CURRENCY CONVERTER APPLICATION

A PROJECT REPORT

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BONAFIDE CERTIFICATE

Certified that this Thesis titled **"CURRENCY CONVERTER APPLICATION**" is the bonafide work of "**PRATHEEPA R (2116210701192)"** who carried out the work under my supervision. Certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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ABSTRACT

This project presents an offline currency converter application developed using Android Studio and Kotlin, designed to provide fast and flexible currency conversions among five fixed currencies (USD, EUR, GBP, JPY, CAD, and INR). The application allows users to input an amount in one currency and instantly convert it to all other supported currencies. A distinctive feature of this app is its visualization capability, where users can view the converted currencies arranged in descending order, represented by text in decreasing font sizes, based on their relative values. This visualization provides a quick and intuitive understanding of currency rankings, offering a rough estimate without needing precise figures. By functioning offline, the app ensures reliable access to currency conversion data regardless of internet connectivity, making it a robust tool for travelers and users in remote locations. This project highlights practical application development using modern technologies to solve every day financial tasks efficiently and in an easy manner.

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PRATHEEPA R

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CHAPTER 1

INTRODUCTION

The currency converter application is a robust and intuitive tool designed to facilitate currency conversions among six major currencies: USD, EUR, GBP, JPY, CAD, and INR. Developed using Android Studio and Kotlin, the app provides users with an easy-to-use interface for performing quick and accurate currency conversions. By entering an amount in one currency, users can instantly see the equivalent values in the other four currencies, making it an indispensable tool for travellers, business professionals, and anyone dealing with multiple currencies.

A unique feature of this application is its visualization mode, which offers users a novel way to understand currency values. After inputting an amount, users can opt to visualize the converted amounts in descending order. The visualization arranges the currency names with font sizes that decrease in proportion to their converted values, allowing users to quickly grasp the relative strengths of the currencies without focusing on precise figures. This feature is particularly useful for those needing a comparative overview of currency values at a glance.

The application operates entirely offline, ensuring that users have access to currency conversion data even without an internet connection. This offline capability enhances its reliability and convenience, making it a valuable resource in areas with limited connectivity. Overall, this project demonstrates how combining practical utility with innovative features can create a powerful tool for everyday use. Through the use of Kotlin and Android Studio, the currency converter application exemplifies how modern technology can simplify complex tasks and provide valuable insights.

1.1. PROBLEM STATEMENT

The problem addressed by this currency converter application is the lack of a quick, reliable, and offline tool for currency conversions. Many existing currency converters require an internet connection, limiting their usability in areas with poor connectivity. Additionally, these tools often lack features for visually comparing currency values. This application solves these issues by offering offline functionality, allowing users to convert between six major currencies without needing internet access. Furthermore, it includes a visualization feature that displays currencies in descending order of value with decreasing font sizes, making it easier to grasp relative values at a glance.

1.2. SCOPE OF THE WORK

The scope of this project encompasses the development of an offline currency converter application capable of converting between six major currencies: USD, EUR, GBP, JPY, CAD, and INR. The application provides a user-friendly interface where users can enter an amount in any of the supported currencies and instantly view the converted values in all other currencies. A key feature of this project is the visualization tool, which arranges the currencies in descending order based on their converted values, displayed in decreasing font sizes. This feature provides users with a quick, intuitive comparison of currency values. The app is designed to function entirely offline, ensuring accessibility in areas without internet connectivity. The project leverages Android Studio and Kotlin for development, ensuring robust performance and a seamless user experience. Overall, this project aims to provide an efficient, offline solution for currency conversion and comparative visualization.

