

# Rizvi College of Engineering

Department of Computer Engineering
Mini Project Synopsis Report

on

# **Currency Converter**

Submitted in partial fulfilment of the requirements
of the Mini-Project 1A of Second Year of
Bachelors of Engineering

by

Soham Shrikant Manjrekar (UIN:201P018)

Shaikh Affan Sajid (UIN:201P062)

Mohammed Baquir Sayed (UIN:201P055)

Suchit Prashant Sawant (UIN: 201P040)

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Guide:

Prof. Mansi Shah



University of Mumbai

2021 - 2022

**ABSTRACT** 

Different countries use different currency, and there is daily variation in these currencies relative to

one another. Those who transfer money from one country to another (one currency to another) must be

updated with the latest currency exchange rates in the market.

Currency converter mini project is built keeping this thing in mind. In this Website, there is regular

update about currency of every country by which it displays present currency market value and conversion

rate. Such website can be used by any user, but it is mainly useful for business, shares, and finance related

areas where money transfer and currency exchange take place on a daily basis.

In this currency converter website, users are provided with an option to select the type of conversion,

i.e., from "this" currency to "to" currency. This simple feature allows users to enter amount to be converted

(say currency in Dollars), and display the converted amount (say currency in Euro).

Major functions and features have been integrated to enhance the performance of the app to give

better results for the users. Currency Converter website gives accurate corresponding exchange result value

in their user hand by utilizing online information sources. It is used in knowing the currency value of

different countries and make available to common people quickly and easily. They can utilize anywhere and

at any time. It helps travellers who are travelling across the borders. It can be further developed by including

more currency option and by showing currency rates table for delivering exact information to the users

Keywords: Currency Converter, Currency Exchange, Crypto Currency Converter, Realtime

## Certificate

This is to certify that the project synopsis entitled "Currency Converter" has been submitted by Soham Shrikant Manjrekar, Shaikh Affan Sajid, Mohammed Baquir Sayed and Suchit Sawant under the guidance of Prof. Mansi Shah in partial fulfillment of the requirement for the award of the Degree of Bachelor of Engineering in Computer Engineering from University of Mumbai.

Certified By

Prof	Prof
Project Guide	Head of Department
Prof	Prof
Internal Examiner	External Examiner

Dr. Varsha Shah

Principal



Department of Computer Engineering **Rizvi College of Engineering,** Off Carter Road, Bandra(W), Mumbai-400050

# Index

Sr.	Title	Page No
No		
1.	INTRODUCTION	5
	1.1. PROJECT AIM	
	1.2. ABBREVIATIONS	
2.	LITERATURE SURVEY	
	2.1. SURVEY OF EXISTING SYSTEM	
	2.2. LIMITATIONS OF EXISTING SYSTEM	
	2.3. PROBLEM DEFINITION STATEMENT	
	2.4. OBJECTIVES OF THE STUDY	
	2.5. SCOPE OF THE STUDY	
3.	PROPOSED SYSTEM	13
	3.1. ALGORITHM	
	3.2. FLOWCHART	
	3.3. DETAILS OF HARDWARE &SOFTWARE	
	3.4. DESIGN DETAILS	
	3.5. APPROACH	
	3.6. SCREENSHOTS OF PROJECT	
4.	IMPLEMENTATION PLAN	22
	4.1. GANTT CHART	
	4.2. COST OF PROJECT	
	4.3. TEST PLAN	
	ADVANTAGES	24
	CONCLUSION	25
	REFERENCES	26

## 1. INTRODUCTION

Currency converter (or currency exchange) is a mini project coded in Python (Flask framework) programming language. This simple Website provides a web-based interface for exchanging/converting money from one currency (say \$) to another currency (say \$).

It is useful tool which gives us the value of certain amount of the one currency to be converted in to different currency. It is also regarded as the value of one country currency in term of another currency. Track of your expenses when travelling abroad Business, shopping and trading.

### 1.1. PROJECT AIM

The main aim of this website is to utilize the python (Flask) programming language for the implementation of real time currency conversion. The website can perform for simultaneous currency conversion by utilizing online information source.

