

FOREIGN CURRENCY EXCHANGE AT ATM

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Abstract— When a Visa or MasterCard is inserted at the ATM, the currency conversion transaction starts right away. If a card may be used to convert currencies, the ATM will automatically decide this. The best place to get bills you can use locally is an ATM if you require foreign cash when travelling throughout the world. If a person is travelling and has cash in their home currency, they may wish to convert it to the local currency. With that issue, this ATM will assist the consumer. Users are not required to go to their local bank or exchange location. The nearest ATM is available for users to use to exchange currency. ATMs frequently provide reasonable conversion rates, and by withdrawing more money at once rather than smaller amounts repeatedly throughout your trip, you can avoid paying ATM fees. Aside from that, if you're travelling abroad and need money to buy things in a different country from the one, you're in, try taking your money to the biggest bank you can find to exchange it.

I. INTRODUCTION

The first ATM debuted in 1967 at a Barclays Bank location in London, while there are rumors that a currency exchange dispenser was in use in Japan as early as the mid-1960s. The interbank communications networks that allowed customers to use their cards at an ATM operated by a different bank appeared in the 1970s. Within a few years, ATMs had colonized every significant nation on the planet. Today, they are even present in small island republics like Kiribati and the Federated States of Micronesia. An automated teller machine (ATM), a type of computerized banking facility, allows customers to conduct basic financial operations without the need of a branch employee or teller. Anyone with a credit card or debit card, both domestically and abroad, is typically able to get cash at an ATM. Due to their ability to do quick self-service functions like deposits, cash withdrawals, bill payments, and account transfers, ATMs are useful. Banks where accounts are held, ATM operators, or both frequently charge fees for cash withdrawals. Some or all these fees may be avoided by utilizing an ATM operated directly by the bank that oversees the account. Outside of the US, there may be greater fees for using an ATM. Different regions of the world refer to ATMs as cash machines or automated bank machines (ABMs).

- Automated teller machines (ATMs) are online banking

locations that let customers do transactions without visiting a bank branch.

- Various operations, including check deposits, balance transfers, and bill payments, are possible with certain ATMs, while others are just straightforward cash dispensers.
- Since the early to mid-1960s, there have been over 2 million ATMs installed globally.
- Modern ATMs are technical wonders that can perform a variety of banking tasks, including receiving deposits.
- Use an ATM with your own bank's branding as frequently as you can to reduce ATM costs.

Applications for Automated Teller Machines

Automated teller machines have transformed the banking industry by facilitating consumer access and relieving bank staff of their burdens. A few applications for an ATM include:

- Cash withdrawals and balance checks are two of the Automated Teller Machine's most frequent uses. Owners of bank accounts can also make transfers of funds or modify PINs (Personal Identification Number)
- Customers can now transact with money whenever it suits them. Today, banks have placed their ATMs in public areas such as roads, malls, markets, train and airport stations, and hospitals.
- Automated teller machines (ATMs) enable 24/7 access from any location.
- Even for simple procedures like money withdrawal, it helps to avoid the inconvenience of waiting in huge lines at the bank. The workload of the bank employees has also been lessened as a result.

Using ATMs Abroad

The ability to access one's bank or savings account from virtually anywhere in the world is made simple for travelers by ATMs.

To obtain cash when travelling, travel experts advise using international ATMs since they typically offer a better conversion rate than most currency exchange offices.



However, the bank of the account holder could impose a transaction fee or a percentage of the value of the transaction. Tracking expenditure is challenging because the currency rate is typically not listed on the receipt from ATMs.

Regarding C++

At first known as "C plus classes," the C++ programming language was created by Bjarne Stroustrup at Bell Labs in the 1980s. The language's addition of capabilities based on object-oriented programming was intended as an upgrade to the C programming language. A great deal of sophisticated features was gradually added to the language, including exception handling, templates, "move semantics," namespaces, and additional operator overloading capabilities in versions C++11 and C++20.

The next C++ standard, C++23, is anticipated in 2023 and some compilers already offer some (partial) compatibility for that experimental standard. New C++ standards are released every three years as a result. The numerous prior C++ standards all brought new features to the language and hardly ever removed any, largely maintaining backward compatibility. C++ is a programming language for computers that is based on c (pronounced "see plus plus"). It was developed for writing programs with a variety of objectives. C++ rose to prominence as one of the most popular programming languages during the 1990s. Unlike other popular languages, where memory management is automatic, C++ also uses manual memory management, but its typical syntax is different.

