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☎: 08258 - 281039 – 281263, Fax: 08258 – 281265

Department of Computer Science and Engineering
B.E. CSE Program Accredited by NBA, New Delhi from 1-7-2018 to 30-6-2021

Report on Mini Project

"Hosting Calculator and Converter Using Firebase"

Course Code: 16CSE33

Course Name: Cloud Computing

Semester: 6 Section: B

Submitted To:

Dr. D. K. Sreekantha

Submitted By:

Jasmine Glani Mathias **4NM17CS070**

Joshni Princia Saldanha **4NM17CS072**

Date of submission:

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CERTIFICATE

"Hosting Calculator and Converter using Firebase" is a bonafide work carried out by Jasmine Glani Mathias (4NM17CS070) and Joshni Princia Saldanha (4NM17CS072) in partial fulfilment of the requirements for the award of Bachelor of Engineering Degree in Computer Science and Engineering prescribed by Visvesvaraya Technological University, Belagavi during the year 2019-2020.

It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report. The Mini project report has been approved as it satisfies the academic requirements in respect of the project work prescribed for the Bachelor of Engineering Degree.

Signature of Guide Signature of HOD

ACKNOWLEDGEMENT

We believe that our project will be complete only after we thank the people who have contributed to make this project successful.

First and foremost, our sincere thanks to our beloved principal, Dr. Niranjan N. Chiplunkar for giving us an opportunity to carry out our project work at our college and providing us with all the needed facilities.

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Jasmine Glani Mathias
(4NM17CS070)

Joshni Princia Saldanha
(4NM17CS072)

ABSTRACT

Calculator is used to calculate arithmetic operations on numbers. It can also handle trigonometric and inverse trigonometric functions, logarithm and natural logarithm, roots, factorial, power and so on. We have round off feature in our calculator which defaults to rounding to the nearest integer.

Unit converter and Currency converter is linked to the Calculator. Unit Converter helps to convert units of measurement based on the unit type. For each unit type, there are different units for conversion. A currency converter is designed to convert one currency into another in order to check its corresponding value. It is based on current market or bank exchange rates.

Table of Contents

1. Introduction

Calculator and Converter is a web-based application. In this project, we have implemented a calculator on a web page and also linked unit converter and currency converter using basic HTML, CSS and JavaScript. Our web page is hosted using firebase.

Our calculator will be able to perform basic mathematic operations: addition, subtraction, multiplication and division as well as scientific operations like trigonometric and inverse trigonometric functions, logarithm and natural logarithm, roots, factorial, power, etc.

Advantages of online calculator:

- Easily available: You will realize that you're only a click away from the issue that you're experiencing if you start using an online calculator.
- All-in-one performance: You can use this calculator to find out solutions of simple calculations to complex calculations. The multipurpose calculator can play different roles like unit converter and currency converter.
- Time-saving: You will find all the solution in the multipurpose calculator website. The calculator can absolutely resolve your issues quickly, thus, you can save time.
- Easy to use: Online calculator is comfortable and easy to use without anyone's help.
- Money saving: The price of the calculator increases with the features of the physical calculator. But you will get all the features here in multipurpose online calculator without spending much money.

Unit conversion is the conversion between different units of measurement for the same quantity, typically through multiplicative conversion factors. Length, Area, Speed, Weight, Volume, Temperature are popular unit converters used for measurements.

Advantages of online unit converter:

- Produces reliable results.
- Helps user to succeed in the problem.
- Ensures faster results.
- Ensures precision and accuracy of measurement and the associated uncertainty of measurement.

The currency converter does the entire task of calculations for you and you get the updated rate of exchange. It helps in international export/import business in determining the selling and buying profits of products.

Advantages of online currency converter:

- Can be Used Anywhere: Traders who send money overseas can immensely benefit from this tool. An online currency converter is a convenient, easy-to-use tool, making it a time-saving proposition for users
- It is Easy to Use: An online currency converter is a simple, handy, fast, and accurate tool. This means that traders can use this accurate tool in any situation when trading with different currencies.
- Offers Speedy Operations: Accuracy and speed are very crucial when it comes to the market. This is one of the essential qualities that you can get from a free online converter, whether it is paid or unpaid.

- It is Reliable: The reliability of online converters cannot be questioned. Many businessmen and brokers have been using this essential tool when trading with different currencies.
- It Can Be Used In Import/Export Business: Used to determine the selling and buying profits of various products.
- It is Efficient: It would be easy for the investors to convert different currencies by using a currency converter.

Firebase is a mobile and web application development platform developed by Firebase, Inc. in 2011, then acquired by Google in 2014. Firebase Hosting provides fast and secure hosting for your web app, static and dynamic content, and micro services.

Firebase Hosting is a static and dynamic web hosting service that launched on May 13, 2014. It supports hosting static files such as CSS, HTML, JavaScript and other files, as well as support through Cloud Functions. The service delivers files over a content delivery network (CDN) through HTTP Secure (HTTPS) and Secure Sockets Layer encryption (SSL). Firebase partners with Fastly, a CDN, to provide the CDN backing Firebase Hosting. The company states that Firebase Hosting grew out of customer requests; developers were using Firebase for its real-time database but needed a place to host their content.

2. Problem Statement

Hosting Calculator and Converter using Firebase

In this project, we have implemented calculator and converter on a web page using basic HTML, CSS and JavaScript. For Calculator, we need two components: A display area for displaying operators, operands and solutions and buttons for inputting values to the display screen. For Unit Converter, we need unit type to choose the type of measure, number of units to input the value for conversion, convert from, convert to, and a display area for displaying the result of conversion. For Currency Converter, we need input box to enter the amount, source currency, destination currency and display box to show converted amount.

Using the Firebase CLI, we deployed files from local directories on our computer to our Hosting server.

For serving your content, Firebase offers several domain and sub domain options:

- By default, every Firebase project has free sub domains on the web.app and firebaseapp.com domains. These two sites serve the same deployed content and configuration.
- You can create multiple sites if you have related sites and apps that serve different content but still share the same Firebase project resources (for example if you have a blog, admin panel, and public app).
- You can connect your own domain name to a Firebase-hosted site.

3. Objectives

The prime objective of the calculator is to perform a number of calculations in response to user supplied input. The possible number of calculations is pre-defined. The results of the calculations may be presented in summary or detailed format. It is these outputs that are the main business functions of the calculator. A scientific calculator is designed to calculate problems in science, engineering, and mathematics. They have completely replaced slide rules in traditional applications, and are widely used in both education and professional settings.

Unit converter is able to convert a measurement from one unit to another appropriate unit, given suitable conversion factors. It is able to solve simple numerical problems involving unit conversions.

Currency converters aim to maintain real-time information on current market or bank exchange rates, so that the calculated result changes whenever the value of either of the component currencies does. They do so by connecting to a database of current currency exchange rates.

Through web hosting, the calculator website is published on the internet and it can be made used by various organizations, schools, work and for personal use.

4. Related reading / Literature

- Strategies for Web Hosting and Managed Services
- Beginning Node.js by Basarat Ali Syed
- Firebase The Ultimate Step-By-Step Guide by Gerardus Blokdyk
- www.w3schools.com
- www.firebase.google.com

5. Solution approach / methodology

First we created a Basic Calculator and linked Unit Converter and Currency Calculator to the basic calculator. We used HTML, CSS and JavaScript to write the code for these calculators. After this, we created a local project directory and moved files of calculators to local directory.