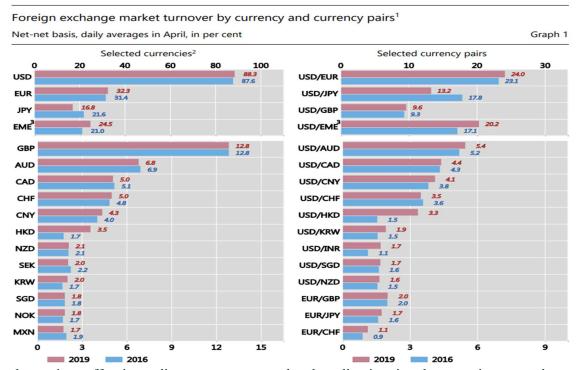
# 1.2. ABBREVIATIONS

CURRENCY		CRYP	CRYPTOCURRENCY	
"ARS"	Argentine Peso			
"AUD"	Australian Dollar	U A ANZEU	A	
"BRL"	Brazilian Real	"AAVE"	Aave	
"GBP"	<b>British Pound Sterling</b>	"BNB"	Binance-Coin	
"BAM"	Bosnia-Herzegovina Convertible Mark	"BUSD"	Binance-USD	
"BGN"	Bulgarian Lev	"BTC"	Bitcoin	
"CAD"	Canadian Dollar	"BCH"	Bitcoin cash	
"CLP"	Chilean Peso			
"CNY"	Chinese Yuan	"ADA"	Cardano	
"COP" "HRK"	Colombian Peso Croatian Kuna	"LINK"	ChainLink	
"CZK"	Czech Republic Koruna	"CRO"	Crypto.com Coin	
"DKK"	Danish Krone		V -	
"DOP"	Dominican Peso	"DOGE"	DogeCoin	
"EGP"	Egyptian Pound	"EOS"	EOS	
"EUR"	Euro	"ETH"	Ethereum	
"FJD" "HKD"	Fijian Dollar Hong Kong Dollar	"ETC"	Ethereum-Classic	
"HUF"	Hungarian Forint			
"INR"	Indian Rupee	"FIL"	Filecoin	
"IDR"	Indonesian Rupia	"IOTA"	IOTA	
"IQD" "ILS"	Iraqi Dinar Israeli New Shekel	"LTC"	Litecoin	
"JMD"	Jamaican Dollar	"NEO"	NEO	
"JPY"	Japanese Yen			
"JOD"	Jordanian Dinar	"MATIC"	Polgon	
"KWD"	Kuwaiti Dinar	"XRP"	Ripple	
"MYR"	Malaysian Ringgit	"XLM"	Stellar	
"MXN" "MAD"	Mexican Peso Moroccan Dirham			
"TWD"	New Taiwan Dollar	"USDT"	Tether	
"NZD"	New Zealand Dollar	"THETA"	Theta-Token	
"NOK"	Norwegian Krone	"TRX"	Tronix	
"PKR"	Pakistani Rupee		-	
"PEN"	Peruvian Nuevo Sol			
"PHP"	Philippine Peso			
"PLN"	Polish Zloty			
"RON"	Romanian Leu			
"RUB"	Russian Ruble			
"SAR" "SGD"	Saudi Riyal Singapore Dollar			
"ZAR"	Singapore Donar South African Rand			
"KRW"	South Korean Won			
"SEK"	Swedish Krona			
"CHF"	<b>Swiss Franc</b>			
"THB"	Thai Baht			
"TRY"	Turkish Lira			
"VND"	Vietnamese Dong			
"AED"	United Arab Emirates Dirham			
"USD"	United States Dollar			

### 2.LITERATURE SURVEY

With more than 180 currencies being recognized as legal tender across the globe today, <u>currency exchanges</u> have become imperative for efficient global trade and tourism. Since time immemorial, it has been vitally essential for individuals who are traveling or paying for goods and services all around the world to convert currencies from one form to the next. Over the years, brick and mortar financial institutions such as banks, <u>brokerage</u> firms, and currency traders have been leading the way in the provision of currency exchange services. However, with the perverse growth of the internet has made it possible for organizations or individuals to convert money online via currency exchange websites. This has made it easy for individuals and organizations from all around the globe to convert cash without so much hassle.

Currency exchange websites are online-based platforms that help people and businesses from across the globe to convert currencies from one form to another. Through the provision of a secure and centralized

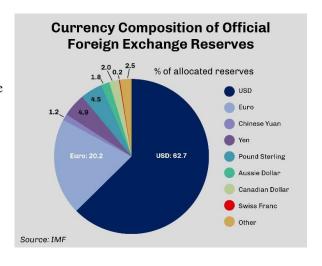


setting, these sites offer immediate transparency, thereby allowing involves parties to understand the financial market conditions and exchange currencies safely. Most of these websites feature a universal currency converter, an application that permits the involved parties to convert currency values based on the day's exchange rates.

