OnCredit
Secure Credit with 3FA using Stageno

Project Report

SESSION 2021 (4rd Semester)

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This project is to be submitted to the Department of ComputerScience, Riphah International College Faisalabad for the partial fulfillment of the requirement for the

ADP DEGREE
IN
COMPUTER SCIENCES

Approved on:_____

Internal Examiner

Examiner Name: _Mr. Rehaan_____

_____

Sign:_____

External

Name:_____

Sign:_____

Department of Computer Science
Riphah International College

DEDICATION

To Our Divinely Parents

We dedicate this project to our loved parents who have always teach us to trust in Allah. believe in hard works and teach us that so much could be done with little. They gave us everything that time when they have nothing. They shadowed us mean while they were in sunshine, provided crystal life of knowledge, they cut their stomachs and afforded our studies.

May Allah bless them Peace, Happiness of life(Ameen)

To Our Respected Teachers

Teacher's ae always great source of inspiration and motivation to us. However, our teacher's remained beacon of light for us. There sincere guidance and prudent leadershipguided our way clearly not only to excel in achieving this dissertation but also definite directions for professional career too.

To Our Sweet Friends

Our friend's means world to us. We are proud to say that save their cooperation, collaboration and team work. We are not able to achieve this target easily we are more than thankful to all for their support and encouragement during the time, I need them most…….

ABSTRACT

This system is named as **OnCredit Secure credit with 3FA using steganography**. This system is designed to help the buyer and seller to maintain their account ledger and their credibility. Buyer and seller both have to login from there personal device. On Credit is the One-click credit system using three-factor authentication will offer an account for every user in which the ledger keeps maintained. It is the one-time setup customers need to manually setup the standing order at the bank. We are using direct debit method, in direct debit the customer will give our organization the authority to take funds from their bank account. The service provider or seller who receives the payment would initiate each payment.

With the growth of internet businesses, the need for safe and secure payment platforms have also risen. There can be many defaulters that can take the product and later don't pay. Initially, an identification with the user's account can be made. The limit for a particular user may also be set. It is useful for the service provider or seller to prevent from defaulters. The service provider or seller who receives the payment would initiate each payment.

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System can verify and register the user who is registering. If the system does not verify, the user cannot register. All other features are explained further with details.

Advisor's Comments

Ms Anam Khalid
ADP-Computer Sciences
Riphah International College

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1) Introduction

Are you tired of defaulters, don't worry we are here to help you. On Credit is the One-click credit system using three-factor authentication will offer an account for every user in which the ledger keeps maintained. It is the one-time setup customers need to manually setup the standing order at the bank. We are using direct debit method, in direct debit the customer will give our organization the authority to take funds from their bank account. The service provider or seller who receives the payment would initiate each payment.

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Three-factor authentication (3FA) is the use of identity-confirming credentials from three separate categories of authentication factors are knowledge, possession and Geolocation. Three-factor authentication is mainly used in businesses and government agencies that require high degrees of security.

System will work on the basis of the longitude and latitudes on which our maps are based. Location-based authentication is the core component of our solution, which stores users' location information and authorization policies. It provides location registration, authentication and authorization services.

Secure exchange of data over the network is very important issue. That is why we are using steganography for hiding your data and transaction records etc. The concealing of a message within another message or a physical object. In computing/electronic contexts, a computer file, message, image, or video is concealed within another file, message, image, or video. The purpose of steganography is to conceal and deceive.

In simple words steganography is covert communication to hide a message from a third party. It is a form of covert communication and can involve the use of any medium to hide messages. It will maintain private data, secure confidential information and so on. We are using some algorithms for embedding that data into the image.

: Why to OnCredit?

As it is named it will work on credit system. The user can pay the amount at the end of the month on his purchase. It is the one-time setup customers need to manually setup the direct debit.

The uniqueness about this system is Three-factor authentication and steganography. The third-factor of authentication is geolocation which is based on the longitudes and latitudes. With the help of the location, an administrator can filter, enable or disable certain authentication methods, allow or deny a login based. Location-based authentication is the core component of our solution, which stores users' location information and authorization policies. It provides location registration, authentication and authorization services.

: What is the Purpose ?

With the growth of internet businesses, the need for safe and secure payment platforms have also risen. There can be many defaulters that can take the product and later don't pay. There is also addition of security using multiple methods which makes our system more secure and reliable.

The main purpose of using steganography in our system is to maintain your data, secure credentials and so on. It will help in data hiding and keeping transaction records.

: How It Will Work ?

Initially, an identification with the user's account can be made. The limit for a particular user may also be set. It is useful for the service provider or seller to prevent from defaulters. The service provider or seller who receives the payment would initiate each payment. The Location-based authentication is the core component of our solution, which stores users' location information and authorization policies.

