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Android Application for Currency Conversion

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Abstract - *Currency is a primary medium of exchange within the times, having way back replaced bartering as a way of trading goods and services. Due to Globalization, there is a tremendous growth of businesses nationally as well as internationally. So, with different nations, they have their different currency values. So, to deal with these fluctuating currency rates, having a mobile application with the latest exchange rates also with a converter which can be accessed anytime anywhere is very helpful. CurrencyX deals with the development of an android-based application for the conversion of different currencies along with getting the latest exchange rates. The main aim of this proposed application is to provide all the features in a single place, accessible anytime anywhere. The application consists of the following modules, namely:(i) Converter (ii)Chart (iii)News (iv)Payment Gateway. The data is fetched through API and the Chart is displayed using the MPAndroidChart library. This application can be used by international tourists, forex traders, and analysts.*

Key Words: Currency, Mobile application, Exchange rates, Android, Chart, News, Forex.

1. INTRODUCTION

Nowadays, money plays an important factor in various aspects from sociological to economical parts of life. The value of this money varies from country to country depending on the exchange rate value it holds in the global market and also, it is determined by the demand for it, a bit like the worth of products and services. Many people don't concentrate to exchange rates because rarely do they have to. The typical person's lifestyle is conducted in their domestic currency. Exchange rates only inherit a focus for infrequent transactions, like foreign travel, import payments, or overseas remittances.

Hence to monitor and analyse the exchange rates of various currencies, many currency exchange systems came into existence. These exchange systems were early available for the companies or various institutions. But as there were advancements in technology, most of the tasks are being on the mobile itself, so currency converter applications with much more features were made the use by people across the globe. Mobile applications made it simpler, accessible anytime and anywhere.

2. PROBLEM STATEMENT

As the currency rates always fluctuate it becomes harder to monitor them. A simple Google search is not always a viable option. You have to visit various websites for a reliable piece of information. It's also not easy to track a currency's performance over a while, and if there is a need to transfer money immediately then it's not possible. So, by providing all the currency-related information and the ability to transfer money in one place such as a mobile application, this issue can be solved.

3. CURRENCY EXCHANGE SOFTWARE MARKET

With exchange happening in foreign markets volatility has fallen over the past few years since the record levels of liquidity provided by the central banks have calmed the markets, it has left the investors with separate ways to wring a take advantage of the trading currencies. As per the Deutsche bank, the top of 2019 experienced a slowdown across all currencies, including the commodity currencies, the Scandinavian and therefore the EUR crosses, and even GBP, because of major political activities happening lower volatility was seen. On the opposite hand, such a trend has been emerging in Asia with the growing fintech activity and increased investments in Southeast Asia. This has opened an area within the money transfer market with players using technology that can provide transparency on price. 5 billion, offers an answer that uses algorithms to predict which country will need liquidity, when, and top up the bucket accordingly with its own. This has opened an area within the money transfer market with players using technology that can provide transparency on price. 5 billion, offers an answer that uses algorithms to predict which country will need liquidity, when, and top up the bucket accordingly with its own. With the launch of a price discovery platform, Send4x for money transfer led the users to get the most cost-

effective and fastest ways to send money. With the increase within the Bitcoin price, more players within the market try to enter, therefore the exchange business has become a lucrative business model.

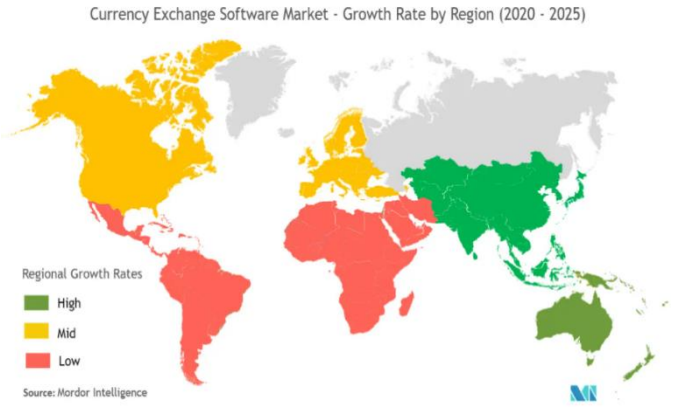

Fig -1: Global view of expected growth

Figure 1, shows the expected growth of the currency exchange software market for a span of five years (2020-2025). The regional growth rate of Australia seems to be the highest whereas Africa and South America show the lowest growth rates.

4. PROPOSED SYSTEM

This system gathers information regarding the current currency rates, their conversion and trends. The application interacts with the server through API calls with the Database to display the current currency rates and their conversions.

