="Fahreneit"){
      result=x;

  }
  if(Fromunit==="Fahreneit" && Tounit==="Celsius"){
      result=((x - 32)*5)/9;
  }
  if(Fromunit==="Celsius" && Tounit==="Fahreneit"){
       result=(9*x/5)+32;
  }
  if(Fromunit==="Celsius" && Tounit==="Celsius"){
    result=x;
  }
  console.log(result);
 return result;
}
```

Futuristic approach of calculator Application

We can add more functionality to present web applications to make it fit for the future. Adding extra functionality will make this calculator web application more advanced and will result in increase in the widespread adoption. We can even try to add voice recognition technology to the present app so that the user can do calculation by speaking only , this facility will provide user with hand free interaction and it will save a lot of time of user. Artificial intelligence and machine learning can play a significant role in in developing the future calculator by making prediction using the user habit and intelligent suggestions. We can also try real time collaboration where the user can collaborate on complex calculations in real time world making it easy for data sharing across different devices and and locations making it beneficial in education setting and professional environments where data sharing and teamwork are important. We can also add features such as solving equation using image. Further we can provide user with customizable interface to make it more user friendly and interactive By integrating emerging technologies and prioritizing user-centric design, we can develop next-generation calculators that not only perform complex computations but also enrich the learning experience and foster greater collaboration and accessibility. We can go for API integration using the tools present on internet ending up adding more useful feature . Adding above features will help in evolving the current web application and open the door for the future innovation.

Conclusion

The progress of calculator app has shown the effectiveness for various calculation. It provides great user experience and will serve as supportive tool for the user. It will allow users to perform their calculation instantly ensuring productivity and flexibility. This project shows the potential of web technologies and explain its various concepts. Future enhancement could be made for adding more features to calculator app. Integration of web app with upcoming technologies will make the app more accessible to user who will benefit from it. The success of this project encourages further exploration and utilization of this project for diverse use cases. By embracing the development and implementation of a calculator app, users can optimize their workflow, increase productivity, and achieve better outcomes in their respective fields. In summary the development of the project calculator has been a great and rewarding experience. It helps in developing the programming as well as problem solving ability. As a developer it will be very helpful to use this project and its concept in future.

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