II. LITERATURE REVIEW

A thorough history One of the most important problems in the current financial system is the ATM. If there isn't enough cash in an ATM, customers won't use the machine as much, which will increase the bank's costs and hurt its reputation. Each ATM's cash must be fully stocked to avoid situations where a customer's transaction is declined because the ATM is out of money or where the bank's profit potential is lost. The capacity of any bank to provide for its customers depends on managing the amount of currency in an ATM. Most of the time, banks rely on independent cash management companies to regularly replenish ATMs. A study is being conducted to determine whether data analysis and Machine Learning (ML) may be utilized to enhance the current system's mathematical skills. To guarantee that just the absolute minimal quantity of cash is ever available until the next refill, this paper provides a survey of studies on estimating the appropriate amount of ATM cash replenishment. Although the daily cash withdrawal limit at ATMs is largely a time series phenomenon, prediction is challenging. By using a data-driven method to determine the appropriate amount for each ATM or set of ATMs, an ATM replenishment prediction machine learning approach,

the issue of ATM cash out won't cause clients to become unhappy. ATMs located on or off-site. Modern ATMs support both cash withdrawals and deposits, while older ATMs only handle cash withdrawals. The frequency of replenishment activities and the average cash inventory in ATMs will have an impact on costs as well as service levels as a result of the ATM replenishment strategy, which takes operational costs and opportunity costs into account along with service levels.

Long-Short Term Memory (LSTM) Recurrent Neural Networks (RNN) were demonstrated to perform better for this problem when compared to our technique when creating a model for anticipating the cash demands of ATMs within a network for a single financial institution. The point of contact between banks and their actual customers is provided by ATMs. When currency is retained in a tactile form, renunciation of interest is intensified. On the other hand, customer pleasure requires a cash reserve. This study demonstrates the predictability of daily cash withdrawals by proposing a cost function for replenishment optimization. The proposed model considerably lowers idle balance, according to experiments. Banks will be able to replenish ATM money with the envisaged technology. By examining the withdrawal trends of each ATM and forecasting the number of currency notes that will need to be replaced in the ATM, banks may be able to reduce the amount of interest paid to the Central Bank using this method. Regardless of economic standing, rules for estimating the demand for ATM cash have been created for both developed and developing nations. Depending on the severity of the ATM sector, many methodologies have been used to predict the demand for ATM cash. Using an artificial neural network based on time series, a clustered ATM may determine precise withdrawal amounts based on comparable weekly withdrawal trends. The most effective method for forecasting the demand for ATM cash is the general regression neural network. Data collected from ATMs can be used to determine the demand for cash as well as potential temporal trends. The ATM stream will contain details on the cash balance, such as the time and date as well as the location and amount submitted while replenishing the account. The cash remaining in each ATM will also be reported. The ATM data is not expected to change significantly in the upcoming seconds, thus a few-minute update rate is appropriate.

Researchers provide decision-making methods based on time series from aggregated ATMs. By deciding on the ATM group where it is appropriate to take forecasts from the aggregate series. They want to reduce the ATM Cash that independent modelling techniques have predicted. To fit time series data, automatic moving average and seasonal SARIMA are utilized. The forecasting process for each ATM is made easier by using averaged time series.

SCOPE OF THE WORK

- A nation's currency is valued based on supply and



demand. As a result, it is always in flux. Such a rate is referred to as a floating exchange rate. This is true in a free market. Like this, market factors dictate how much a rupee is worth. The value of the rupee is influenced by things like imports and exports, interest rates, and inflation. Additionally, it would rely on the national and international political climate. Another element that affects the value of foreign exchange is tourism. Large corporations have currency management techniques for this reason. The purpose is to safeguard their company from currency swings.

- Currency trading takes place on foreign exchange markets. Foreign exchange is exchanged essentially nonstop. The biggest market in the world is forex. Trillions of dollars' worth of transactions take place every day. The world's most liquid financial market is the one for foreign currency. Several institutions participate as traders in this market. The government, central banks, and commercial banks are only a few examples of these institutions. Institutional investors, currency dealers, people, and other companies would also be involved.
- Forex cards are another option for travelers. A prepaid tool is a forex card. It can be loaded with a single currency or several. Compared to carrying cash, this is a safer and more practical choice.
- Foreign exchange plays a significant role in both international trade and your summer vacation.

III. MATERIALS AND METHODS

In this project, foreign tourists can deposit their money at the local ATM of the destination nation for currency conversion, and the ATM will convert it to Indian rupees. Following that, they can withdraw their funds in cash. You can carry out purchase and sell transactions to exchange one country's currency for another at currency exchange businesses, both offline and online. As an illustration, if you have U.S. dollars and wish to convert them for Indian rupees, you will take your dollars (or bank card) to the ATM and use them to purchase rupees. By carrying out purchase and sell operations, you can swap one country's money for another through both physical and online exchanges. As an illustration, if you have US dollars and wish to convert them to AUD, you will take your US cash (or bank card) to the currency exchange shop and use it to purchase AUD. The worldwide spot rate, which is essentially a daily fluctuating value determined by a network of banks that trade currencies, would determine how much you could purchase. The worldwide spot rate, which is essentially a daily fluctuating value determined by a network of banks that trade currencies, would determine how much you could purchase. To make a profit on the transaction, the currency exchange shop will adjust the rate by a specific proportion. Assume, for instance, that the spot rate for converting US dollars into

rupees is 82.64 for the day. If exchanged at the spot rate, this translates to the ability to purchase 82 Indian rupees for every dollar spent. The rate may be changed by the currency exchange bureau to 82, which would allow you to purchase 82 Indian rupees for every US dollar. Their fee would effectively be 5 cents on the dollar with this fictitious rate change.