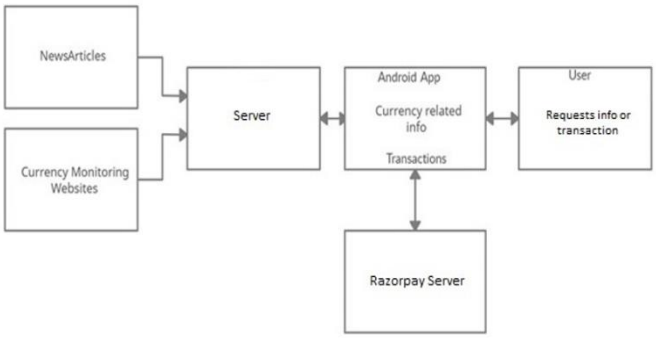

Fig -2: Project Framework

Base currency is set by the user. Once the base currency is set by the user, the application provides the user with the currency exchange rates with base currency, the trends regarding the base currency, providing the user with the latest news related to the forex market. Presenting the trends in a Graphical format that can be easily analyzed with access to historical data. Also, provide a payment gateway interface for international transactions. All of these features are provided within a single Android application which most of the others mobile applications lack.

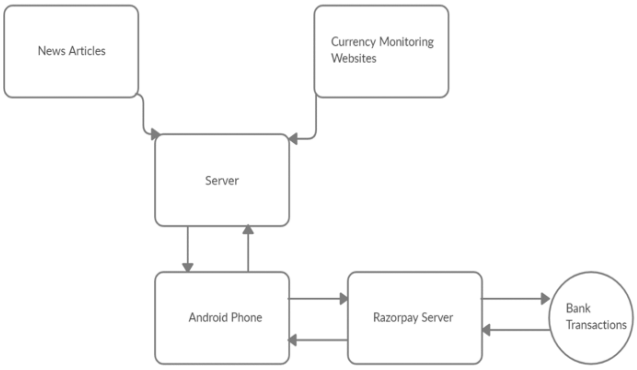

Fig -3: Data Flow Diagram

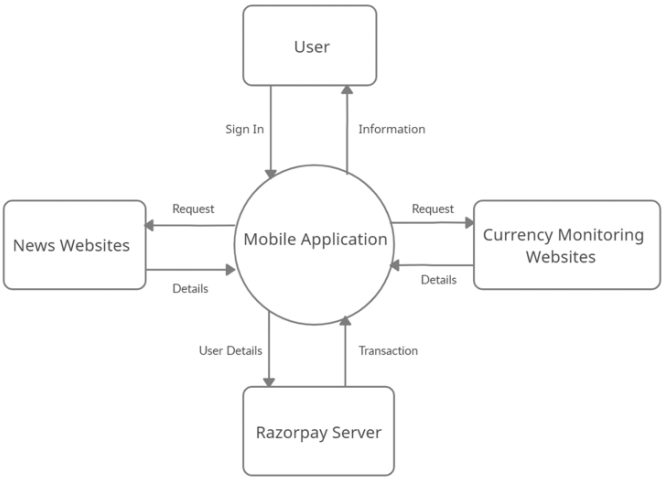

Fig -4: Control Flow Diagram

5. FEASIBILITY

- Operational Feasibility: It is the ability to utilize, support, and perform the necessary tasks of a system such as collecting data from various websites, filtering them, and storing them in the database server. As per the user's choice user sets the base currency, then accordingly shows the user the currency exchange rates, trends from the data that is fetched from the database server of currency monitoring websites. Similarly, the news feed

is fetched through forex market news-related websites through API calls.

- Technical Feasibility: It includes the development of a working prototype of the final mobile application. Android is the most used mobile operating system and availability of good modules with strong customization options, dynamic features, good connectivity. Here we have implemented the project using Java programming language and the Android Studio - which is an open-source Android application development platform that is used to create, design, test and debug Android applications. API's have also been used to fetch data from the sources and display it in the application.
- Economic Feasibility: It is the cost and logistical outlook for a business project. We'll be using the European Central Bank API for getting exchange rates and trends, News API from newsapi.org, and Razor pay REST API for payment gateway integration. All the APIs used are free to use and open-source. The cost incurred will be at the time of deployment i.e., Play Store, Maintenance and Database setup as Firebase, which will be required if the user pool is higher than expected.

6. METHODOLOGY

Here, we have used the Agile methodology for the development of this project. The main reason behind selecting the Agile method is the simplicity of this strategy which is rapid development without too much need of documentation in the case of the android application we need to create, check, correct, rebuild, test continuously, and each time we make changes we'd like to travel through these steps to verify the results of our work. Agile methodology has various roles during the development of software [1]. The regular waterfall methodology includes judging the wants before time with testing and documentation as end steps instead of being crucial as a part of development.