One situation that warrants currency exchange is when traveling out of the country. Since every country has its unique currency, you need to convert your money into the destination country's currency so that you can be able to buy their goods and services. When it comes to travel currency exchange, most individuals like to convert their cash before they embark on their journey so that they can get reasonable rates. Organizations and individuals can also convert currency when engaging in international trade.

### What is foreign exchange?

This is the exchange of one currency for another or the conversion of one currency into another currency. The foreign exchange market is also recognized as the global market where currencies are traded virtually around the clock. It is estimated to be the largest and the most liquid financial market in the world. From the definition above, we understand the term foreign exchange also means currency exchange.



### • What is exchange rate?

An exchange rate is the value of one nation's currency vs the currency of another nation. For instance, let's take the Nigerian Naira vs the United State Dollar; 1NGN= 360\$. The exchange rate of USD in Nigeria is therefore 360.

### • What is Cryptocurrency?

These are currencies only available in a digital or electronic form, and not in the physical form. Recall in the previous section where we talked about money as a currency. We established the fact that a currency must be accepted for exchange before it can be considered as a currency. This is to tell you; digital currency also serves as a means for legal exchange in the digital world. It is a decentralized currency; hence it cannot be controlled by any physical government. This is the main reason some countries stand against it.

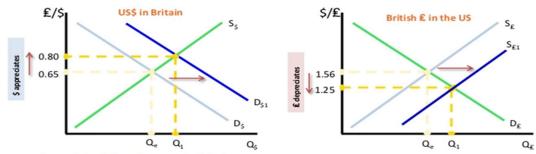
# 3.2 Exchange Rates

The Forex Market



#### The Foreign Exchange Market - Changes in the Exchange Rate

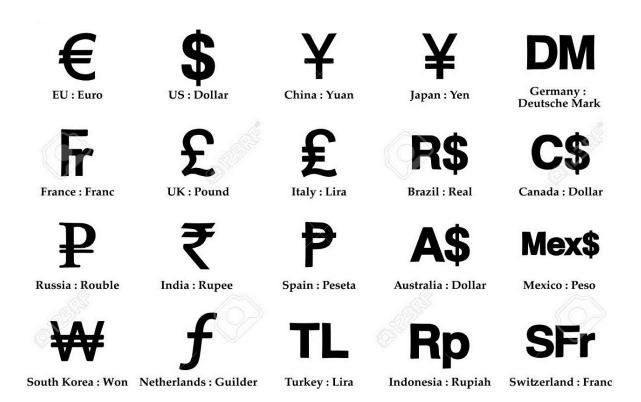
We now know that an exchange rate is determined by supply and demand for a currency. Therefore, if supply or demand change, the exchange rate changes.



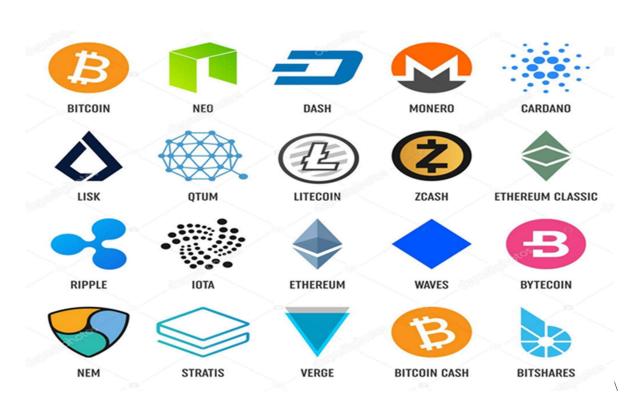
#### Assume demand for dollars increases in Britain:

- . The D\$ curve shifts outwards, causing the dollar to become more scarce in Britain. The dollar appreciates.
- In order to buy acquire more dollars, British households, firms, government or banks must supply more pounds.
   Pounds become less scarce in the US market, and therefore depreciates.
- An appreciation of one currency is always accompanied by a depreciation of the other currency.