Then we created a firebase project and we used command prompt to initiate the firebase using the firebase init command .We selected the existing project option which we created in firebase. After this, it shows firebase initialisation complete. Then we use firebase deploy command to deploy the website and it shows deployment complete. After that we will get hosting URL for hosting the website.

6. Implementation details

Before you can set up Firebase Hosting, you need to create a Firebase project.

Step 1: Install the Firebase CLI

Install NodeJS

Make sure to install NodeJS in your computer. Then, run:

npm install -g firebase-tools

Sign in and test the Firebase CLI

After installing the CLI, you must authenticate. Then you can confirm authentication by listing your Firebase projects.

Sign into Firebase using your Google account by running the following command:

firebase login

This command connects your local machine to Firebase and grants you access to your Firebase projects.

Step 2: Initialize your project

To connect your local project to your Firebase project, run the following command from the root of your local project directory:

firebase init

During project initialization, from the Firebase CLI prompts:

Step 3: Select to set up Hosting

If you want to set up other Firebase products for your project, refer to the documentation for setup information. Note that you can always run firebase init later to set up more Firebase products.

Step 4: Select a Firebase project to connect to your local project directory

The selected Firebase project is your "default" Firebase project for your local project directory. To connect additional Firebase projects to your local project directory, set up project aliases.

Step 5: Specify a directory to use as your public root directory

This directory contains all your publicly served static files, including your index.html file and any other assets that you want to deploy to Firebase Hosting.

The default for the public root directory is called public.

You can specify your public root directory now or you can specify it later in your firebase.json configuration file. If you select the default and don't already have a directory called public, Firebase creates it for you.

If you don't already have a valid index.html file or 404.html file in your public root directory, Firebase creates them for you.

Step 6: Choose a configuration for your site

If you select to make a one-page app, then Firebase automatically adds rewrite configurations for you.

At the end of initialization, Firebase automatically creates and adds two files to the root of your local app directory:

A firebase.json configuration file that lists your project configuration.

Learn more about this file on the configure hosting behavior page.

A .firebaserc file that stores your project aliases.

Step 7: Deploy to your site

To deploy to your site, run the following command from the root of your local project directory:

firebase deploy

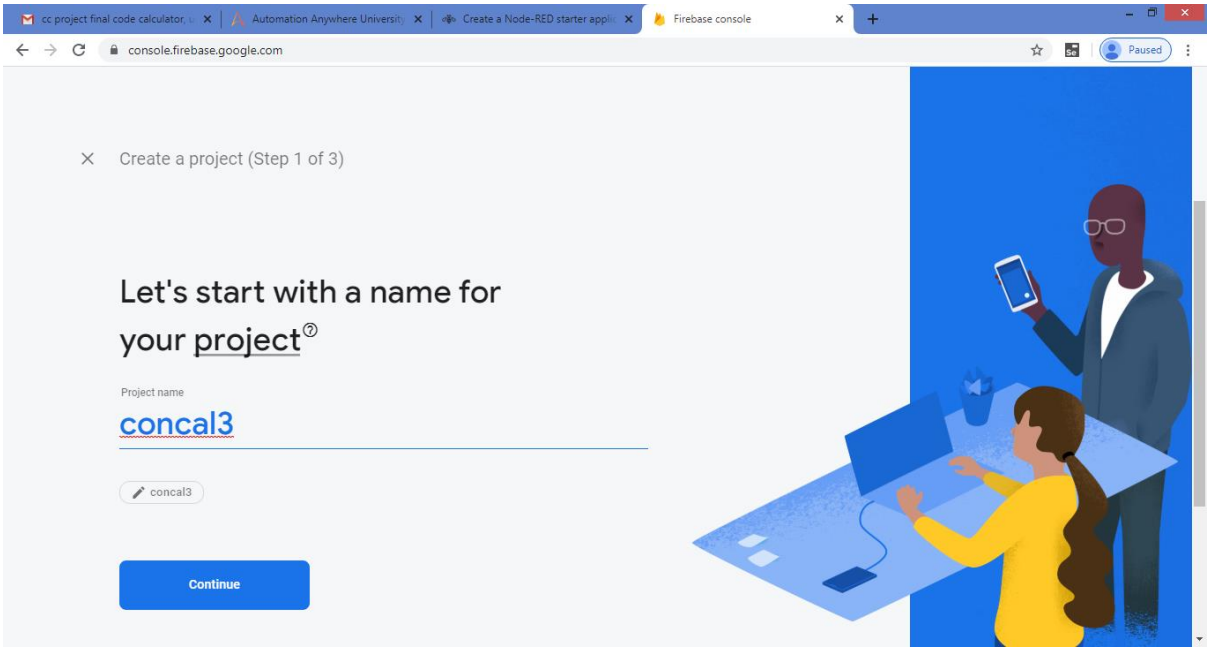
This command deploys a release to your Firebase project's default Hosting sites:

projectID.web.app

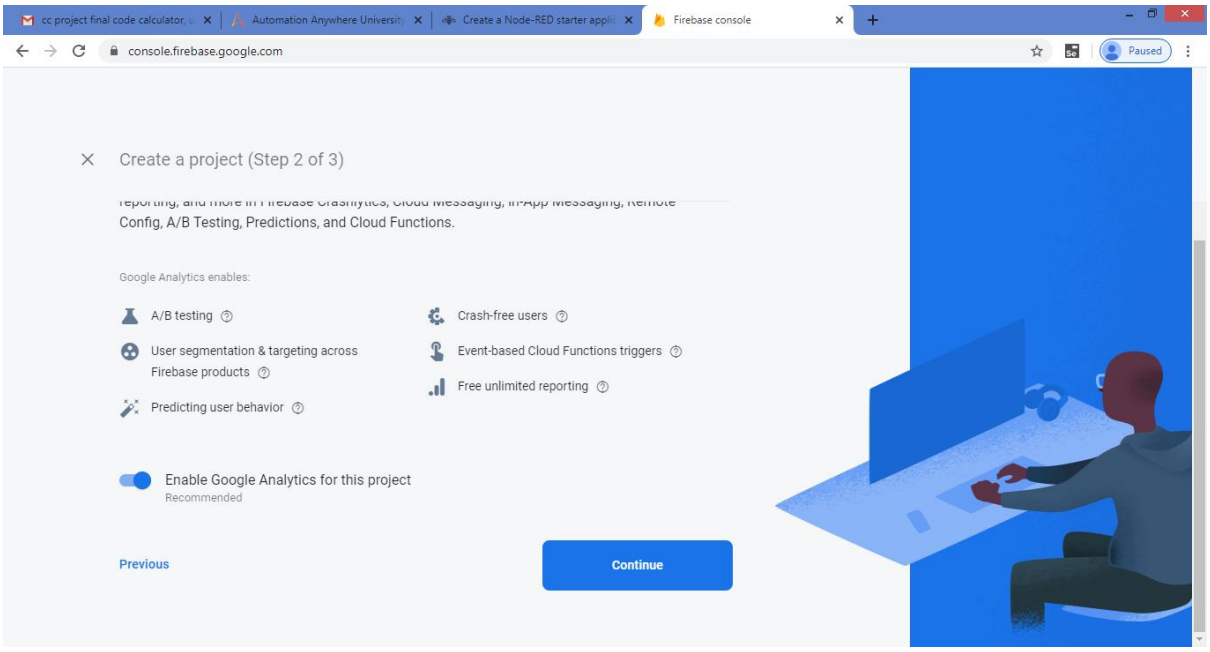
projectID.firebaseapp.com

7. Results

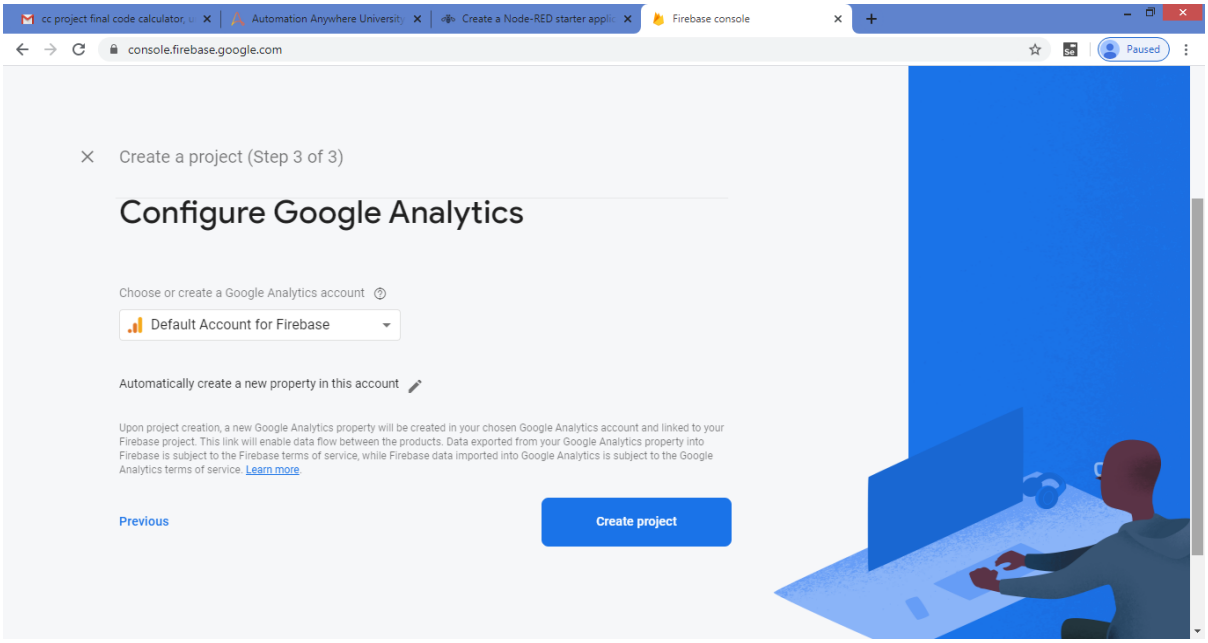
Creating a project:



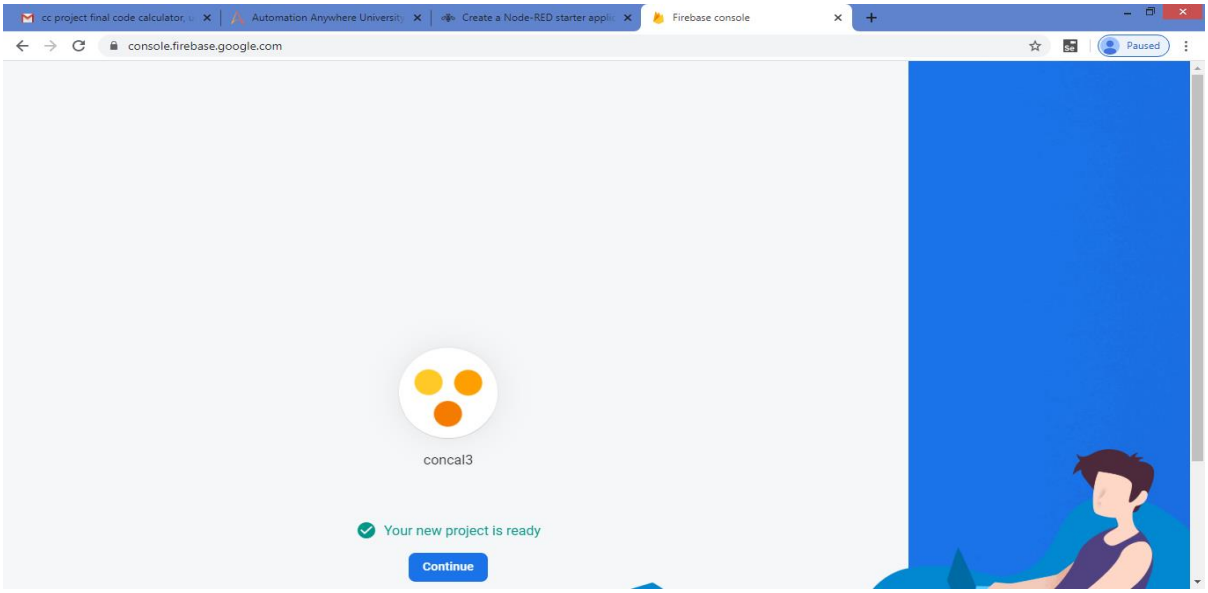
This is the page where we need to give the name for our project that is concal3.



This is the page where we need to enable the Google Analytics for this project.

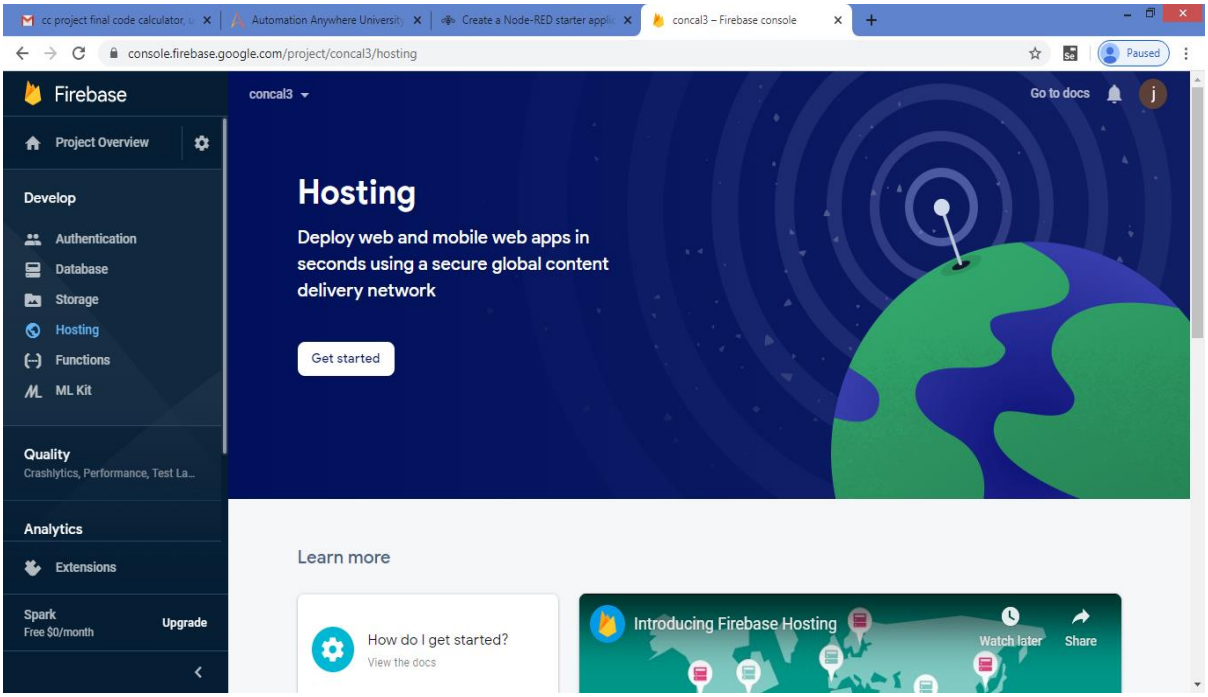


This is the page where we need to choose a Google account.