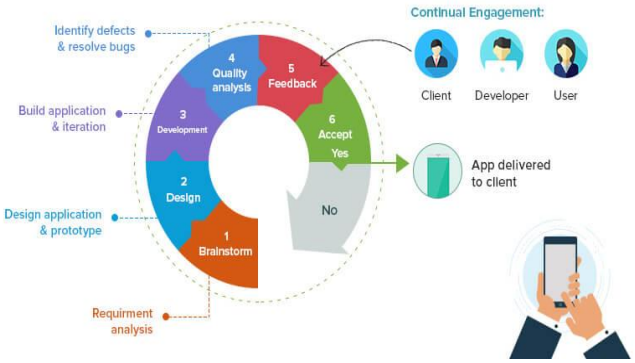

Fig -5: Stages of Agile Development

The application comprises the following major modules:

Converter module- The converter module is important as it serves as the homepage of the application. It consists of a list of currencies with their country flag and currency symbol. Euro is the base currency with the other three currencies like the Indian rupee, American dollar, and Australian dollar when the application is launched for the very first time. As the user edits the amount of the base currency in the input, simultaneously the amount value of the other currencies gets updated. The list has 32 international currencies on which the user can add, remove and clear the list of currencies up to his wish.

Chart module- Chart modules display a line graph of the currencies rates against time which ranges from present-day to a maximum of five years. It can also be customized to view a range of weeks, months, quarters, or years. The currency selected from the list and base currency chart is displayed by default but can be changed by adding another currency from the list. The chart displayed can be inverted too. The chart responds to two-finger pinch and expands gestures, also will scroll when expanded. All these features in the chart are implemented using the MPAndroidChart library- which is an open-source Android chart view/graph view library using which you can draw a line, bar, pie, radar, bubble, candlestick charts.

News module- The news module provides the user with the latest news on the forex market, commodities, and indices on daily basis. The news displayed consists of a title, along with a small description and the source of the news. These news articles are used for the prediction of the exchange

rates, stock rates through Deep learning techniques, and sentiment analysis of the news article's title [2][3].

Payment Gateway- Payment gateway makes it easier for the user to send as well as accept payments internationally. For this, we have used Razorpay API integration for the payments to be made through the app. The API integration is very easy with all the steps explained in the application. Razorpay supports more than a hundred currencies around the world with real-time currency conversions and minimal charges on every transaction. The payments are accepted through debit/credit cards, net banking, wallets and also have an inbuilt PayPal integration.

7. IMPLEMENTATION

For the implementation of this Application, we used Android Studio along with APIs to fetch data. The test here was to make the application user-friendly by making its interface basic, easy to use, and helpful for its fundamental reason. Since there exist several various versions of android and it continuously keeps updating previous ones with new features due to which developing the app was quite difficult it was a tough choice to select the best available environment and developing kit that will satisfy all the requirement of our application. Overcoming the difficulties, we finally implemented the idea we had of our application. There are few parameters based on which our app has laid its foundation. Some of the features include a converter, chart, news, and payment gateway. All the other apps have something missing out on these features. This drawback is overcome through our application. Table I is the comparison table to various apps.

8. RESULT ANALYSIS

On the successful run of the application, the user can access the exchange rates with multiple conversions at a time is achievable. The chart displayed is clear to see, is expandable, and scrollable. In the payment gateway on a successful transaction, a payment id is shown to the user. Many other features such as responsiveness, system compatibility, CPU usage, memory, network response, and energy released. Now, a systematic approach is being followed along with other techniques for testing and diagnosing applications [4][5].

To test the application responsiveness, we have used Android Profiler- which is a system with tools that provide real-time data to help you to understand how your app uses CPU, memory, network, and battery resources. Fig 6 shows the application's performance with the parameters CPU, memory, network, and energy released. The application is profiled for each action performed, from the launch of the application to switch between modules and fetching of data. After testing each of the modules, the application performs well on all the parameters used.

	Parameters			
Apps	Converter	Chart	News	Payment Gateway
All Currency Converter	Yes	Yes	No	No
XE Converter	Yes	Yes	No	Yes
Easy Converter	Yes	Yes	Yes	No
CurrencyX	Yes	Yes	Yes	Yes