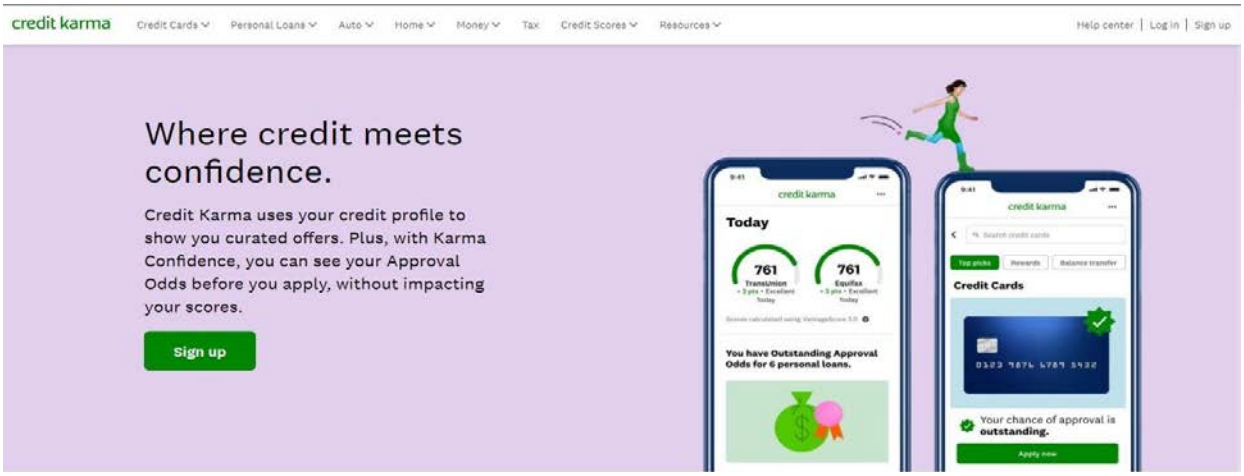
It provides location registration, authentication and authorization services. Both the seller and buyer will make account and the buyer give access to the seller. The seller sell items to the buyer the buyer will approve the items after taking a look on it then the bill will be added to its credit history and at the end of the month the total credit amount will be deducted from the buyer's account and transfer into the seller's account

2) *Relevant Work*

1) Credit Karma:

Link: https://www.creditkarma.com/

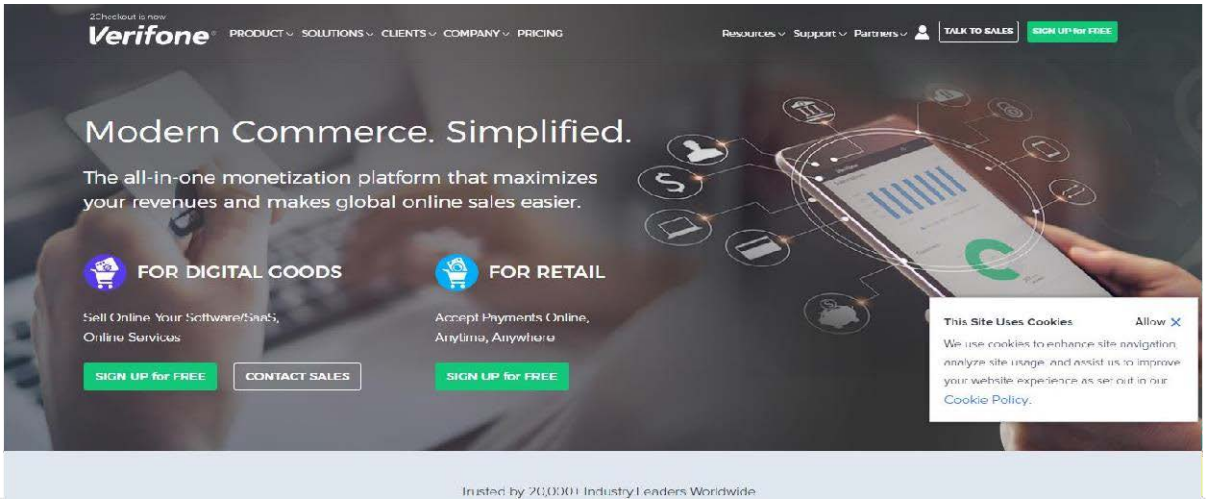
The **Credit Karma** is an American multinational personal finance company founded in 2007, which has been a brand of Intuit since December 2020. The company operates in the United States, Canada and the United Kingdom.



2) 2Check Out:

Link: https://www.2checkout.com/

2Checkout is an electronic payment service (merchant account alternative) founded in 2000 that allows merchants to accept online credit card payments from customers in their home country and abroad.



3) Home Shopping pk:

Link: https://homeshopping.pk/

Homeshopping.pk: Pioneer in e-commerce industry, we stand exceptional in offering electronic products under one roof with best prices and availability. The primary objective is to provide the best online shopping experience and the best customer service possible to the customers.

4) Walmart:

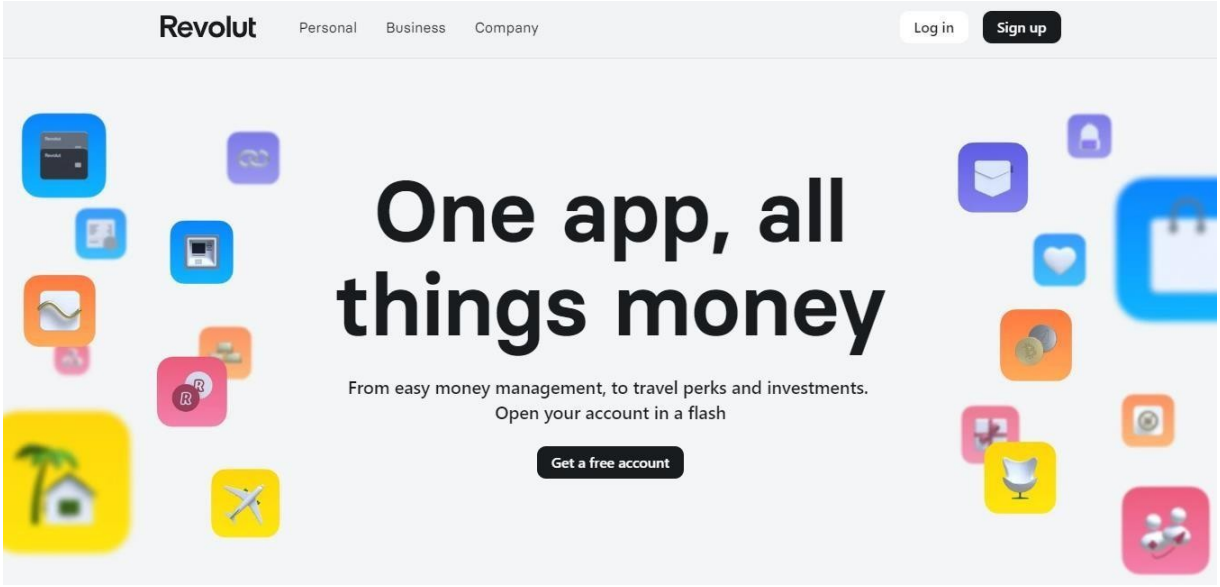
Link: https://www.walmart.com/

Walmart Inc. is an American multinational retail corporation that operates a chain of hypermarkets, discount department stores, and grocery stores from the United States, headquartered in Bentonville, Arkansas.

5) Revolut:

Link: https://www.revolut.com/

Accept payments easily from anywhere. Start accepting all types of payments. Get fast payment processing with low rates, instant settlement, and so much more. From your everyday spending, to planning for your future with savings and investments, Revolut helps you get more from your money.



3) System Requirements

3.1: Functional Requirements:

1. **Login:**
   The act of logging in to a database, mobile device, or computer, especially a multiuser computer or a remote or networked computer system. A username and password that allows a person to log in to a computer system, network, mobile device, or user account.
2. **User 3 factor authentication:**
   Three-factor authentication (3FA) is the use of identity-confirming credentials from three separate categories of authentication factors – typically, the knowledge, possession and inherence categories. Multifactor authentication dramatically improves security.
3. **Data encryption decryption:**
   Data encryption is a way of translating data from plaintext (unencrypted) to ciphertext (encrypted).
4. **Payment transection:**
   An action of transferring funds, initiated by the payer or on its behalf or by the payee, irrespective of any underlying obligations between the payer and the payee.
5. **Purchased product adding:**
   A purchase order, or PO, is an official document issued by a buyer committing to pay the seller for the sale of specific products or services to be delivered in the future.
6. **Balance detail:**
   Your account balance is the total amount of money that is currently in your account, including any pending transactions
7. **Product lists:**
   The customer can request a *list* of *orders* of any status, including suspended orders. The request can include the customer number, individual number of the order placer, and a start date, indicating the most recent date to include in the list.
8. **Newsletter:**
   A newsletter is an email you can send to customers to update them about your brand's latest products and services.
9. **Billing detail on email:**
   An invoices details how much your client owes you ad when payment is due and what services you rendered. Invoices are the business records.

10.3rd party integration:

A third-party API integration is when a business uses a third-party's API to power an integration with another business's app or web service. For instance, your business might use Google's API to power a Google Ads integration with your own website. This is a third-party API integration.

: Non-Functional Requirements:

1. **Usability:**
   Usability refers to the quality of a user's experience when interacting with products or systems, including websites, software, devices, or applications. Usability is about effectiveness, efficiency and the overall satisfaction of the user.
2. **Performance:**
   Performance is an indicator of how well a software system or component meets its requirements for timeliness. Timeliness is measured in terms of response time or throughput. The response time is the time required to respond to a request.
3. **Security:**
   Software security is the concept of implementing mechanisms in the construction of security to help it remain functional (or resistant) to attacks
4. **Maintainability:**
   Software security is the concept of implementing mechanisms in the construction of security to help it remain functional (or resistant) to attacks. This means that a piece of software undergoes software security testing before going to market to check its ability to withstand malicious attacks.
5. **Scalability:**
   Scalability is the property of a system to handle a growing amount of work by adding resources to the system. In other words, a scalable architecture supports higher workloads without any fundamental changes to it.
6. **Reliability:**
   Reliability is an attribute of the system responsible for the ability to continue to operate under predefined conditions. Availability is part of reliability and is expressed as the ratio of the available system time to the total working time.
7. **Portability:**
   The possibility to use the same software in different environments. It applies to the software that is available for two or more different platforms or can be recompiled for them.
8. **Design:**
   Software design delves deeper into the implementation details of the system. Design concerns include the selection of data structures and algorithms, or the

implementation details of individual components. Architecture and design concerns often overlap.

9. **Accessability:**

   The ability of the system to be used by people with disabilities. Applicability. Any system which may be used or operated by people with disabilities, or may be subject to legislation regarding disabilities. Concerns.

10. **Privacy:**

    A data-driven privacy architecture includes data governance for data you collect, and data sharing models that use anonymization and other privacy-centric techniques.

: Hardware Requirements:

1. **Operating System:**

   64-bit Windows 8 or later macOS Sierra 10.12 or later, Ubuntu 14.04+, Debian 8+, openSUSE 13.3+, or Fedora Linux 24+

2. **Processor:**

   Intel i3 or later

3. **Memory:**

   4 GB minimum, 8 GB recommended

4. **Screen resolution:**

   1280x1024 or larger

: Software Requirements:

1. **Code Editor:**

   Visual Studio Code is a streamlined code editor with support for development operations like debugging, task running, and version control. It aims to provide just the tools a developer needs for a quick code-build-debug cycle and leaves more complex workflows to fuller featured IDEs, such as Visual Studio IDE.