This is the page where our project is ready.

After creating the project in firebase console, the calculator project page will be displayed.

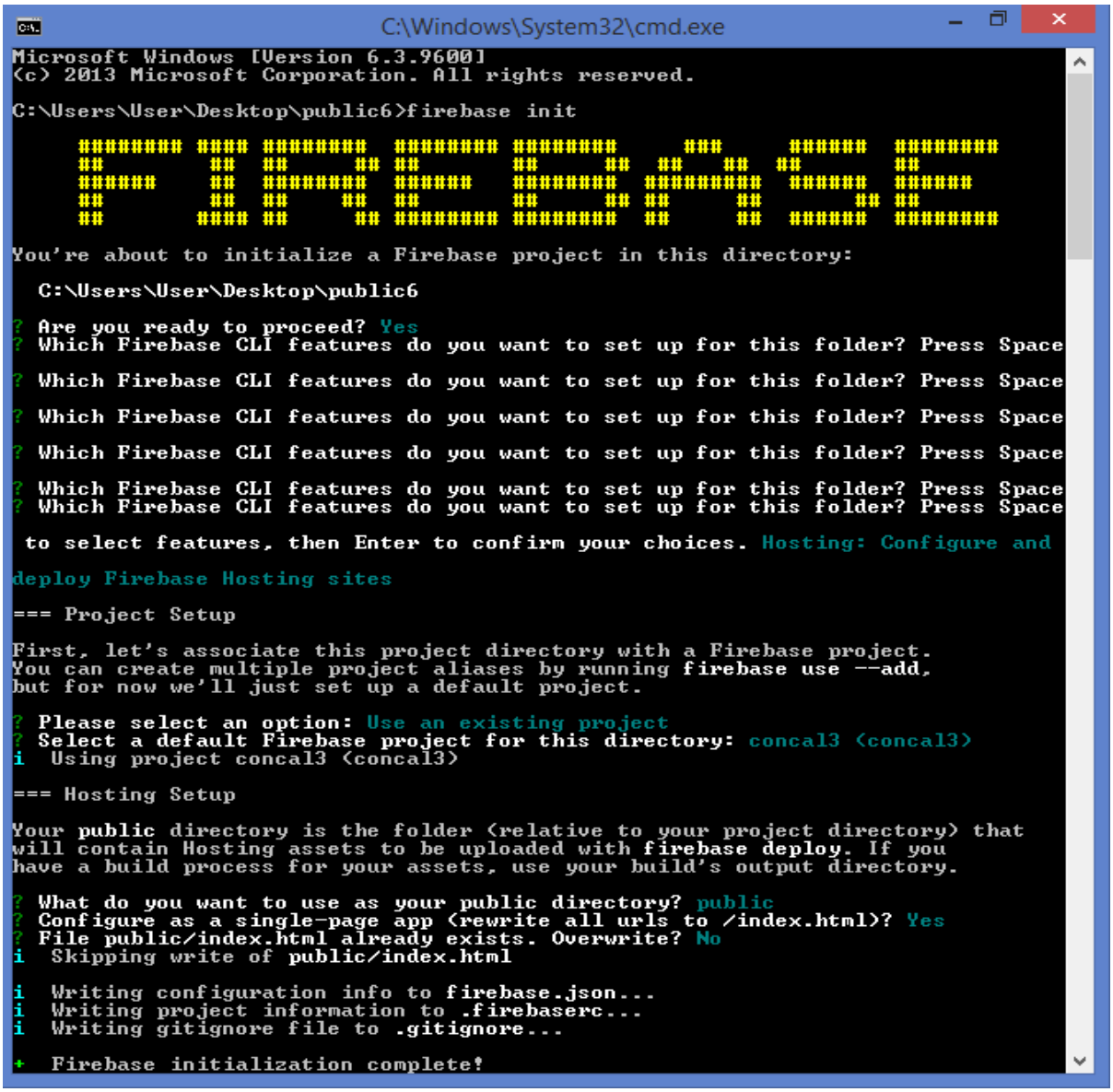


This is the Hosting page.

Firebase Login

We should open the command prompt and to login to the firebase we should use the command firebase login.

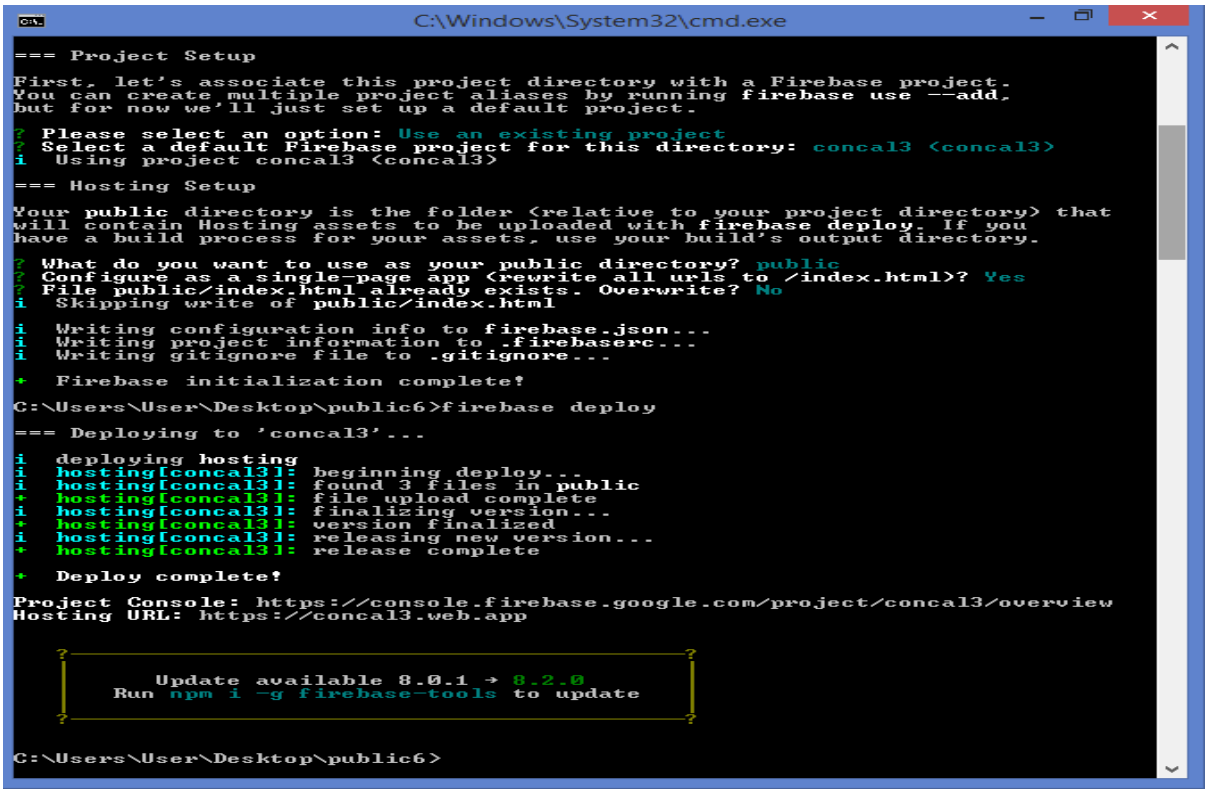
Firebase Initialization:



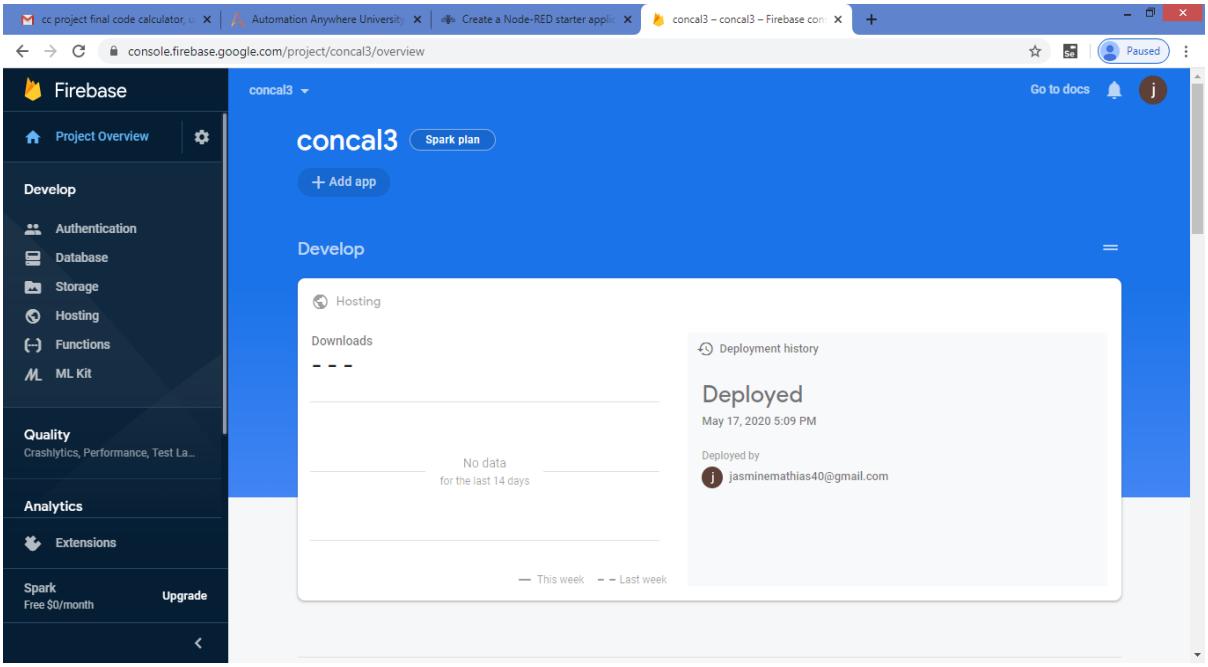
To initiate the firebase we use the command firebase init.

In project setup, we selected 'Use an existing project' option which we created in firebase console that is concal3.

Firebase deploy:

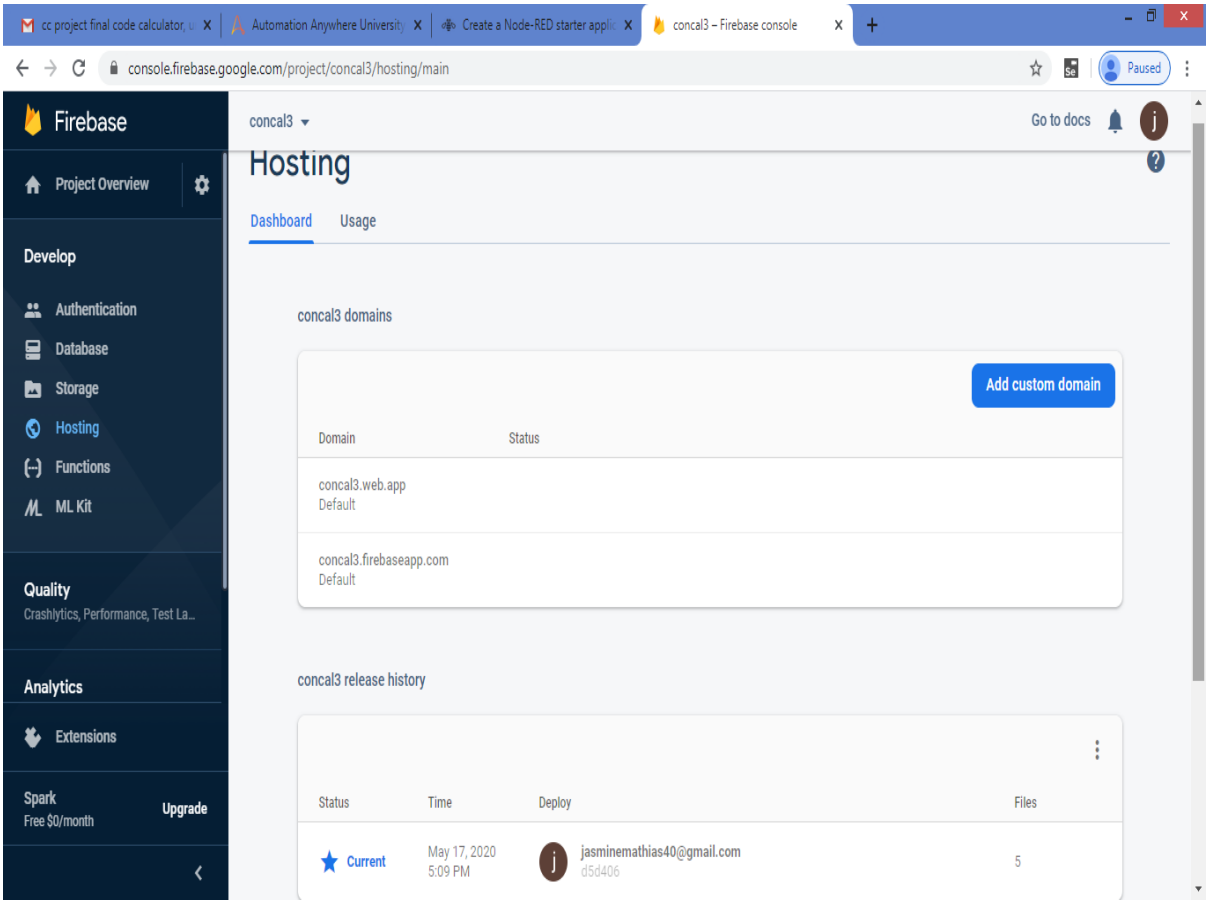


To deploy the website, we use firebase deploy command and after deploying it shows deploy complete.



This is the project console page where we can see the deployed date and time.