Table-1: Comparison of Features

9. SAMPLE SCREENSHOTS

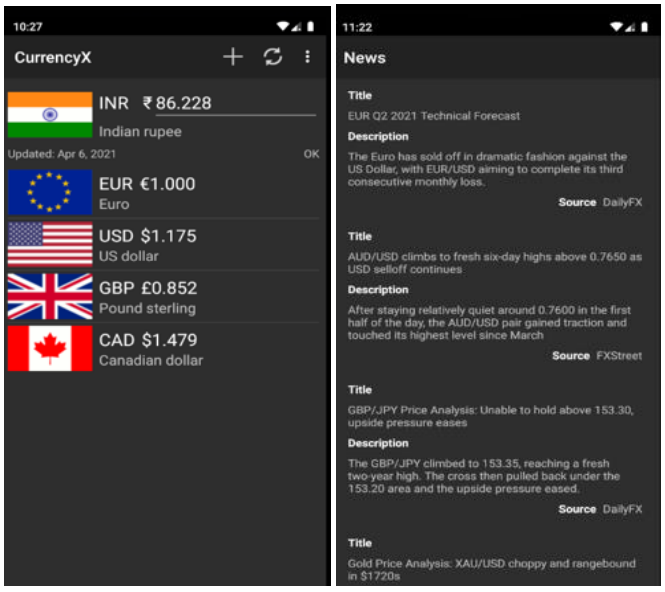

Fig -6: Home and News Sections

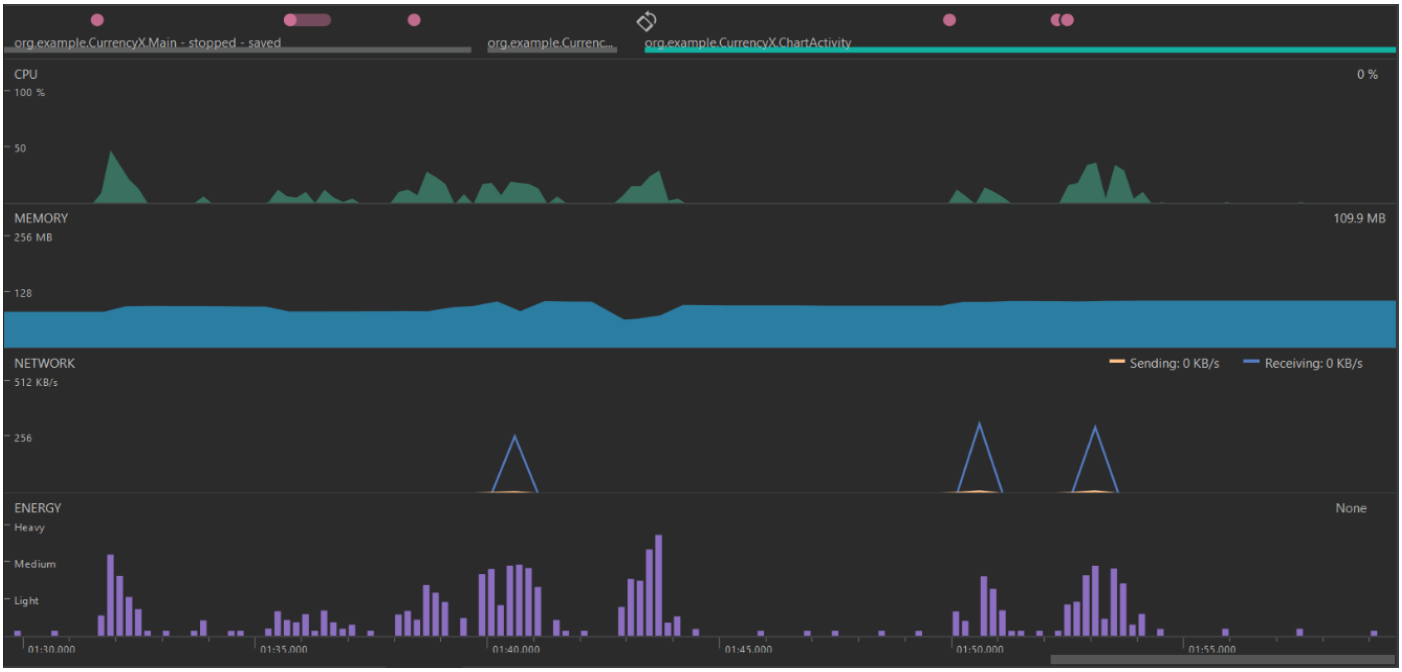

Fig -7: Android Profile Analysis

10. CONCLUSION

CurrencyX app will help to fetch, analyze and learn all the information needed regarding foreign currencies under one roof. As compared to many other possible solutions, our proposal is much more feasible and easier to implement. As the system is dynamic in nature, it is easy for future modifications. Apart from just mere converting values, this application provides alerts daily and a payment gateway for making transactions in international markets. CurrencyX App can be used by everyone which includes forex traders, international tourists, analysts with convenience for social and business purposes. Development was done making use of available tools, techniques, while making the system, an eye has been kept on making it as user-friendly. The application has been tested with live data and has provided a successful result. Hence the software has proved to work efficiently.

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