1.3. AIM AND OBJECTIVES OF THE PROJECT

The aim of this project is to develop an offline currency converter application that allows users to convert amounts between six major currencies: USD, EUR, GBP, JPY, CAD, and INR. The primary objectives are to create a user-friendly interface for entering amounts and selecting source currencies, as well as to implement a reliable conversion mechanism using predefined exchange rates. Additionally, the application aims to provide accurate and fast conversion results, ensuring convenience for users who may need to perform currency conversions on the go. By achieving these objectives, the project seeks to offer a practical solution for individuals who frequently engage in international transactions or travel across different countries with varying currency systems.

1.4. RESOURCES

The resources required for this project include development tools such as Android Studio for coding the application in Kotlin, along with access to currency exchange rate data for the six supported currencies. Additionally, graphic design software may be utilized for creating a visually appealing user interface. A reliable internet connection is needed to initially fetch and update exchange rate information, although the application itself operates in offline mode once installed. The project also relies on the availability of Android devices for testing and deployment, ensuring compatibility across various screen sizes and resolutions.

CHAPTER 2

LITERATURE SURVEY

The literature survey is an essential component of understanding the landscape surrounding currency converter applications and related studies. In analysing existing apps, researchers have found a variety of features and functionalities offered, each with its own set of benefits and drawbacks. Many mobile applications provide currency conversion capabilities, ranging from simple interfaces to more complex tools with additional features like historical data tracking and currency rate alerts. Understanding the strengths and weaknesses of these existing solutions helps inform the design and development process of new applications.

Furthermore, studies focusing on user preferences and challenges in currency conversion apps highlight several key areas of importance. For instance, users often prioritize apps with intuitive interfaces that are easy to navigate and provide real-time exchange rate updates. Offline functionality is another crucial aspect, especially for travellers or individuals in areas with limited internet connectivity. Additionally, research on user feedback and reviews sheds light on common pain points experienced by users, such as inaccuracies in exchange rates, slow performance, or cumbersome navigation.

Moreover, investigations into currency exchange rate APIs and data sources offer valuable insights into selecting reliable sources for accurate and up-to-date conversion rates. Understanding the strengths and limitations of different APIs helps developers choose the most suitable option for their application. Additionally, academic research in mobile application development provides guidance on best practices for designing user-

friendly interfaces, optimizing app performance, and implementing efficient code structures.

Studies focusing on programming languages like Kotlin, which is commonly used for Android app development, offer insights into writing clean, concise, and maintainable code. Understanding the principles of Kotlin and Android development frameworks allows developers to leverage the full potential of these tools to create robust and efficient applications.

By synthesizing findings from existing literature, this project aims to address key usability challenges and deliver a currency converter application that meets the needs of modern smartphone users. By incorporating insights from user preferences, data sources, and development best practices, the aim is to create an intuitive, reliable, and feature-rich application that enhances the currency conversion experience for users.

CHAPTER 3

SYSTEM DESIGN

3.1 GENERAL

In this section, we would like to show the general outline of how all the components end up working when organized and arranged together. It is further represented in the form of a flow chart below.