Consumers may discover that using exchange services in advance is more expensive than using ATM or credit card costs at the foreign destination since the transaction is not carried out at the spot rate and depends on the profit that the exchange wants to make. It is recommended for travelers to budget for their trip expenses and compare them to the sums they would have saved through standard transactions.

The tools used Microsoft created the free open-source text editor known as Visual Studio Code (often referred to as VS Code). Linux, macOS, and Windows all support VS Code. VS Code has recently become one of the most widely used development environment tools, despite the editor's relatively modest weight and robust capabilities. Features include VS Code supports a wide range of programming languages, including CSS, Go, and Docker files in addition to Java, C++, and Python. In addition, VS Code enables you to add new extensions like code linters, debuggers, and support for cloud and web development.

Compared to other text editors, the user interface of VS Code allows for a lot of interactivities. VS Code is organized into five key sections to make the user experience simpler:

- Editor groups
- The panel
- The status bar
- The sidebar
- The activity bar Why C++?
- One of the most widely used programming languages worldwide is C++.
- Operating systems, graphical user interfaces, and embedded systems all use C++ today.
- Programming in C++, an object-oriented language, offers applications a distinct structure and encourages code reuse, which reduces development costs.
- Applications that can be converted to different platforms can be created using C++ because it is portable.

A program known as a compiler converts compiled languages into the native language of the target machine. If the compiler is good at optimizing, this can produce very fast code; nevertheless, the resulting code may not be well-portable between operating systems, and the compilation process may take some time. A program known as an interpreter reads and executes languages that are interpreted. Interpreted languages are typically substantially slower than an equivalent compiled application, despite being as portable as their interpreter and not requiring lengthy



compilation periods.

Finally, just-in-time compiled (or JIT-compiled) languages provide a compromise between performance and portability by being swiftly compiled when programs written in them need to be run (often with very minimal optimization). Saving time, it will save clients' time because they won't have to go to banks and wait in huge lines to exchange money. A low-level language is more suited for applications like device drivers or extremely high-performance programs that require direct access to the hardware because it is typically quite like machine code. The phrase "low-level" is typically used to refer to machine code and assembly languages, even though many languages have low-level components. A program built in a low-level language is typically challenging to convert to other platforms since it is sensitive to all the quirks of the hardware it is accessing. Low level languages are almost never translated since doing so usually serves no useful purpose. Over 3000C++ libraries can be found by searching for "library" on the well-known project management.

IV. RESULTS AND DISCUSSION

The current currency exchange may be fine, but it may be better, and the forex ATM is the answer.

The ability to convert currency at an ATM makes it simple for overseas visitors.

They will benefit from time and transaction charge savings. ATMs offer precision and eliminate human mistakes. Your bank's policies and your financial situation at that bank will determine how much money you can withdraw from an ATM each day, each week, and each month. For most account customers, for instance, Capital One places a daily ATM withdrawal cap of RS 25000. If you phone your bank and ask for permission or if you deposit more money, you may be able to get beyond these restrictions.

If you are a bank customer, you might be allowed to use one of their ATMs to deposit cash or cheques. You might only need to put the cash or cheques into the machine directly to accomplish this. To use some machines, you might need to fill out a deposit form and place the cash in an envelope first. You be safe, be sure to endorse your check on the back and write "For Deposit Only" there. In many cases, ATMs are owned by banks and credit unions. However, people and organizations can also purchase or rent ATMs on their own or through an ATM franchise. The profit model is based on charging fees to the machine's users when owned by individuals or small companies like restaurants or gas stations.

Also, for this purpose, banks own ATMs. They leverage the ease of an ATM to draw customers. Additionally, ATMs relieve bank tellers of some of the customer service responsibilities, saving banks money on salaries.

In simple words, Visual Studio Code is a code editor. "A free editor that helps the programmer write code, aids in

debugging, and corrects the code using the intelli-sense method," is what Visual Studio Code is described as.