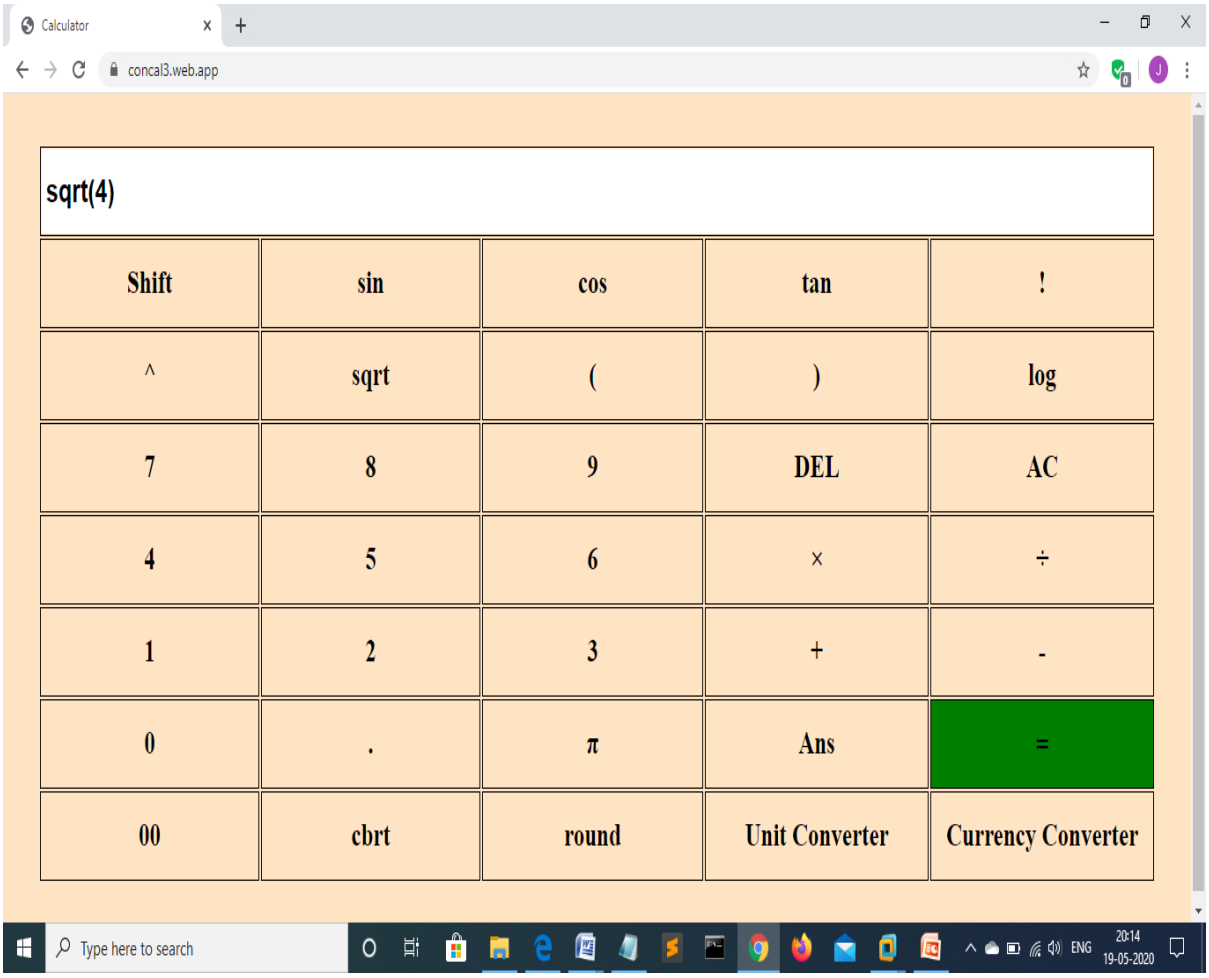
Firebase hosting:



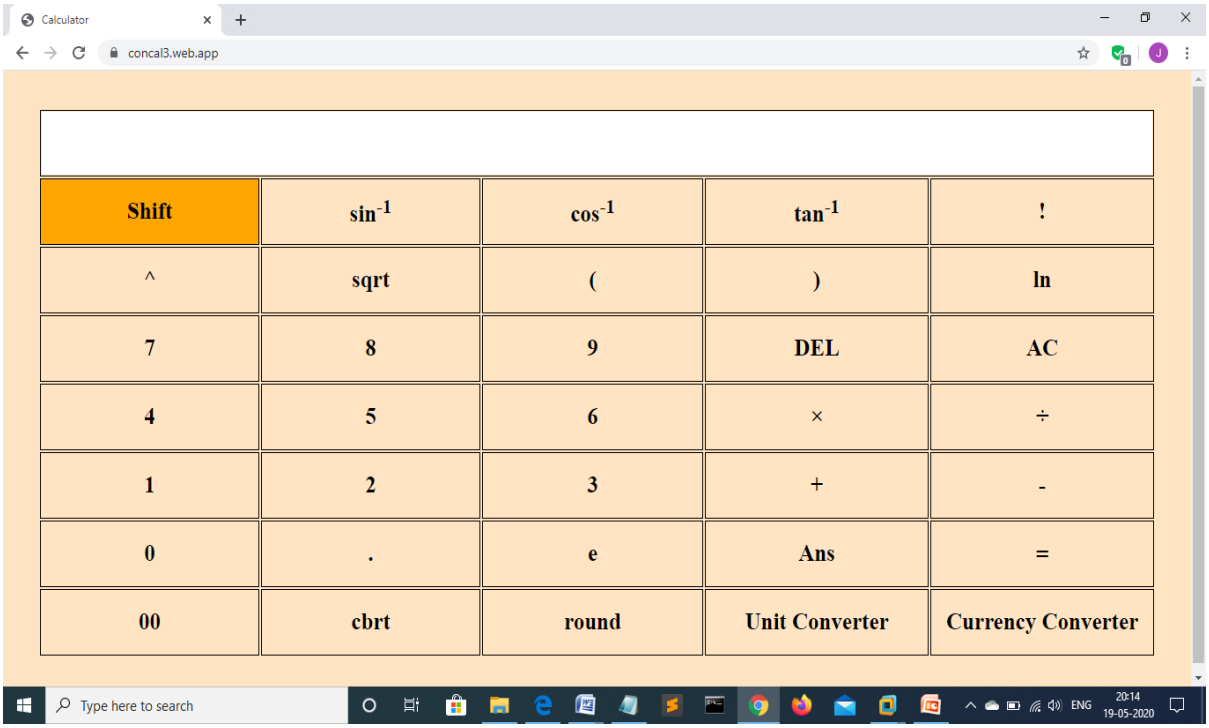
This is the firebase hosting page where the domains are displayed.

