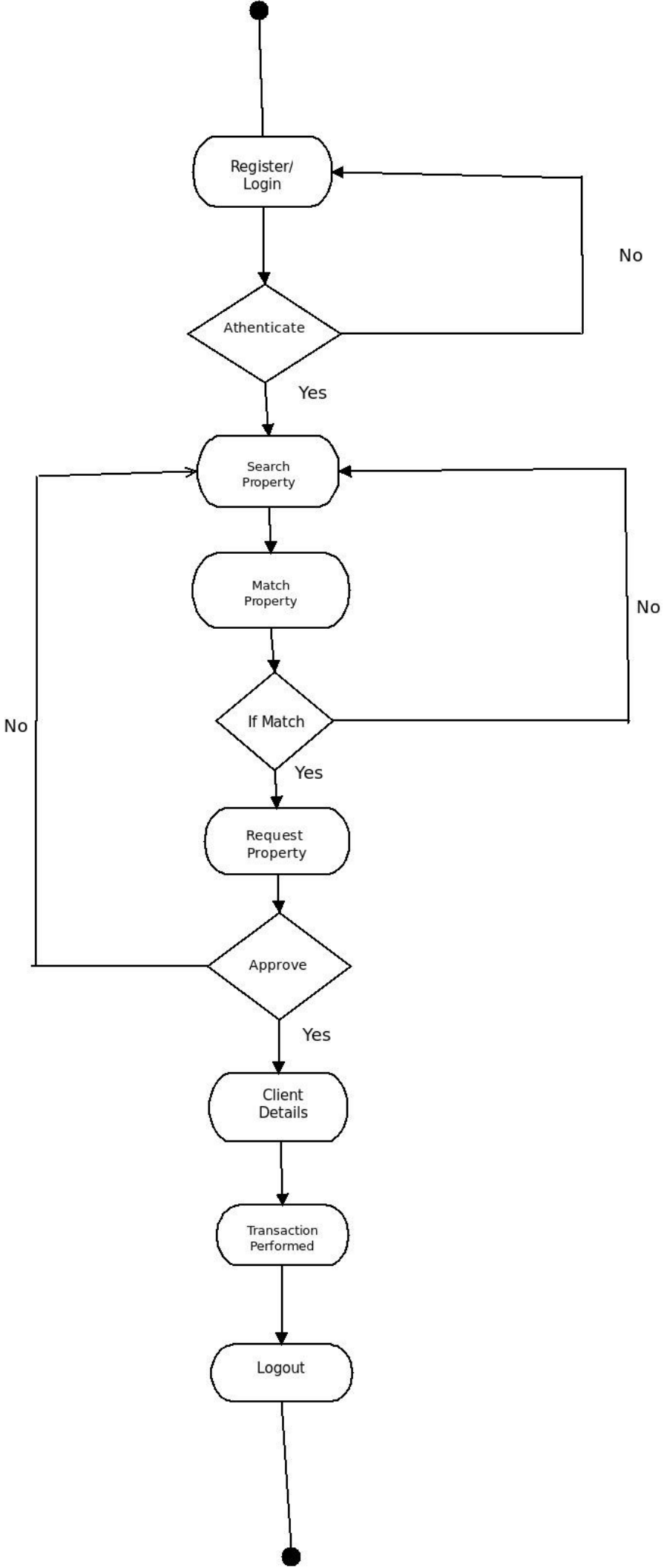
## Proposed System

Blockchain is an open, peer-to-peer (meaning shared) ledger of transactions. It's accounting, but the ledger doesn't live in a central place it's distributed and supported by everyone's systems. So to authenticate a transaction, more than one node has to see the transaction occur and agree that it's accurate. Only then is the transaction added to the ledger.
This project is focuses on bringing the real estate industry on decentralized network. The ethereum wallet is an important module in the system. It basically stores the cryptocurrency with metamask, private key,mnemonics, keystore file. Another module is the erc20 token. We will be having our own cryptocurrency on the system and it will follow erc20 standards.
This project focuses on making the transactions and ownership transfer transparent. With the help of blockchain technology there will be a unique entity for a person so there will be no duplicity. The information will be visible to all eliminating the intermediaries. This process will reduce the cost of registration or the ownership transfer as compared to the legal paper procedures. We will be using Ethereum. It is an open source platform which uses blockchain technology for developing decentralized applications popularly known as dApps. It also allows us to create our own currency or the token which are called as the erc20 token and accordingly with the help of this token transactions will happen. With the help of distributed ledger, it is going to be a transparent system which will eliminate the use of intermediaries like lawyers in the field of real estate.