## **CURRENCY SYMBOLS**



# **CRYPTO-CURRENCY SYMBOLS**



### 2.1 SURVEY OF EXISTING SYSTEM

### **Top Currency Exchange Websites:**

#### \* XE

Boasting to be one of the most renowned global foreign exchange platforms, XE is a professionally designed website that is easy to use and navigate. The platform offers a broad range of other financial services besides being among the most reputable and trusted international foreign exchange website. The site is cost-effective as compared to other platforms, and it helps you save money in the long-run. It covers up to 70 currencies across 170 countries.

#### Cons:

• Exchange rates are provided only when you transact

#### **❖** TransferWise

Another renowned currency exchange website is TransferWise. This site is designed to help you save cash on exchanges through their exclusive peer-to-peer system. The website allows you to exchange currencies with other individuals seeking to convert their money to your currency. This platform is also renowned for its swift transfer services, which enable you to send or receive money in various countries. The website also takes pride in its transparency, which is what allows parties to view fees and rates before they make any transaction.

#### Cons:

- No cash pickup option
- It charges currency exchange fees for international transfers.

#### Oanda

Feted with several prestigious awards for its outstanding customer service, Oanda is a US-based platform that offers top-class currency exchange services. Besides, they also provide money transfer services, Forex &CFD trading, and corporate fx payments. This platform provides currency conversion for up 160 currencies

#### Cons:

Financial information is not available for those who are not transacting with this platform

#### \* Travelex

Travelex is also another popular online platform for currency exchanges around the world. The website boasts a ton of currency exchange resources such as the currency calculator, historical analysis, graphs, and monthly averages. Through Travelex, businesses and individuals can access exchange rates for different currencies from all over the world. This site's exchange rates reflect the changes that occur in worldwide markets whenever they occur.

#### Cons:

- No cash payment or pickups
- Doesn't have the most competitive exchange rate

## 2.2 LIMITATIONS OF EXISTING SYSTEM

The many current converter system for currency exchange is to choose one currency from 200+ currencies manually and for crypto currency another tool is present. This is time consuming process and time is very important in trading in currencies.

- 1) It is less user-friendly.
- 2) It is difficult to choose one currency because they have 200+ currencies and many currencies are not mostly used.
- 3) It is a time-consuming process to find another crypto currency tool. It required lot of time
- 4) Daily rate charts of all currencies are not available

## 2.3 PROBLEM DEFINITION STATEMENT

The program should have a range of currency types for it to work properly and calculate the exchanged amount between all of the currencies – this will involve setting the decimal data type properly. It has to be user-friendly and aesthetically pleasing – it has to look good, presentable and be easy to use. The investor wants a currency converter that converts at least top 50 currencies. Investor has asked us to design a program which can convert different currencies based on a given exchange rate, crypto currencies and country currencies are work in one converter.

## 2.4 OBJECTIVES OF THE STUDY

The main objective of the study is to develop a currency converter for major countries in the world. The countries to be used here are Indian Rupees (INR), Australian Dollar (AUD), Euro (EUR), Nigerian Naira (NGN) and US Dollar (USD) and many other. To achieve this objective, specific objectives are laid out which include:

- i. Develop a system which able to convert between the currencies mentioned above
- ii. A system in which an exchange rate for any particular currency can be stored and used in conversion between the correspondent currency.
- iii. Develop the program that can determined the amount of one currency to another currency using API.
- iv. Trader is able to Convert one currency to another by using few clicks of mouse and only press one convert button.

## 2.5 SCOPE OF THE STUDY

The scope of this project is to develop a currency converter system by using flask. The system will be able to convert the crypto and country currencies in one converter extract the data from the currency real-time rates json by using API, accept and store an exchange rate for conversion between currencies. Add all currency-based rates charts on website.

There is a future scope of this facility that many more features such as online lectures video tutorials can be added by teachers as well as online assignments submission facility, a feature of group chat where students can discuss various issues of engineering can be added to this project thus making it more interactive more user friendly and project which fulfils each user need in the best way possible

This Website will be useful to every organization that deals with Currency, it will help in easy conversion of currency to another. This work is also significant to Trader who needs to make research about currency conversion.