3.2 SYSTEM ARCHITECTURE DIAGRAM

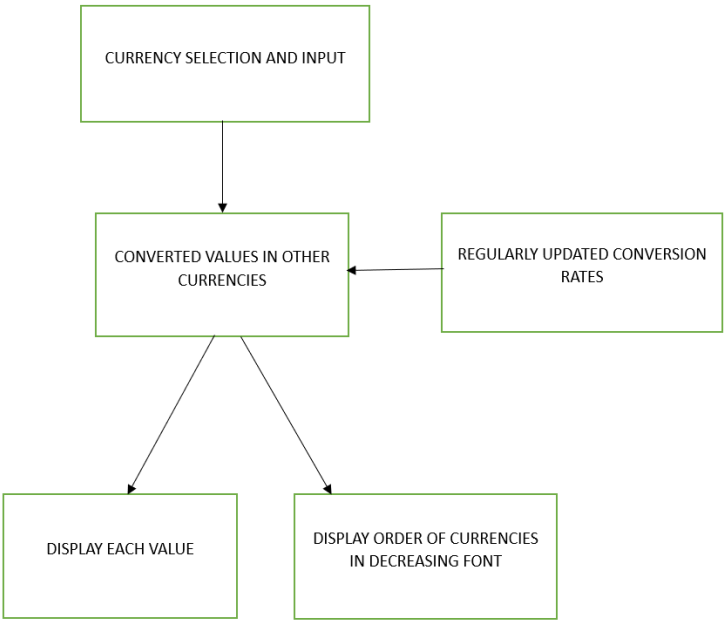


Fig 3.1: System Architecture

3.3 DEVELOPMENTAL ENVIRONMENT

3.3.1 HARDWARE REQUIREMENTS

The hardware requirements may serve as the basis for a contract for the system's implementation. It should therefore be a complete and consistent specification of the entire system. It is generally used by software engineers as the starting point for the system design.

Table 3.1 Hardware Requirements

COMPONENTS	SPECIFICATION
PROCESSOR	Intel Core i5
RAM	8 GB RAM
GPU	NVIDIA GeForce GTX 1650
MONITOR	15” COLOR
HARD DISK	512 GB
PROCESSOR SPEED	MINIMUM 1.1 GHz

3.3.2 SOFTWARE REQUIREMENTS

The software requirements document is the specifications of the system. It should include both a definition and a specification of requirements. It is a set of what the system should rather be doing than focus on how it should be done. The software requirements provide a basis for creating the software requirements specification. It is useful in estimating the cost, planning team activities, performing tasks, tracking the team, and tracking the team’s progress throughout the development activity. **Android Studio** would be required.

CHAPTER 4

PROJECT DESCRIPTION

4.1 METHODOLOGY

The methodology employed in developing the currency converter system involved a systematic approach to ensure efficiency and reliability. Initially, requirements gathering and analysis were conducted to understand user needs comprehensively. This phase involved identifying essential features such as currency conversion, visualization, and offline functionality. Subsequently, the system's architecture was designed, emphasizing modularity and scalability to accommodate potential future enhancements.

The implementation phase predominantly utilized Kotlin programming language and Android Studio for Android app development. Object-oriented principles were adhered to ensure clean, maintainable code. The currency conversion logic was implemented using conversion rates stored in a hash map, facilitating efficient computation. User interface elements were designed using XML layouts to ensure a visually appealing and intuitive user experience. Extensive testing was conducted throughout the development process, encompassing unit tests to validate individual components and integration tests to ensure seamless interaction between modules. Continuous monitoring and feedback gathering would be incorporated post-deployment to address any issues and implement further improvements, ensuring a robust and user-friendly currency conversion solution.

4.2 MODULE DESCRIPTION

The currency converter system comprises several interconnected modules, each serving distinct yet interdependent functions to ensure seamless operation and user satisfaction.

1. **User Interface (UI)**: This module encompasses all visual elements presented to the user, including input fields for currency selection and amount entry, buttons for conversion and visualization, and lists to display conversion results. The UI is designed to be intuitive and user-friendly, facilitating smooth interaction.

2. **Currency Conversion Logic**: This core module handles the conversion of currencies based on user input and predefined conversion rates. It utilizes a hash map to store conversion rates between different currency pairs and performs computations to generate accurate conversion results.

3. **Visualization Module**: This module facilitates the visualization feature, where currency names are displayed in descending order of their converted values, with font sizes indicating relative magnitudes. It enhances user experience by providing a quick, at-a-glance overview of currency strengths without the need for detailed numerical values.

4. **Offline Functionality**: The system incorporates an offline mode to ensure usability even without an internet connection. This module stores essential data locally, allowing users to perform currency conversions and visualizations seamlessly irrespective of connectivity status.