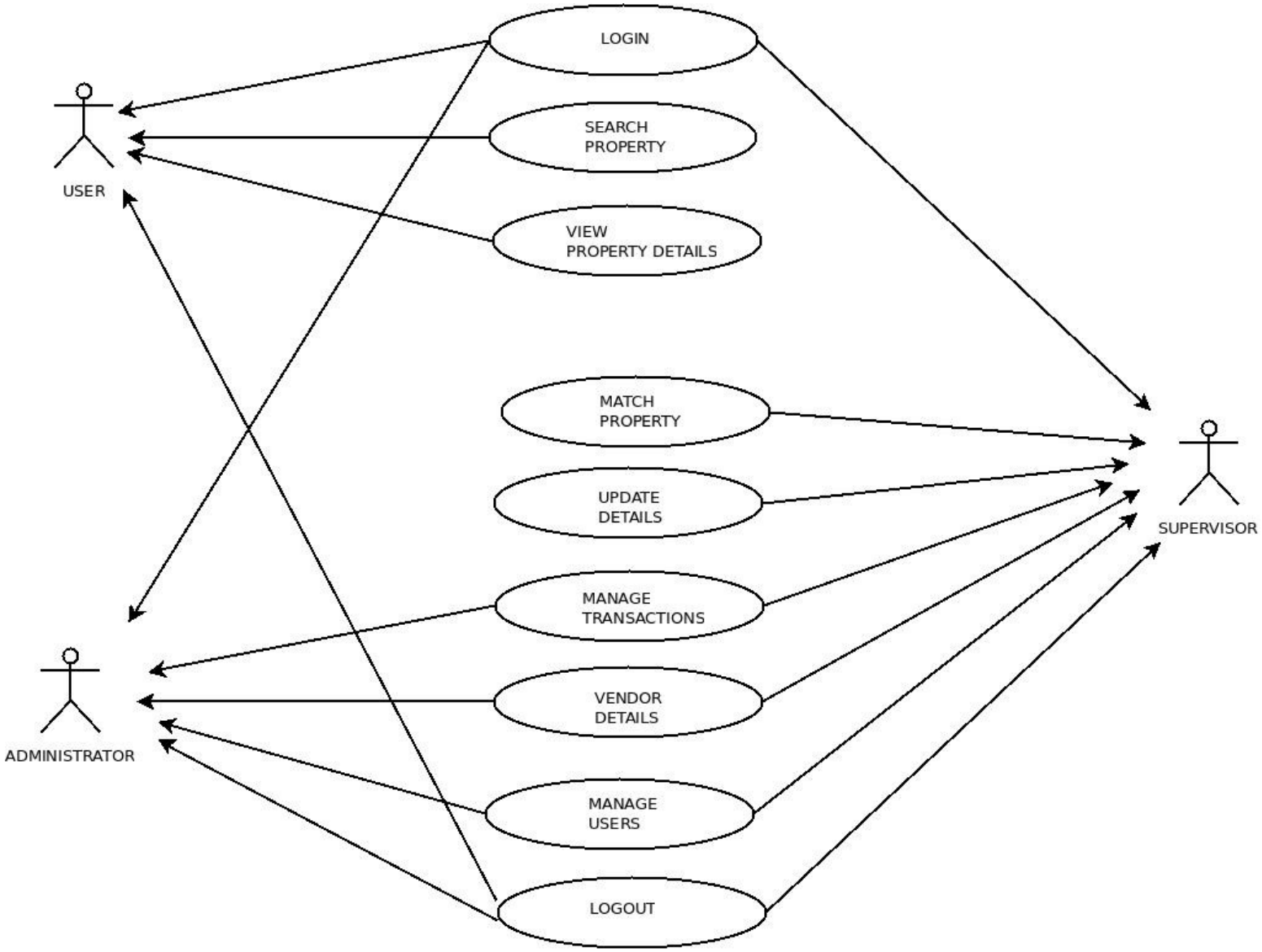
## Flow of modules

In first place the user will interact with the front end which will probably be made using react.js. When the basic website will be created at that point of time the page will itself have a option of create wallet. Basically the wallet will come into picture only because of cryptocurrency. The ethers will be
kept inside the wallet. When the user will click on create a wallet at that very moment the user has to click on generate on random and when the mnemonics is generated the user needs to write it down secretly and then fill the left blank spaces. If the user has already created the wallet then the user needs to click on load wallet and sign in with the either of the 4 options: (1)metamask-the wallet itself, (2)Private Key, (3)Mnemonics, (4)keystore file.The frontend will be binded to the blockchain using
ether.js.All the important documents of the seller and buyer will be kept on the ledger as blockchain is decentralised there will be no backend. Each and every thing will be saved on the nodes. There will be something like smart contracts which is the business logic that decides when and how the exchange of ethers should take place.These smart contracts are saved on the ethereum blockchain inorder to verify that all the activities are performed according to the smart contracts.

## Activity Diagram


Register/
Login
No
Athenticate
Yes
Search
Property
Match
Property
No
If Match
No
Yes
Request
Property
Approve
Yes
Client
Details
Transaction
Performed
Logout

## Use Case Diagram



## Description Of Use Case

The real estate use case is one of the excellent use case of the best use case of practical use of blockchain in real life. In this system the whenever the user registers himself in the system, the user can Login to the system and then search for the property. User has the privilege to view the property details if he/she is interested in a certain property. If the user wishes to buy the property they can contact the seller and negotiate their price. An admin will be required to manage the properties and manage all the users. The admin has the privilege to make necessary arrangements for user and may block the user if they try to violate the terms and conditions of the respected enterprise. It is the duty of the admin to update the vendor details as and when they get updated. The integral part of this system is that the transactions are visible to all and the motive is to keep the transactions visible for transparency in the system so. The admin manages the transactions and decides how many transactions could be alloted in a block. The block settings are done on the network layer. On such a system many types of transaction might take place. It is necessary to manage all the transactions. In blockchain the transactions will be time stamped but the number which must be alloted for block so that it can contain the defined number of transactions.