2. **React JS v18.0:**

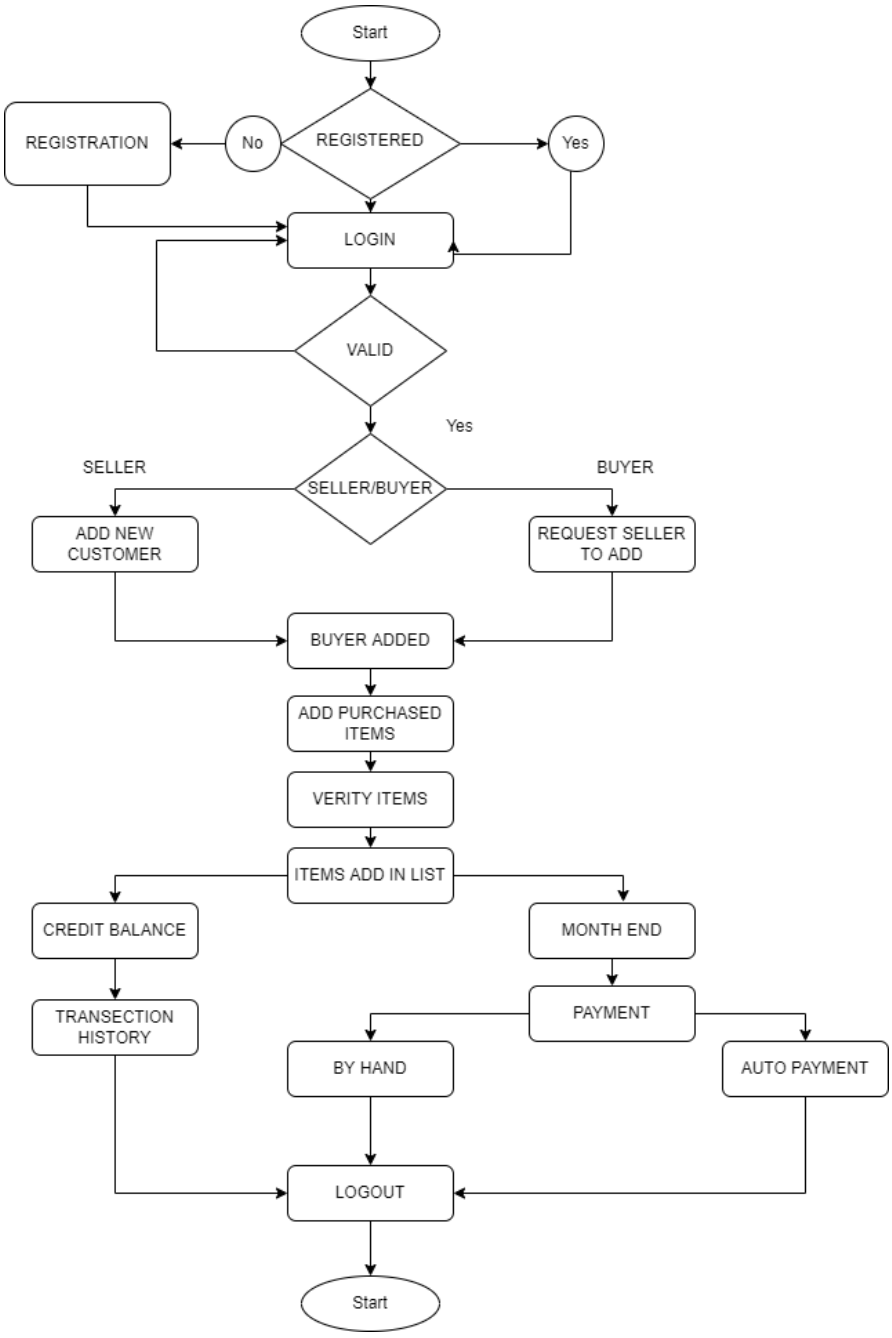
   React (also known as React.js or ReactJS) is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta (formerly Facebook) and a community of individual developers and companies