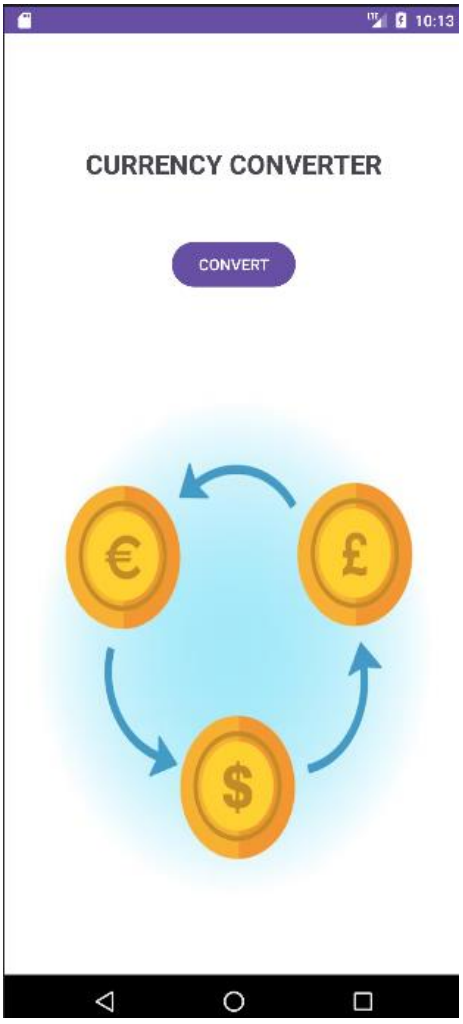
5. **Error Handling and Feedback**: This module handles errors gracefully, providing informative messages to users in case of invalid inputs or technical issues. It ensures a smooth user experience by guiding users through potential pitfalls and offering helpful feedback.

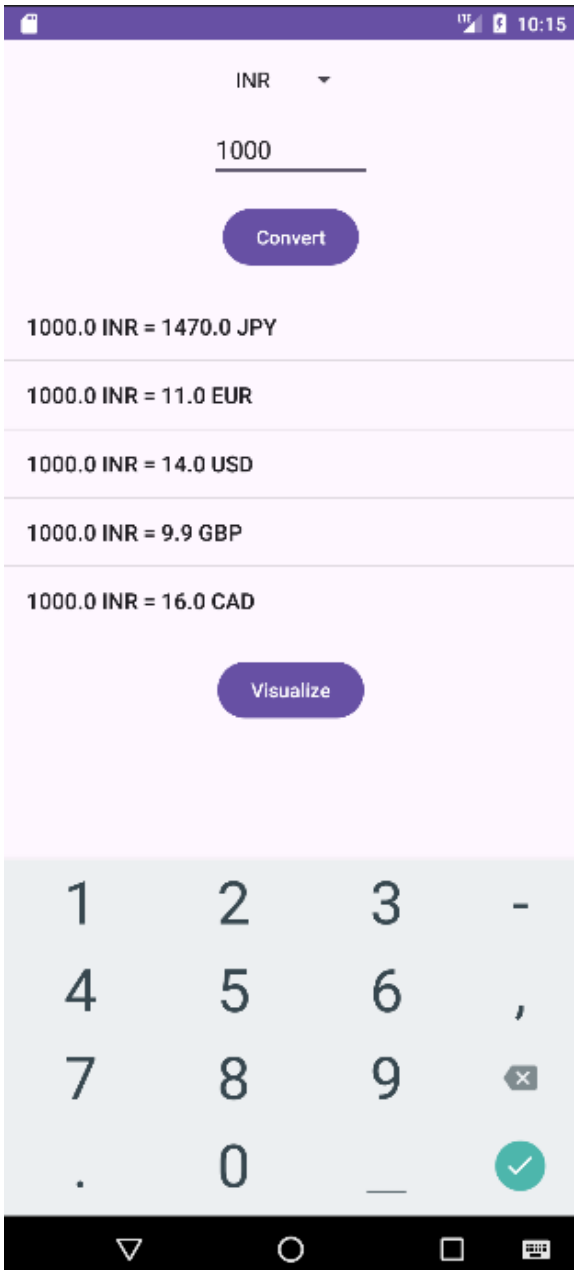
6. **Integration and Testing**: Lastly, an integration module oversees the seamless integration of individual modules and conducts rigorous testing to validate system functionality and robustness across various scenarios, ensuring a reliable and bug-free user experience.