## Module 1
## Ethereum Wallet

The very first and the most important module is to make an ethereum wallet inorder to load the cryptocurrency known as ethers. Working: A full node wallet requires you to download the entire Ethereum Blockchain to operate. Essentially, this transforms your computer into a node, an entity that supports the entire network by updating the Blockchain via reaching an agreement on the legitimacy of transactions with other nodes.

How to create a wallet?
The web page will be provided with the option of creating a wallet. The user
will be switched to an ethereum wallet. The wallet page will contain twooptions:create a wallet (new user), load a wallet(existing user). When the user will click on create a wallet at that very moment the user has to click on generate on random and when the mnemonics is generated the user needs to write it down secretly and then fill the left blank spaces. If the user has already created the wallet then the user needs to click on load wallet and sign in with either of the 4 options: (1)metamask-the wallet itself, (2)Private Key, (3)Mnemonics, (4)keystore file.When metamask is being used at that moment only the signer is being user but when private key is being user at that point both provider and signer together enter the wallet and once they are done entering the wallet the session related to the signer and provider expires. In this way he/she can easily create a ethereum wallet

## Module 2

## ERC20 token

What is ERC20 token ?
ERC20 is a protocol standard that defines certain rules and standards for issuing tokens on Ethereum's network. In 'ERC20', ERC stands for Ethereum Request For Comments and 20 stands for a unique ID number to distinguish this standard from others. Similar to the fact that we have an HTTP protocol for internet, we have a standard protocol for tokens to be issued on Ethereum i.e. ERC20.The ERC20 also has smart contract that defines a certain rules for the sender denoted as (msg.sender). Also it explains many other conditions like allowance, freezing of the account etc.

Specifies six functions: ERC-20 defines six different functions for the benefit of other tokens within the Ethereum system. These are generally basic functionality issues, including the method in which tokens are transferred and how users can access data regarding a particular token. All together, this set of functions and signals ensures that Ethereum tokens of different types will uniformly perform in any place within the Ethereum system. As such, nearly all of the digital wallets which support the ether currency alsosupport ERC-20-compliant tokens.

## Module3

### Binding front end to blockchain with ethers.js

The ethers.js library aims to be a complete and compact library for interacting with the Ethereum Blockchain and its ecosystem.The basic need of ether.js is used to bind the frontend with the blockchain. Previously web3.js was being used but due to some reasons it is replaced by ether.js.But till today when it comes to only binding the frontend with metamask at that moment web3.js is being used.