3. **Node JS v16.15.1:**

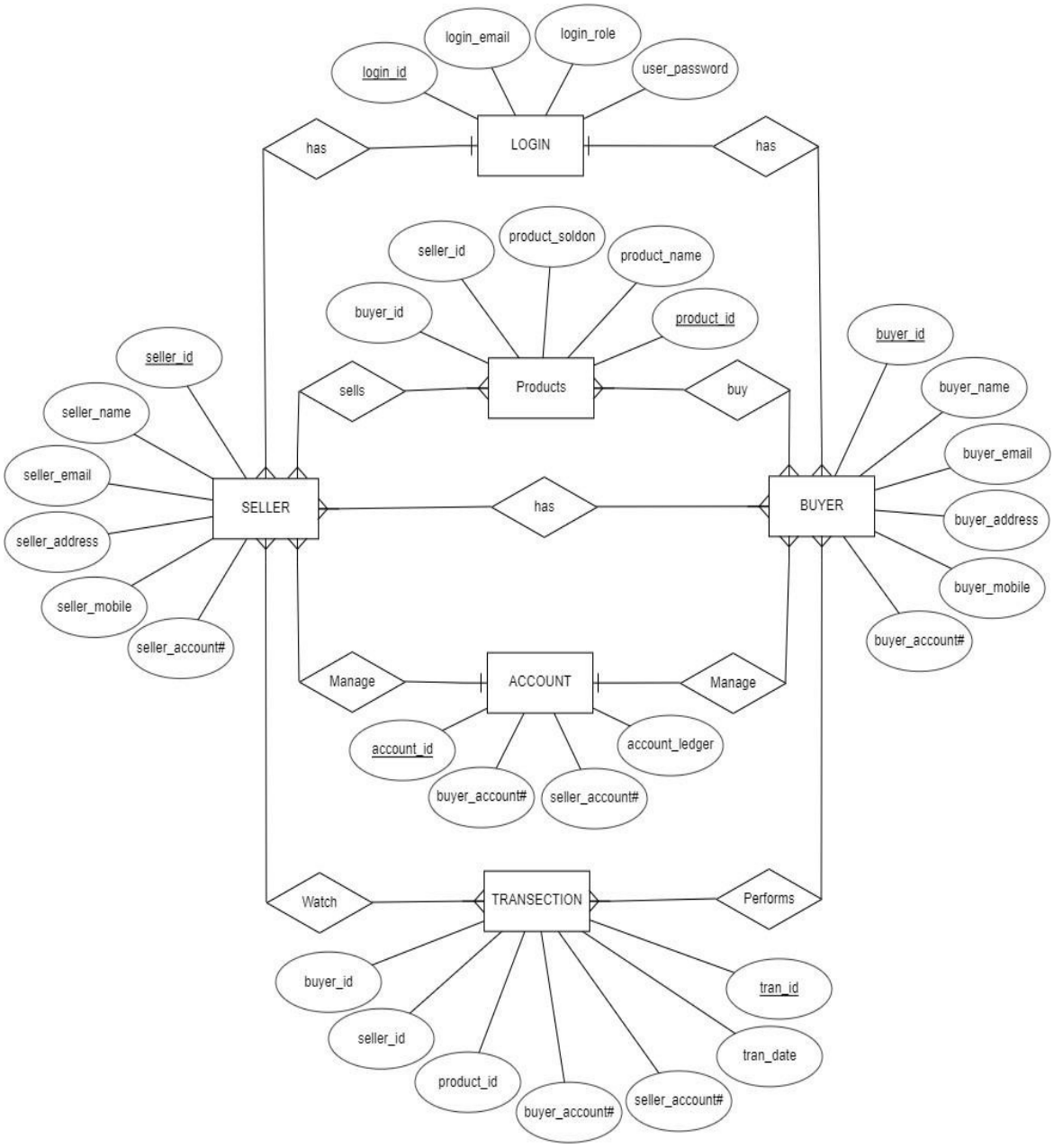
   Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on the V8 engine and executes JavaScript code outside a web browser, which was designed to build scalable network application

4) Diagrams:

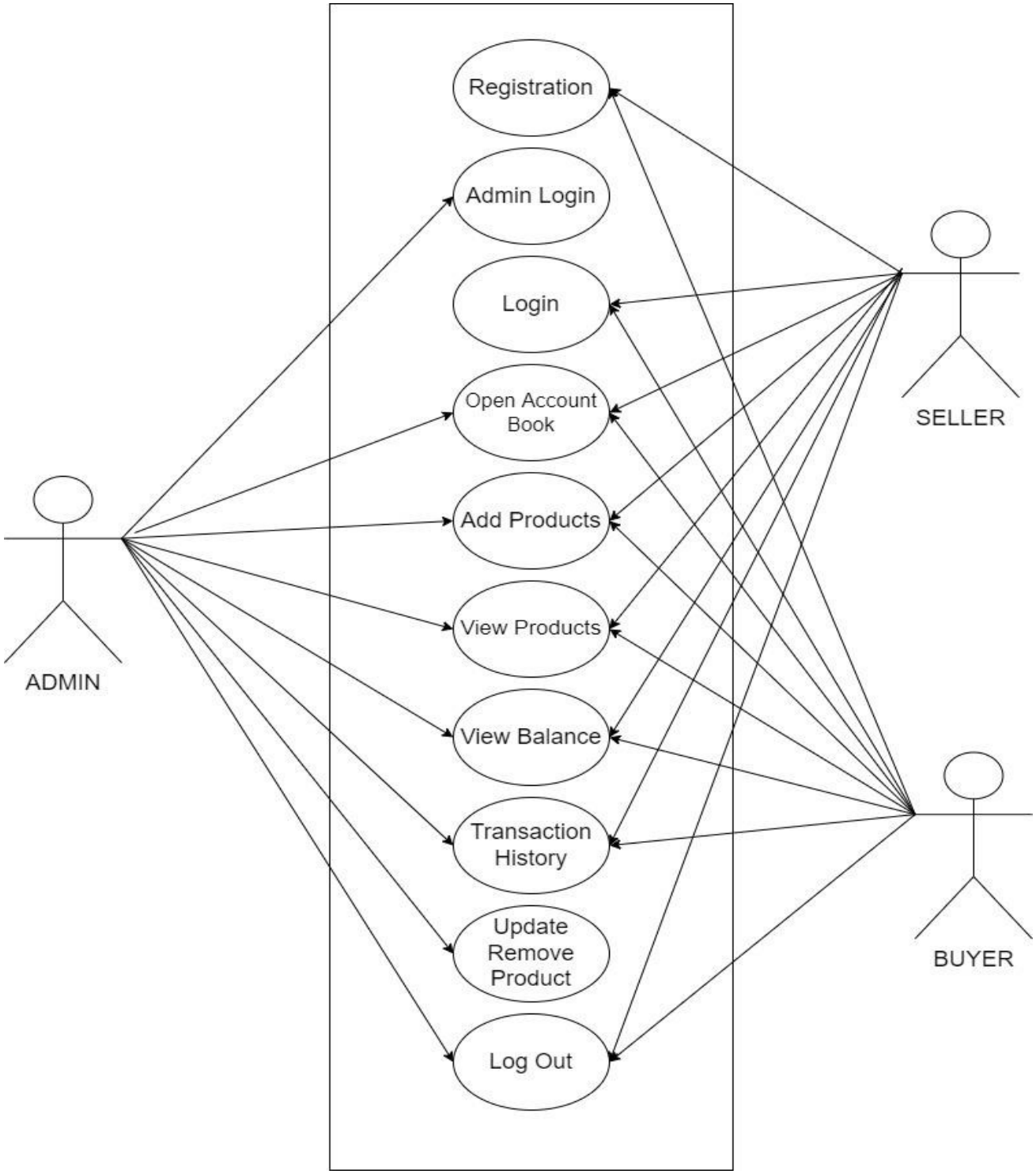
: Flow Chart Diagram:



: Entity Relation Diagram:



: Use Case Diagram:



5) Proposed System

1. System Details:

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Three-factor authentication (3FA) is the use of identity-confirming credentials from three separate categories of authentication factors are knowledge, possession and Geolocation.