### • DEFINITION OF TERMS:

Currency: Money or any item used for exchange of goods and services and facilitates transactions

Conversion: The act of bringing out an equivalent of one commodity in another commodity

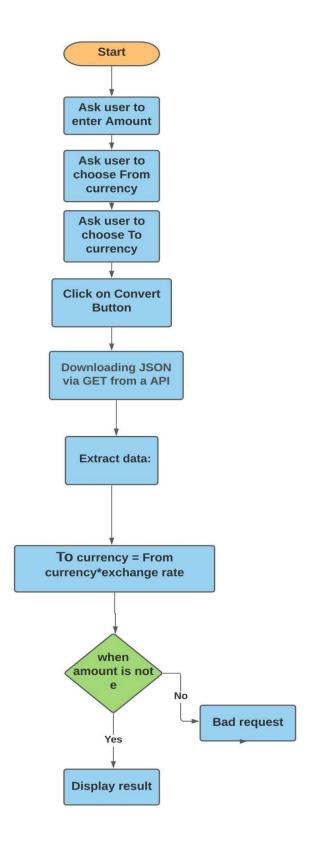
## 3.PROPOSED SYSTEM

This Website can be used by any user, but it is mainly useful for business, shares and finance related areas where money transfer and currency exchange take place on a daily basis. The amount of money you'll get for a given amount of your country's currency is based on internationally determined live exchange rates. Current international exchange rates are determined by a managed floating exchange rate. The aim of our system is to help people who need to recognize different currencies and able to convert then to another currency using a known exchange rate.

### 3.1 ALGORITHM

- Step1: start
- Step2: Enter the amount value
- Step3: Select the currency from to to
- Step4: Click on the convert button
- Step5: The value and latest time will be displayed
- **Step6**: Exit

# 3.3 FLOWCHART



### 3.3. DETAILS OF HARDWARE & SOFTWARE

# 1) Hardware Requirements:

It should run on every standard pc currently in use. But it will be better to mention processor requirements, memory, screen resolution. Well, hardware requirements are not much, you just need a laptop or desktop computer which has its basic functionality.

- I3 or higher,
- 256 MB RAM
- 1 Gb hard free drive space

# 2) Software Requirements:

The main thing is the software requirements for the project on which you want to work. Here are some useful software's which help a lot in making websites from scratch.

### a) Editor

You need an editor for writing all the html, JavaScript, CSS codes. And the best editor for that is Vscode which you can get for free from its official website. It is available for Windows, Mac, and Linux.

## b) Web Browser

Next up is, you need a web browser to run and test the code. I will recommend Google Chrome for it, because it is more advance, some people prefer Mozilla Firefox for its console service, they write their code in it and then copy-paste it in the editor.

## c) Local hosting

Well, if you are going to use flask framework to make it then you are going to need development server to run it, well development server is a cross platform of vscode which allows you to run flask on your system. It works on all the operating systems like Windows, Mac, and Linux.

- Flask
- HTML
- JavaScript
- CSS
- Web Browser: Microsoft Internet Explorer, Mozilla, Google Chrome or later
- Operating System: Windows XP / Windows 7/ Windows 10

# 3.4. DESIGN DETAILS

- We are using different language like HTML for creating web page layout CSS for design web page
  - JAVASCRIPT for adding extra features like Change the color of a button when the mouse hovers over it
- Flask uses for backend. Flask is a popular and lightweight Python web framework, meaning it is a third-party Python library used for developing web applications.
- we need a API KEY from ALPHA VANTAGE to get the real time currency exchange rate.
- This code is hosting using PythonAnywhere server.

#### **PROGRAMMING LANGUAGES:**

The whole Project is divided in two parts the front end and the back end.

#### Front end

The front end is designed using of html, CSS, Java script

- 1. HTML HTML or Hyper Text Markup Languages the main markup language for creating web pages and other information that can be displayed in a web browser.HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>), within the web page content. HTML tags most commonly come in pairs like <h1> and </h1>, although some tags represent empty elements and so are unpaired, for example <img>. The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags). In between these tags web designers can add text, further tags, comments and other types of text-based content.
- 2. CSS Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a corner stone specification of the web and almost all web pages use CSS style sheets to describe their presentation. CSS is designed primarily to enable the separation of document content from document presentation, including elements such as the layout, colours, and fonts. This separation can improve content accessibility, provide more flexibility and control in the specification.

**3. JAVASCRIPT** - JavaScript (JS) is a dynamic computer programming language. It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. It is also being used in server-side programming, game development and the creation of desktop and mobile applications. JavaScript is a prototype-based scripting language with dynamic typing and has first-class functions. Its syntax was influenced by C.