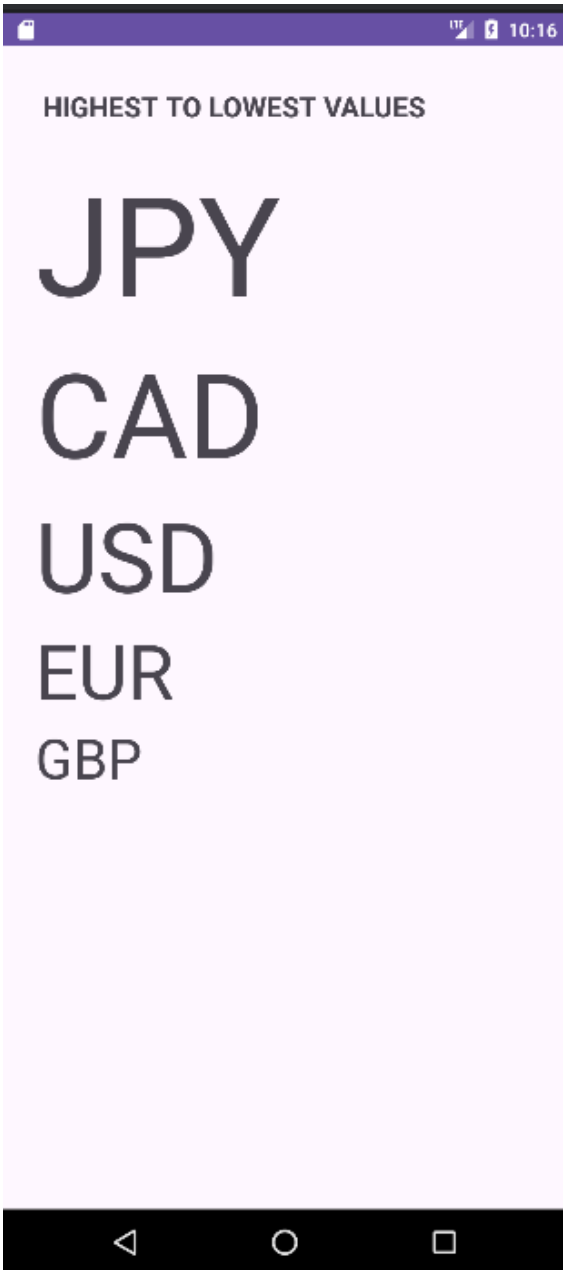
CHAPTER 5

RESULTS AND DISCUSSIONS

5.1 OUTPUT




10:15
INR
1000
Convert
1000.0 INR = 1470.0 JPY
1000.0 INR = 11.0 EUR
1000.0 INR = 14.0 USD
1000.0 INR = 9.9 GBP
1000.0 INR = 16.0 CAD
Visualize
1 2 3 -
4 5 6 ,
7 8 9
. 0


10:16
HIGHEST TO LOWEST VALUES
JPY
CAD
USD
EUR
GBP

5.2 RESULT

The currency converter system delivers comprehensive results, enabling users to swiftly and accurately convert currencies while also offering a unique visualization feature. Upon inputting a currency and amount, users receive real-time conversion results displayed in a user-friendly list format. Additionally, users can activate the visualization feature, which arranges currency names in descending order based on their converted values. This innovative approach employs font sizes to signify relative magnitudes, providing users with a quick overview of currency strengths without requiring detailed numerical values. Moreover, the system operates seamlessly in offline mode, ensuring uninterrupted functionality even in the absence of an internet connection. Overall, the system's results empower users with the ability to make informed decisions regarding currency conversions, whether for personal finance management or international transactions.