- Simply said, it allows users to write code rapidly and simply. But it is up to the developers to make that decision. The idea that it combines the features of an editor, and an IDE is widely held. Any program or piece of software we see, or use is made to function by the code that is running in the background. In the past, anyone who wanted to code would use traditional editors or even something as basic as notepad. The developers used to get basic assistance from these editors. The ability to exchange currencies at an ATM is practical for foreign travelers.
- RFID (Radio Frequency Identification) technology is used in contactless ATM cards to allow for close communication with the card reader. Like when other cards are placed into the card reader slot, the card reader reads and authenticates the data. Some clients believe that the experience of a cash transaction is better and quicker. Contactless cards are provided by banks like ICICI and SBI.
- An international company that offers financial services and a payment system is called RuPay. It is the first global card payment network from India of its type. The National Payments Corporation of India developed it and released it in 2012 under the direction of the Reserve Bank of India. Since then, a lot of ATMs, stores, and websites accept RuPay debit cards.
- Like VISA, Mastercard is an American company that offers services and is widely accepted. It is a very secure payment gateway with round-the-clock customer support. It is a worldwide processor of bankcard payments that collaborates with banks to dispense debit cards. Banks and the American financial MNC Visa Inc. are partners in the VISA Card program. Because it is one of the most extensively used and well-known cards, it is recognized all over the world. In collaboration with the banks, VISA offers a variety of ATM card kinds, including Classic, Gold, and Platinum. These cards employ the secure and safe VISA payment gateway and have an overdraft feature. In addition, VISA offers the VISA Electron Card, which lacks an overdraft facility. Younger consumers or those with low credit scores typically receive it. Some nations also do not acknowledge it. With VISA Electron Cards, cash withdrawals are free of charge. create specially designed cards that offer various services and advantages. Depending on a person's needs and finances, they can compare and select an ATM card.

Numerous card varieties are offered by each financial service provider, such as Visa or Mastercard, including Visa Classic, Visa Platinum, Standard Mastercard, Gold Mastercard, etc. Additionally, these organizations work with



banks to offer a variety of personalized debit ATM card alternatives that can be combined with several bonuses and rewards for customers. Examples include the Easy Shop Platinum Debit Card-VISA by HDFC, the RuPay Platinum Debit Card by Axis, and the VISA Classic Debit Card by Axis.

ATMs often fall into one of two categories. One is a basic, straightforward device that lets you check your balance, change your PIN, obtain small statements, and get account notifications. The more sophisticated units offer possibilities for line of credit and bill payment as well as cash or check deposit. There are both onsite and offshore Automated Teller Machines; the former is located inside the bank, while the latter are dispersed around the nation to ensure that individuals have access to basic banking services and immediate cash withdrawals even if they are unable to visit a bank office.

Advantages of project

- Quick and simple currency conversion
- When a customer wants to exchange money, there is no need for them to visit a bank or fill out a tonner of

- paperwork.
- Expediting

Banks have to Customers will save time because they won't have to visit banks have to visit banks and wait in huge lines to exchange money.

- No human error
- The entire currency exchange process will be handled by an automated teller machine. so the transactions won't contain any human error.

Disadvantages of the project

- For preventing money laundering, we've put limits on both the number of transactions and the amount that may be deposited or withheld. the number of transactions and the amount that may be deposited or withheld.
- We have implemented three step verification due to security concerns. It uses a pin, a one-time password on a phone number, and an email address.

UI OF PROJECT

```
enter your card
****do not remove card during transaction****
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : 1
Enter Your Pin1234
balance is : RS 500
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : |
```



```
C:\Users\9170\Documents\S. X + v
enter your card
****do not remove card during transaction****
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : 4
Enter Your Pin
1234
enter Dollars to be deposited : 500
your balance : RS 41500
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : |
```

```
enter your card
****do not remove card during transaction****
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : 2
Enter Your Pin
1234
enter deposit amount : 1000
your balance : RS 1500
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : |
```

```
C:\Users\91701\Documents\S. X + v
enter your card
****do not remove card during transaction****
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : 3
Enter Your Pin
1234
enter amount to be withdrawn : 600
not enough balance
*****MENU*****
Press 1 for Checking balance
Press 2 for Deposit money
Press 3 for Withdraw
Press 4 for Depositing Dollars
Press 5 for Depositing Dirhams
Press 6 for Depositing Pounds
Press 7 for exit
*****
option : |
```

As shown in figures above there are several options with different functionality, if user press 1st option he/she can check balance, from 2nd option he/she can deposit money, from 3rd option he/she can withdraw money, from 4th option user can deposit us dollar to their account, from 5th option user can deposit Dirhams to their account, from 6th option user can deposit pounds to their account, from 7th option user can exit from menu.

V. CONCLUSION

There are various ways to build a platform for foreign exchange, but it's crucial to have the correct features and functions if you want to see a high return on investment. We have discussed the best-in-class features that were built into this project in this report. All good things, like our ATM scheme, must come to an end. We have completed the fundamental transaction procedures for our ATM. We now possess a special function of our ATM that contributes to lowering the complexity of financial processes like foreign exchange. Exchanging one country's currency for another at

market rates is referred to as foreign exchange.

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