#### Back end

The Back end is designed using of Flask.

- 1. Flask Flask is a web application framework written in Python. Armin Ronacher, who leads an international group of Python enthusiasts named Pocco, develops it. Flask is based on Werkzeug WSGI toolkit and Jinja2 template engine. Both are Pocco projects.
- A. **WSGI:** Web Server Gateway Interface (WSGI) has been adopted as a standard for Python web application development. WSGI is a specification for a universal interface between the web server and the web applications.
- B. Werkzeug: It is a WSGI toolkit, which implements requests, response objects, and other utility functions. This enables building a web framework on top of it. The Flask framework uses Werkzeug as one of its bases.
- C. **jinja2:** jinja2 is a popular templating engine for Python. A web templating system combines a template with a certain data source to render dynamic web pages.

### **SYSTEM DESIGN:**

System design is the solution for the creation of a new system. This phase focuses on the detailed implementation of the feasible system. Its emphasis on translating design. Specifications to performance specification. System design has two phases of development

### A. Logical design:

During logical design phase the analyst describes inputs (sources), output s(destinations), databases (data sores) and procedures (data flows) all in a format that meets the user requirements. The analyst also specifies the needs of the user at a level that virtually determines the information flow in and out of the system and the data resources. Here the logical design is done through data flow diagrams and database design.

### B. Physical design:

The physical design is followed by physical design or coding. Physical design produces the working system by defining the design specifications, which specify exactly what the candidate system must do. The programmers write the necessary programs that accept input from the user, perform necessary processing on accepted data and produce the required report on a hard copy or display it on the screen.

#### **\* INPUT AND OUTPUT DESIGN:**

### 1) INPUT DESIGN:

Input design is the link that ties the information system into the world of its users. The input design involves determining the inputs, validating the data, minimizing the data entry and provides a multi-user facility. Inaccurate inputs are the most common cause of errors in data processing. Errors entered by the data entry operators can be controlled by input design. The user-originated inputs are converted to a computer-based format in the input design. Input data are collected and organized into groups of similar data. Once identified, the appropriate input media are selected for processing. All the input data are validated and if any data violates any conditions, the user is warned by a message.

In this project the Amount is to be entered at the time of Currency conversion. A page is designed for this purpose which is user friendly and easy to use. The design is done such that users get appropriate messages when exceptions occur.



### 2) OUTPUT DESIGN:

output is the most important and direct source of information to the user. Output design is a very important phase since the output needs to be in an efficient manner. Efficient and intelligible output design

improves the system relationship with the user and helps in decision making. Allowing the user to view the sample screen is important because the user is the ultimate judge of the quality of output. The output module of this system is the selected notifications. In this project the two outputs show after Currency conversion, one is result of conversion and second is last refreshed time. A webpage is designed for this purpose which is user friendly and easy to use. The design is done such that users get appropriate result and time after conversion



### 3.5. APPROACH

To solve this problem, the following steps are followed:

- 1. First, we need to import the libraries like requests, flask.
- 2. Then, create a Flask app and name it "app".
- 3. API key taken from www.alphavantage.co
- 4. Now, Route Our Function:
  - We'll listen to root URL or index page requests and invoke the index() function.
- 5. Extracting data (include --> amount: given amount, from\_c: convert from which currency, to c: convert to which currency) given by user to the server
- 6. Making of the proper URL before create a get request to 'www.alphavantage.co' API service
- 7. Make the get request to 'www.alphavantage.co' API service and then store the response to 'response' variable
- 8. Calculating the amount according to the currency exchange rate and store the value to 'result' variable
- 9. Extracting all other necessary information from 'response' to display in web-page
- 10. It returns to home page of application with essential information for displaying to user
- 11. Create a Python Try-Catch Block We want to catch any exceptions.
- 12. I run mine in the debug mode. Basically we invoke the run() method of the Flask class, with debug property set to true.

### • THE CURRENCY CONVERTER API:

This API provides automation capability for converting one currency into another with our Forex Reference Suite service.

It provides an easy way to convert currencies using the latest available conversion rates data. Designed as a single call REST API, it provides a quick way to integrate accurate currency conversion functionality in your software.

With a single GET or POST request you may calculate any amount from over 23000 currency pairs with accurate up to date exchange rates.

