OPENSEA (NFT MARKETPLACE)

Introduction:

Users can see, purchase, and trade NFTs on OpenSea's NFT Marketplace. These NFTs might range from the arts to sports, collectibles, and music, among other things. It is completely free to use as soon as the user logs in and creates a hot wallet. I was astounded to learn how much research has gone into blockchain, and my interest in NFTs was a key factor in my decision to use this tool. It has a lot of potential in the next days, and I'd say it's the future. On such Marketplaces, it is worthwhile to investigate and learn skills. I've been an investor and trader in the cryptocurrency market for some time and would like to learn more.

Primary Use Case:

USECASE

- Artists and Creator
- Seller/Buyer
- Admin
- Developers

Primary use case:

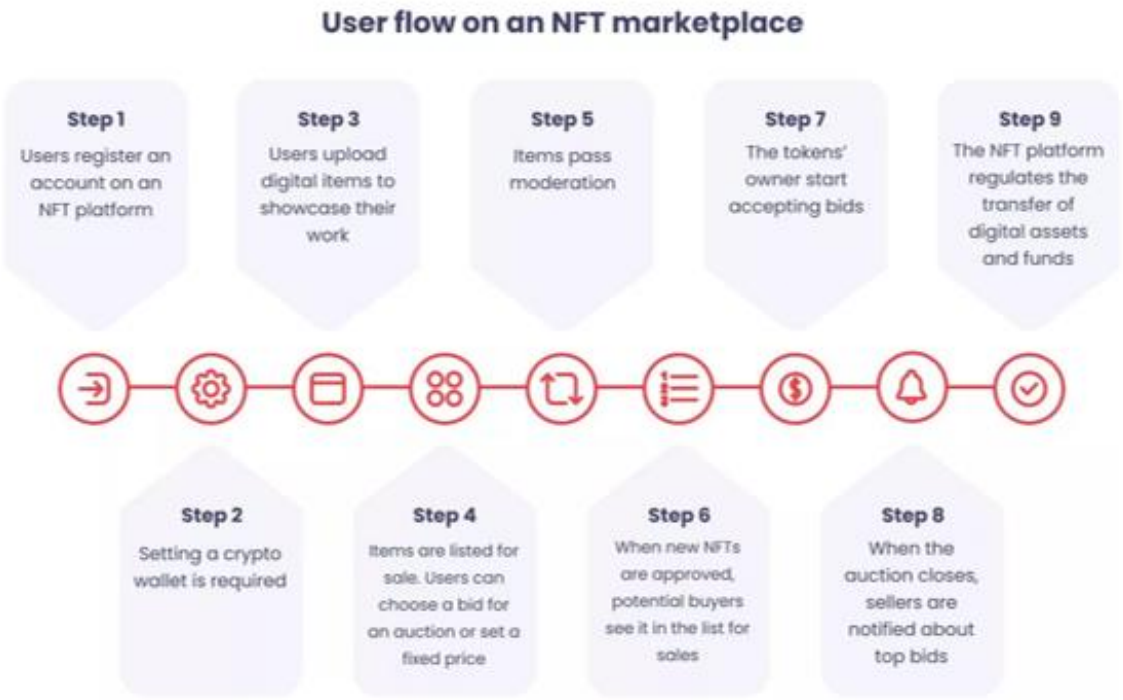
Seller/Artist: On the open sea marketplace, the seller offers art items by auction or at a fixed price. The painting will be sold at auction to the highest bidder within a set time range.

Buyer 1: Buyer 1 will place a bid for the art.

Buyer 2: Buyer 2 will make a bid on the same piece of artwork. Buyer1 owns the artwork because his bid was higher than Buyer2's in the time allotted.

Buyer 3: Buyer 3 makes a fixed-price purchase. The payment is deducted from the buyer's account and credited to the sellers. As royalties, a fixed amount (2.5 percent) will be credited to open-sea and artists.

USER FLOW DIAGRAM:



BUSINESS CHALLENGES:

- NFT Royalties Challenges
- NFT Business Models Due to Integrity
- Security Issues with Hot Wallet