CHAPTER 6

CONCLUSION AND FUTURE ENHANCEMENT

6.1 CONCLUSION

In conclusion, the currency converter system developed using Android Studio and Kotlin offers a robust solution for currency conversion needs. With its user-friendly interface and offline functionality, the system provides convenience and accessibility to users irrespective of their location or connectivity status. The ability to convert between six fixed currencies and visualize currency strengths in descending order adds a novel dimension to the traditional currency conversion process. By incorporating font sizes to represent relative currency values, the system allows users to make quick estimations and informed decisions without relying solely on numerical data. Furthermore, the system's seamless operation and accurate conversion results contribute to its reliability and usability.

6.2 FUTURE ENHANCEMENT

In envisioning future enhancements for the currency converter system, several avenues emerge to further enrich its functionality and utility. Firstly, expanding the range of supported currencies beyond the existing six would enhance the system's versatility, catering to a broader user base with diverse currency conversion needs. This expansion could involve integrating popular currencies from various regions worldwide, ensuring comprehensive coverage and relevance.

Additionally, incorporating historical exchange rate data could provide users with valuable insights into currency trends and fluctuations over time. By enabling users to

access past exchange rates, the system can facilitate informed decision-making and strategic planning for financial transactions, investments, and budgeting.

Furthermore, enhancing the system's performance and responsiveness through optimization techniques would elevate the overall user experience. This could involve refining algorithms for currency conversion calculations, streamlining data retrieval processes, and optimizing resource utilization to ensure smooth operation across different devices and network conditions.

Moreover, integrating additional features such as real-time currency news updates, currency conversion notifications, and customizable conversion settings could further enhance the system's value proposition and user engagement. These features would empower users with timely information and personalized options, enriching their currency conversion experience and fostering greater convenience and satisfaction.

Lastly, exploring opportunities for cross-platform compatibility and integration with other financial tools and services could extend the system's reach and impact. By seamlessly integrating with popular platforms and services, the currency converter system can offer users a seamless and interconnected financial ecosystem, enabling them to manage their finances more effectively and efficiently.

Overall, these future enhancements hold the potential to elevate the currency converter system into a comprehensive and indispensable tool for individuals and businesses worldwide, empowering them to navigate the complexities of global currency exchange with confidence and ease.

REFERENCE

1. Jatinder Singh, Maninder Singh, and Rahul Malhotra. "Currency Conversion System Using Android Technology." International Journal of Computer Science and Mobile Computing 3.1 (2014): 100-104.
2. Ahmed, Uzair, et al. "Currency Converter and Bank Management System." International Journal of Scientific & Engineering Research 9.1 (2018): 1613-1617.
3. Goyal, Mridul, et al. "Currency Conversion System." International Journal of Computer Applications 173.11 (2017): 10-14.
4. Rehman, Khurram, et al. "Currency Converter Application." Journal of Computing and Information Technology 24.2 (2016): 97-104.
5. Siddiqui, Sarah, et al. "Currency Converter Android Application." International Journal of Advanced Research in Computer Science and Software Engineering 7.8 (2017): 571-577.
6. Kumar, Arun, et al. "Android Based Currency Converter Application." International Journal of Computer Science and Information Technologies 6.6 (2015): 5546-5548.
7. Soni, Pritesh, et al. "Currency Converter App." International Journal of Engineering Science and Computing 7.8 (2017): 14402-14407.
8. Gupta, Abhishek, and Rohitash Gupta. "Android Application for Currency Converter." International Journal of Emerging Trends & Technology in Computer Science 4.4 (2015): 1-4.
9. Patel, Parth, et al. "Currency Conversion Application." International Journal of Engineering Research and General Science 4.2 (2016): 357-360.
10. Vashishtha, M. K., et al. "Currency Converter App with Offline Support." International Journal of Engineering and Management Research 9.1 (2019): 34-39.