Hosting URL: https://concal3.web.app

CALCULATOR

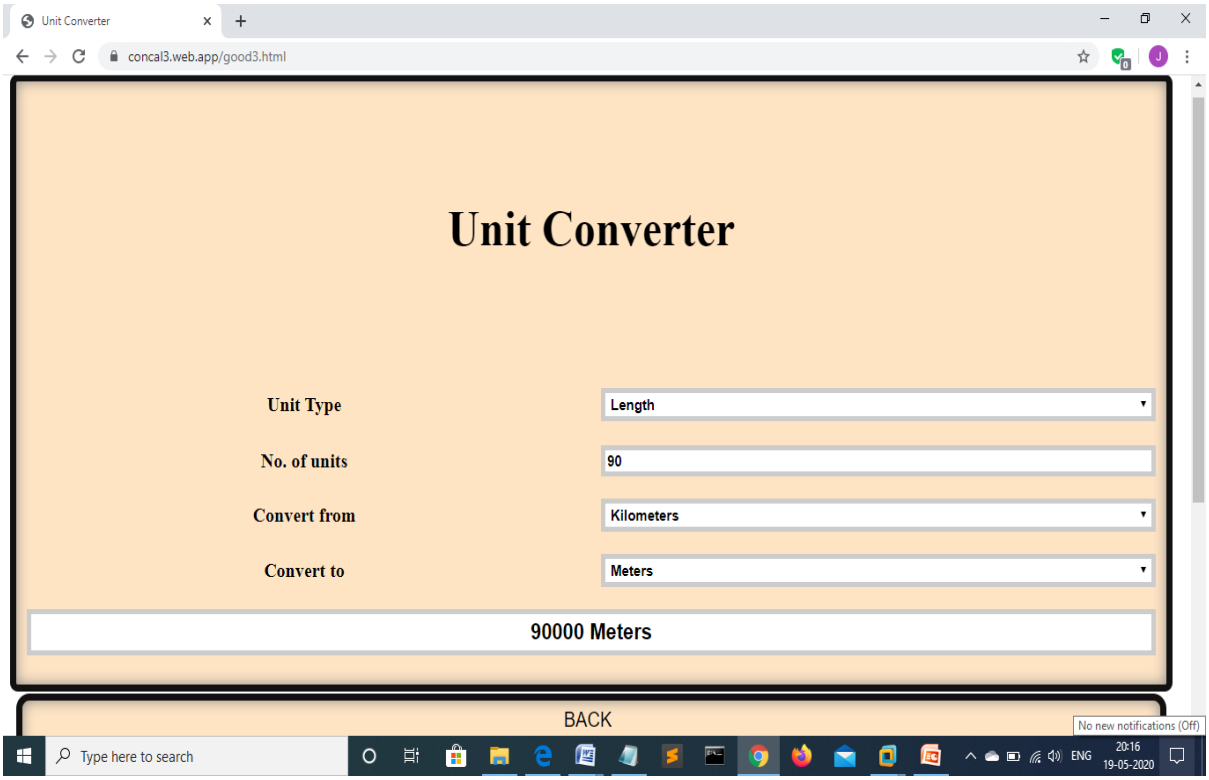


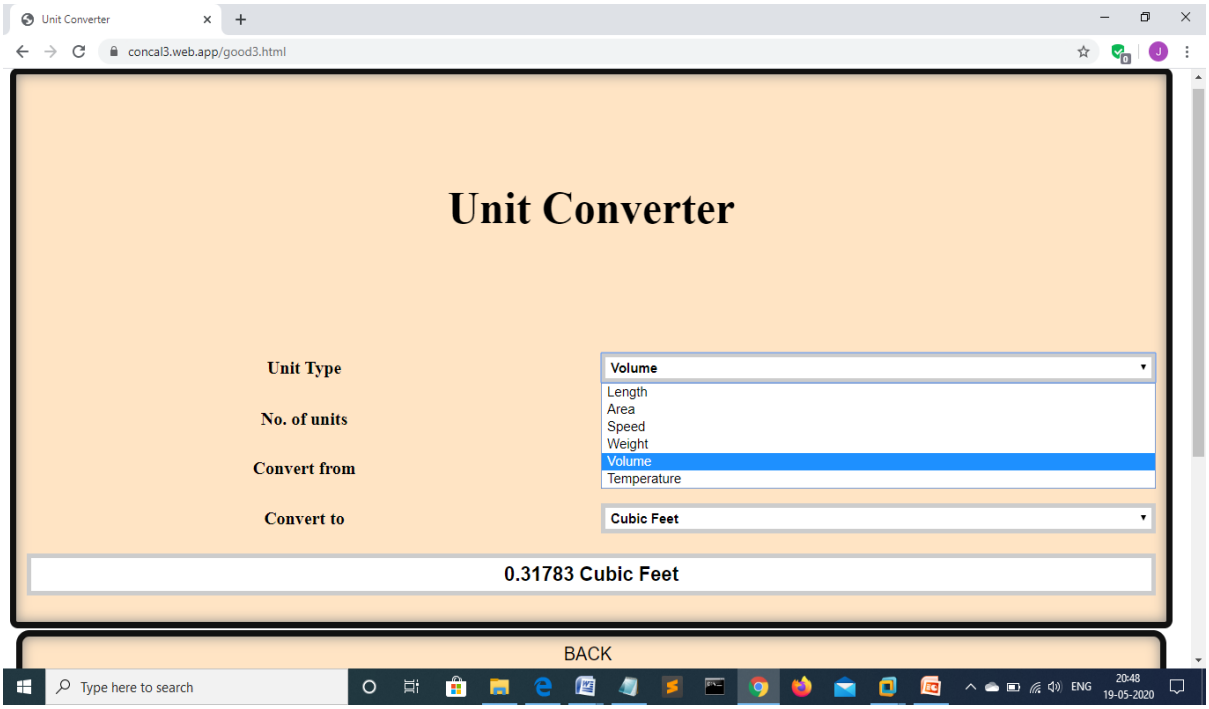
This is a basic calculator with certain mathematical functions, trigonometric functions, square root, cube root, factorial, power, decimal point, pi, log, numbers, round off feature, delete and clear function. Unit Converter and Currency Converter are linked to this Basic Calculator.



If we click on shift button, the inverse trigonometric functions, natural logarithm and exponential functions are displayed.