#### • JSON:

Json is the most popular data inter-change format these days. The reason for that is because of it's light weightiness and ease of readability. We use it to exchange information across applications especially via HTTP.

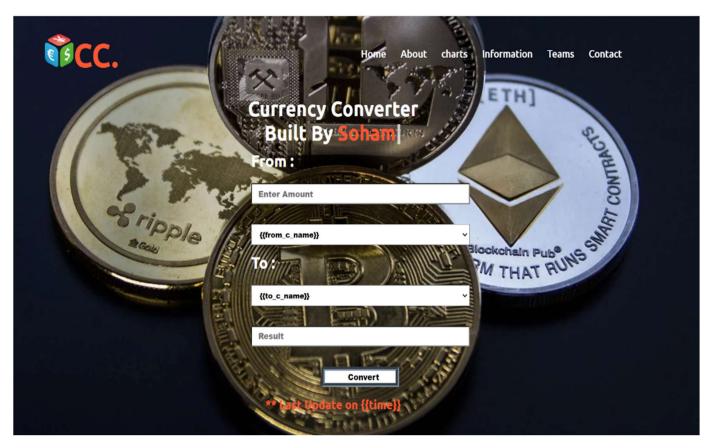
```
Examples:

US Dollar to Japanese Yen:

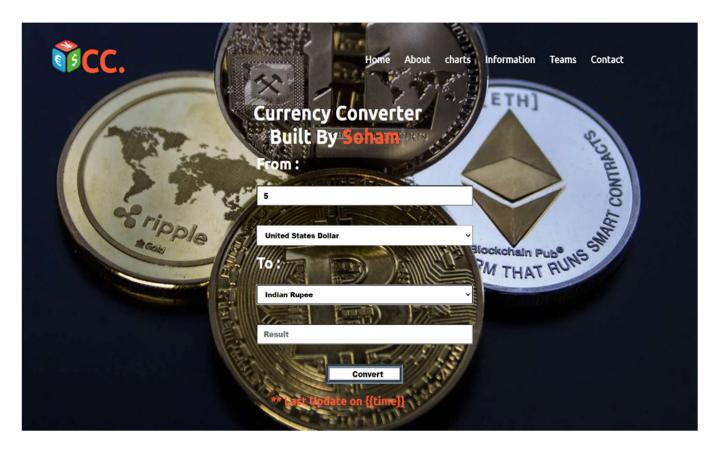
{
    "Realtime Currency Exchange Rate": {
    "1. From_Currency Code": "USD",
    "2. From_Currency Name": "United States Dollar",
    "3. To_Currency Code": "JPY",
    "4. To_Currency Name": "Japanese Yen",
    "5. Exchange Rate": "113.85000000",
    "6. Last Refreshed": "2021-11-13 01:33:22",
    "7. Time Zone": "UTC",
    "8. Bid Price": "113.84800000",
    "9. Ask Price": "113.85500000"
}
```

# 3.6. SCREENSHOTS

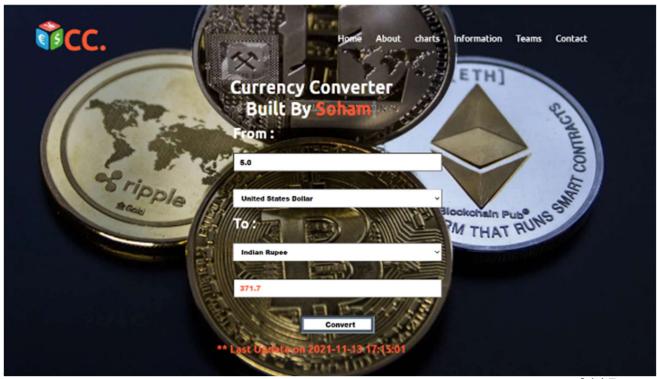
# • Project user interface:



• The view when currencies are selected:

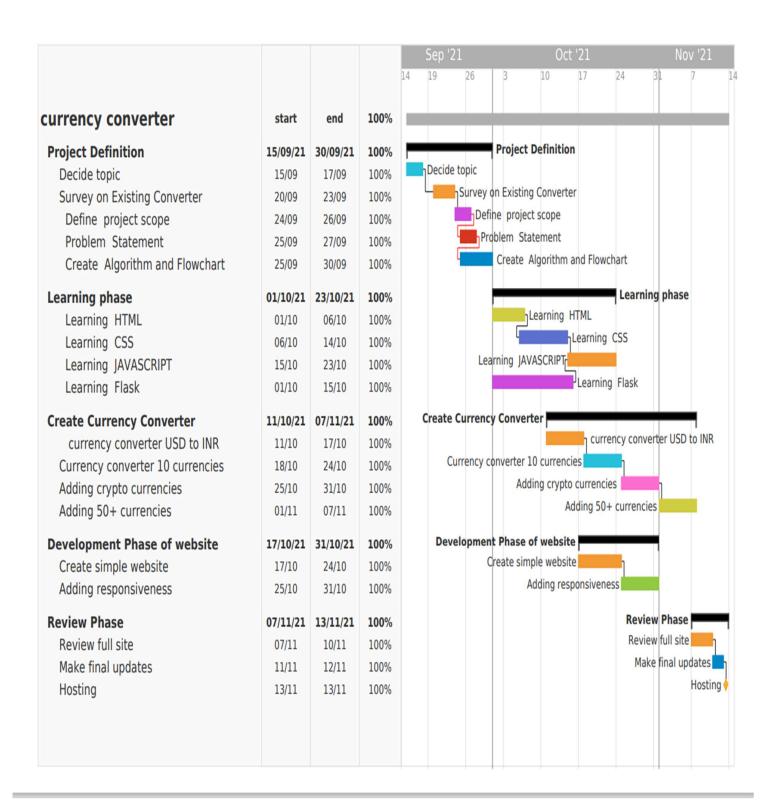


• The view when currency Conversion is done:



### 4.IMPLEMENTATION PLAN

### 4.1. GANTT CHART



### 4.2. COST OF PROJECT

Cost of project is approx. Rs. 0 because we use free hosting and domain. Free API key taken from Alpha vantage and no buy any template or logo. But in future upgrade cost of website is follows:

 Domain Name
 Rs. 199-1000

 Website Hosting
 Rs. 2000-10000

 Website Theme
 Rs. 0-8000

 Mobile Responsive
 Rs. 1000-5000

 Logo
 Rs. 500-6000

 Images
 Rs. 500-2000

 API Integration
 Rs. 1000-7000

### 4.3. TEST PLAN

### 1. Test Case 01:

• **Test Title:** USD to INR

- **Test Procedures:** Select "United States Dollar" from {{from\_c\_name}} and Select "Indian Rupee" from {{to\_c\_name}} then Click on the convert button.
- Expected Result: In result box see Result of conversion and in bottom of converter see last update time.

### 2. Test Case 02:

• Test Title: BTC to INR

- **Test Procedures:** Select "Bitcoin" from {{from\_c\_name}} and Select "Indian Rupee" from {{to\_c\_name}} then Click on the convert button.
- Expected Result: In result box see Result of conversion and in bottom of converter see last update time.

### 3. Test Case 03:

• Test Title: Euro Rates chart

• **Test Procedures:** Click on Euro rates.

• **Expected Result:** It will redirect to Euro rates chart page.

### **ADVANTAGES**

- Can be Used Anywhere Traders who send money overseas can immensely benefit from this tool. Individuals who are using an updated converter have access to all the currency exchange rates. This means that they can perform their online transactions or businesses within no time.
- An online currency converter is a convenient, easy-to-use tool, making it an energy ad 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 forex 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 Many business people use this tool in the import/export business to determine the selling and buying profits of various products. With an online converter, a trader can identify the difference in making or losing money. All kinds and types of businesses can use online currency
- Converters for quick and effective results. As a trader, you can use a converter to get a good estimate of what your foreign trip would cost while traveling abroad.
- It is Efficient One can use a converter to perform entire tasks of calculations. Apart from performing calculations, this tool will always give you regular updates on rates of exchange. It would be very difficult for investors to convert different currencies without using a currency convert

### **CONCLUSION**

Currency converter that the people are using, they will always find ways to get the highest possible profits out of the exchanges. To those who are going to travel, it is a wise thing to check the different foreign exchange options they have beforehand.

It is also regarded as the value of one country currency in term of another currency. Track of your expenses when travelling abroad Business, shopping and trading. this tool will always give you regular updates on rates of exchange. It would be very difficult for investors to convert different currencies without using a currency convert

# **REFERENCES**

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