Secure exchange of data over the network is very important issue. That is why we are using steganography for hiding your data and transaction records etc.

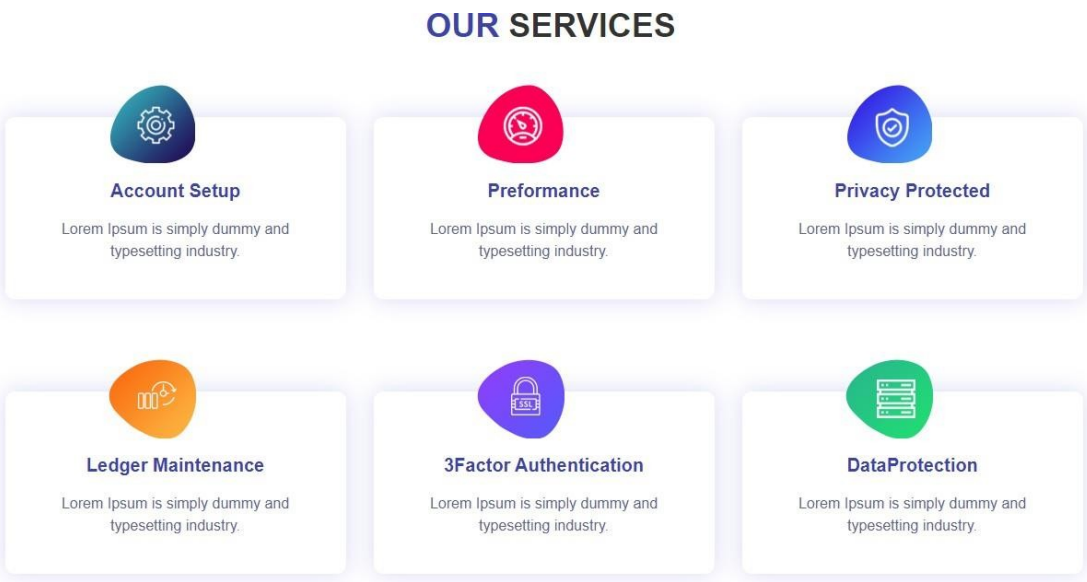
Users:

i. Admin.
ii. Seller.
iii. Buyer.

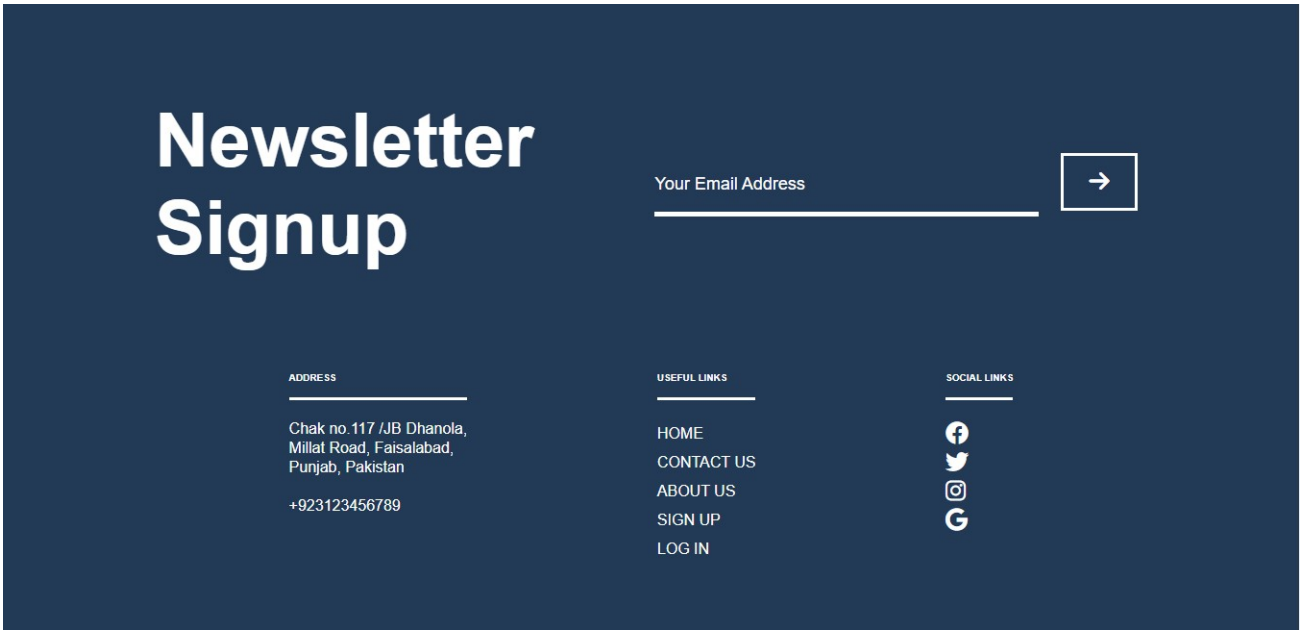
2. Our System:

Homepage Section 1:

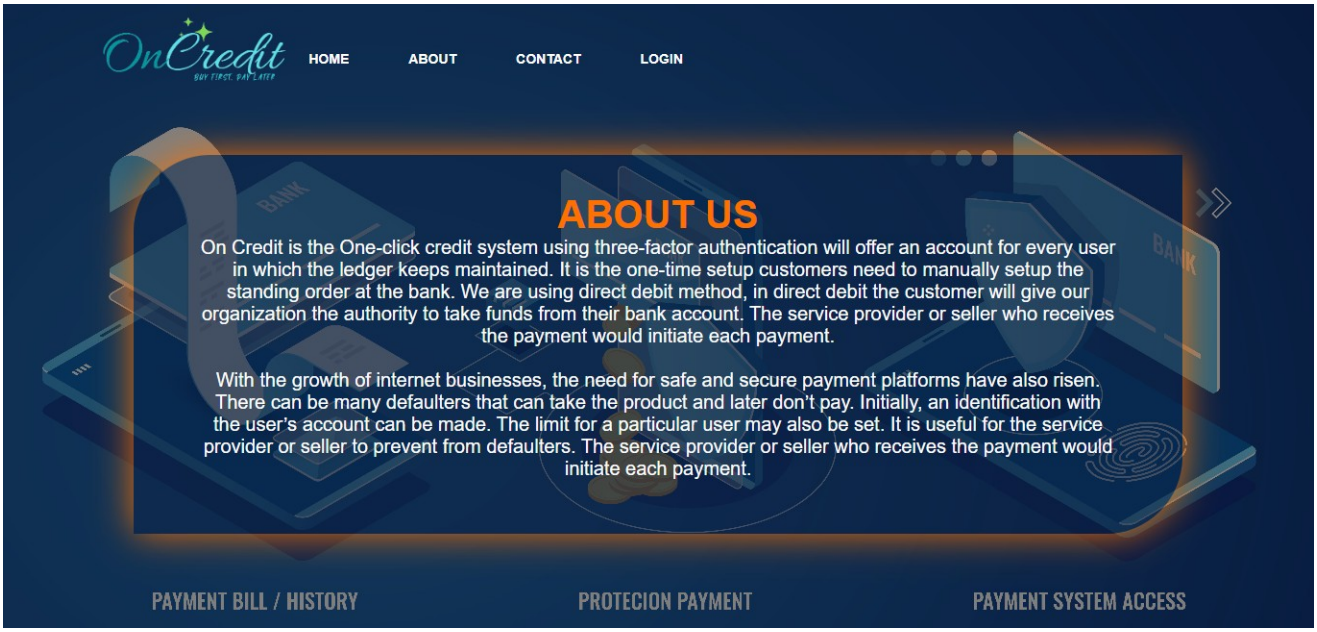
Homepage (our services) Section 2:



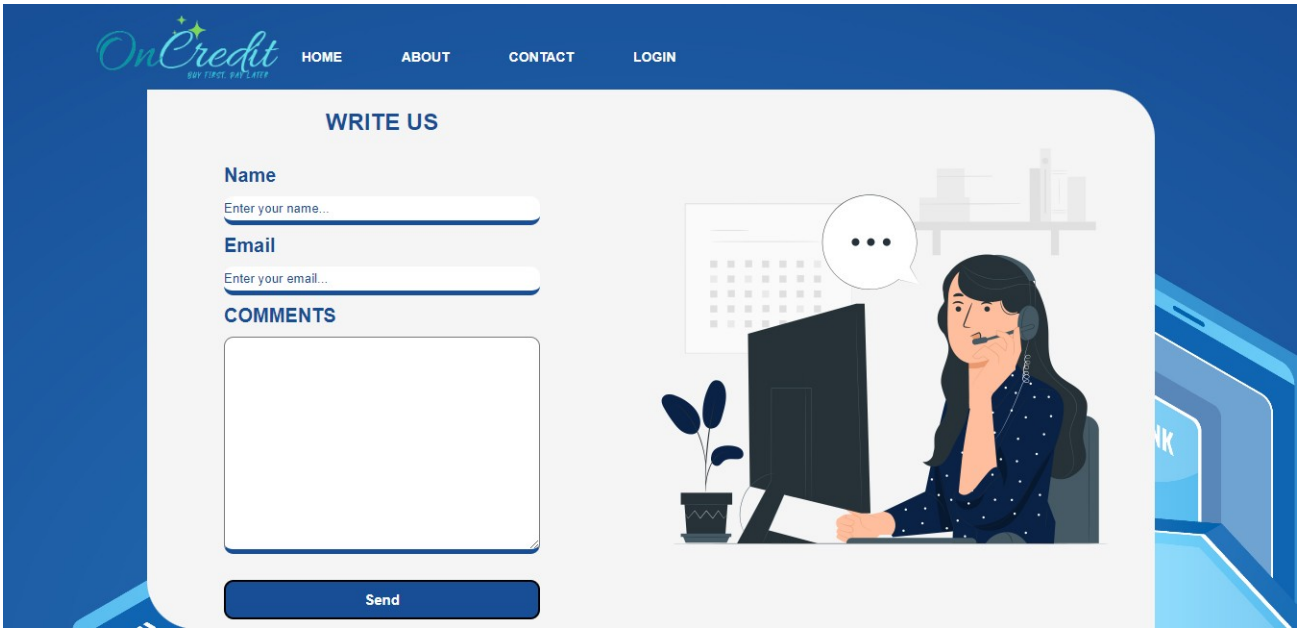
Homepage Section 3:



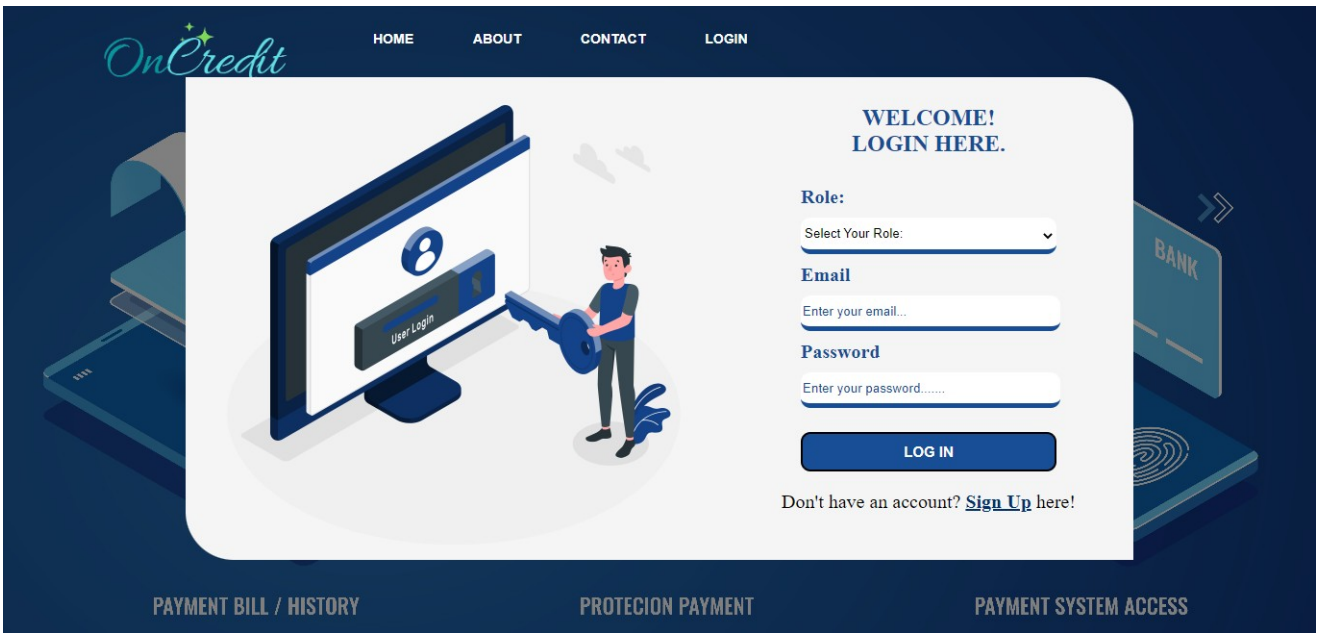
About Page:



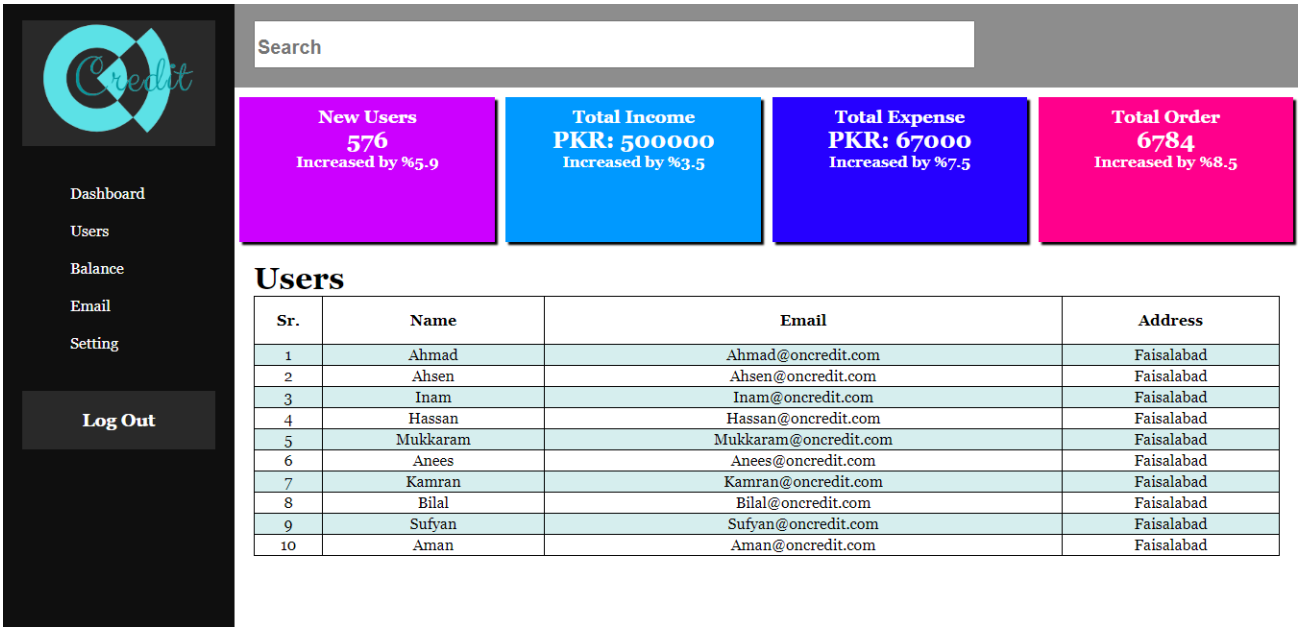
Contact Page:



Login Page:



Dashboard:



Conclusion

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References

1. https://www.revolut.com/
2. https://www.walmart.com/
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