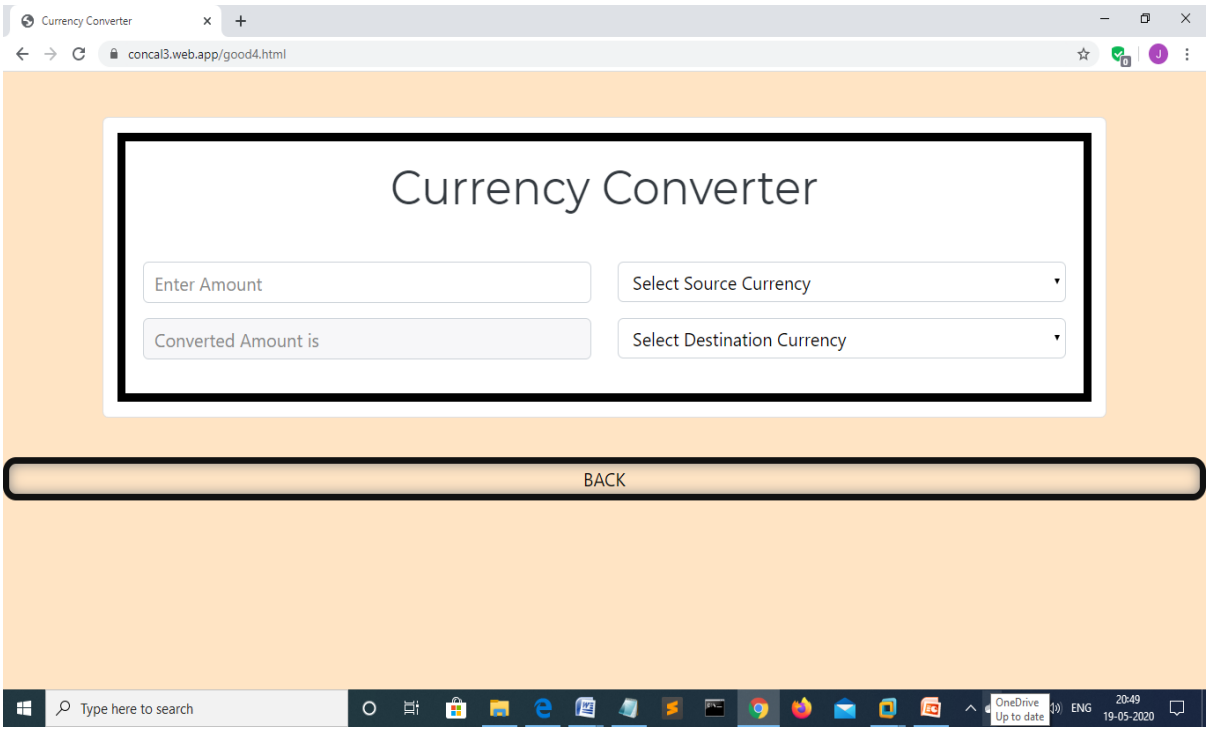
UNIT CONVERTER

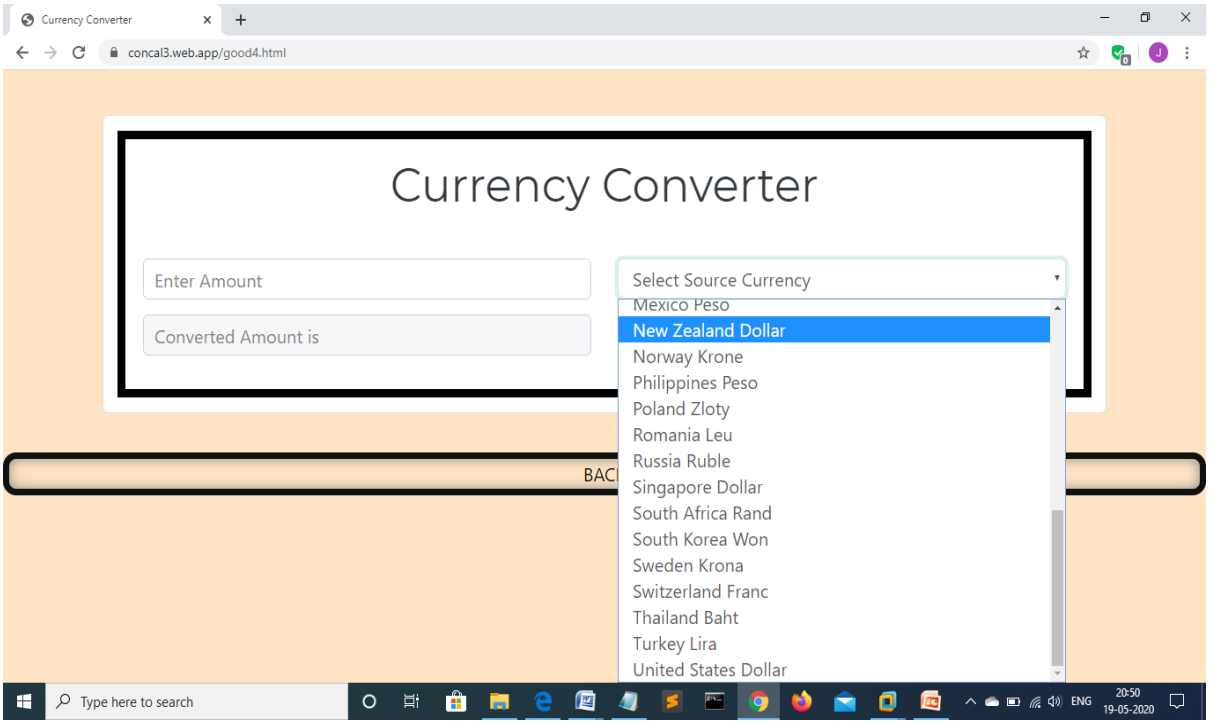


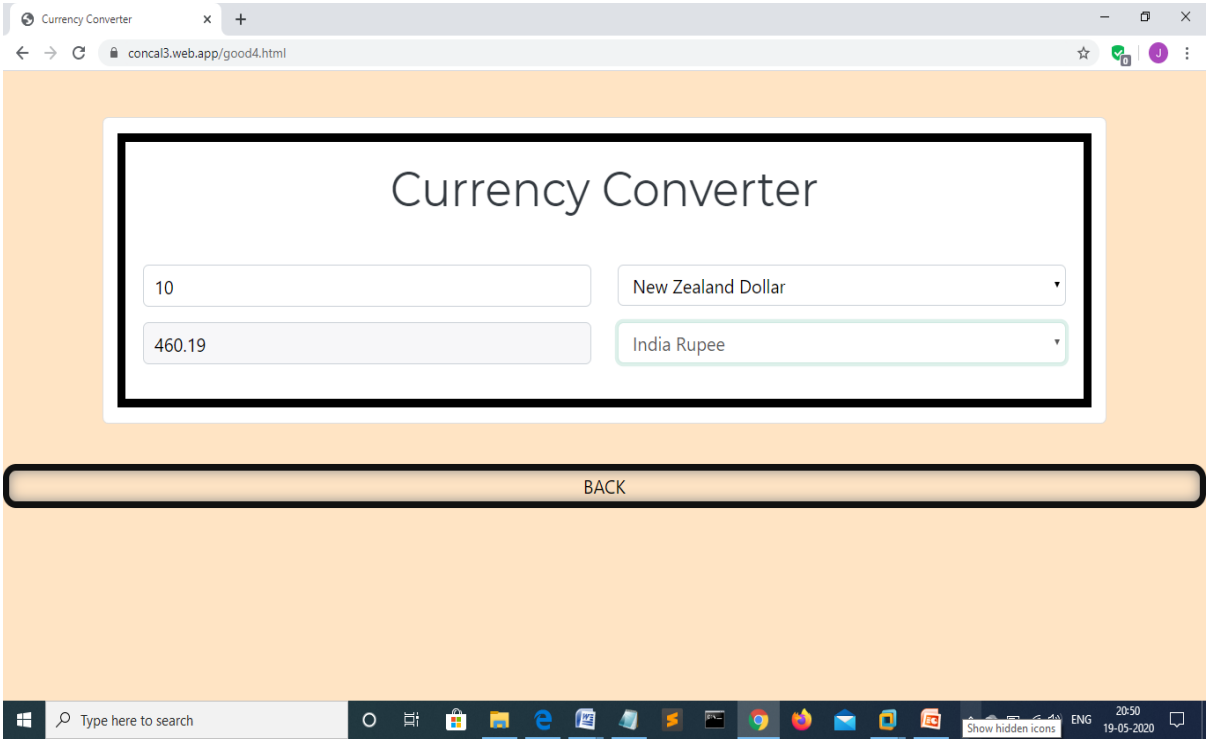


This is the Unit Converter where we need to specify the No. of units and we have dropdown for unit type. Whichever Unit Type we select the conversions for Convert from and Convert to will change accordingly.

CURRENCY CONVERTER







This is the Currency Converter which converts the source currency to the destination currency.

8. Conclusion

The end result of calculator is its ability to process number and operators, and to provide a useful result. It is easy in calculating tedious mathematical problems and in retrieval of errors.

Unit converter converts a measured quantity to a different unit of measure without changing the relative amount.

Currency converters aim to maintain real-time information on current market or bank exchange rates, so that the calculated result changes whenever the value of either of the component currencies does. They do so by connecting to a database of current currency exchange rates.

9. References

- Web Hosting Guide for Beginners (J.D. Rockefeller's Book Club)
- https://firebase.google.com/
- https://firebase.google.com/docs/hosting
- https://nodejs.org/en/
- https://www.youtube.com/
- https://www.w3schools.com/