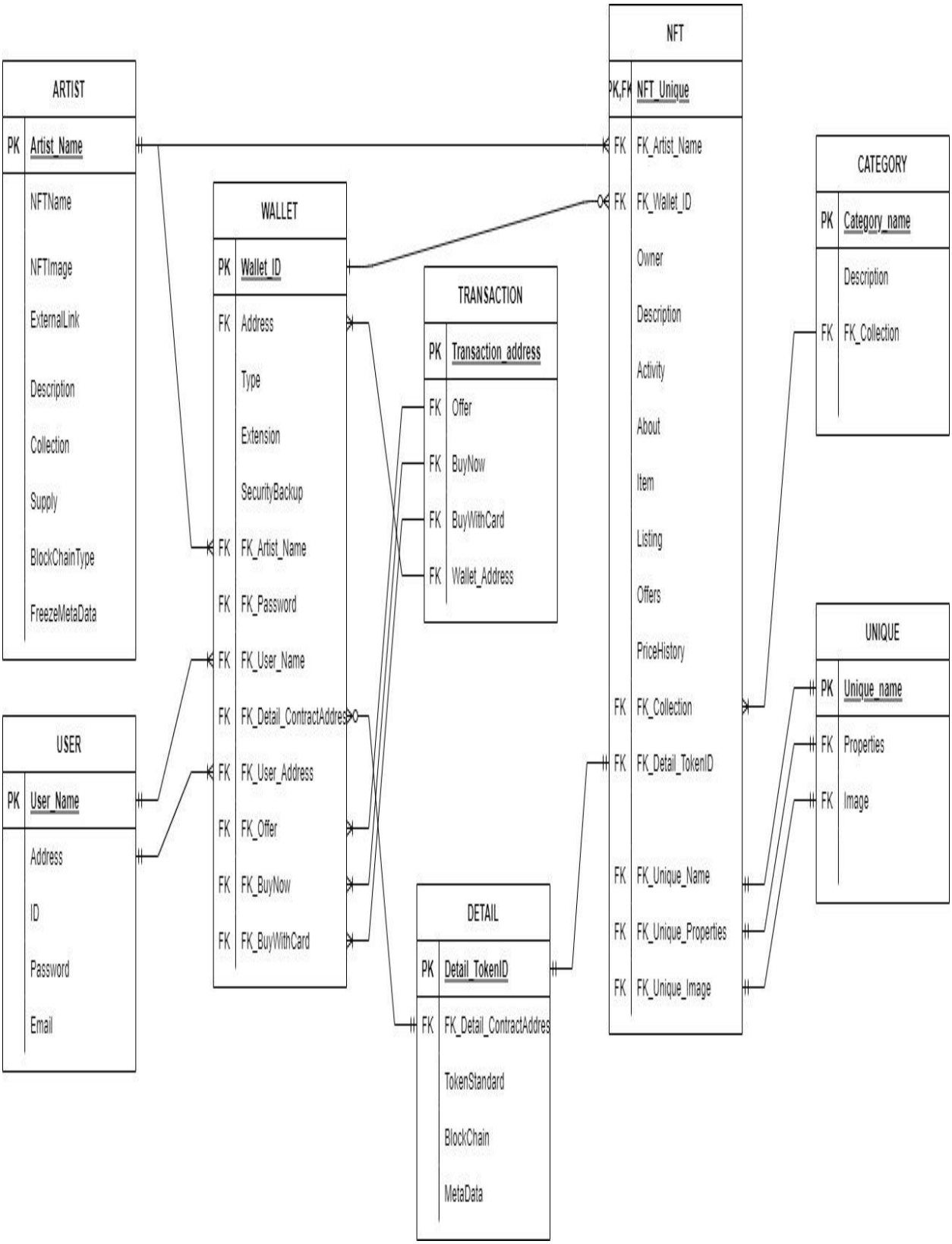
BUSINESS ANALYSIS:

Artists, Buyers, Admins, and Developers are the main users, as previously said.
• Artists: Artists can use OpenSea to mint NFT. Individual or many NFTs are possible.
• Buyers: Buyers are users who connect to a wallet and purchase NFT using one of the offered payment methods.
• Admin: They give support, take on tasks, and oversee the management of servers and databases.
• Developers: To make OpenSea visible, developers integrate it with NFT Collections.

BUSUINESS RULES/ LOGIC:

- One ARTIST can have unique wallet address
- One ARTIST can connect with multiple wallets
- One ARTIST can create multiple unique NFTs
- USER will create a WALLET to access OpenSea
- USER can connect with multiple WALLETS
- One CATEGORY can have multiple NFT Collections
- One NFT will have a UNIQUE name, image, and properties
- USER can either make offer or buy an NFT to make a TRANSACTION
- One TRANSACTION can be made with multiple WALLETS
- USER must connect to WALLET address and add funds or pay directly from card to purchase the NFT
- USER will enter WALLET address for completion of TRANSACTION

ER Diagram:


ARTIST
PK Artist_Name
NFTName
NFTImage
ExternalLink
Description
Collection
Supply
BlockChainType
FreezeMetaData
NFT
PK,FK NFT_Unique
FK FK_Artist_Name
FK FK_Wallet_ID
Owner
Description
Activity
About
Item
Listing
Offers
PriceHistory
FK FK_Collection
FK FK_Detail_TokenID
FK FK_Unique_Name
FK FK_Unique_Properties
FK FK_Unique_Image
CATEGORY
PK Category_name
Description
FK FK_Collection
WALLET
PK Wallet_ID
FK Address
Type
Extension
SecurityBackup
FK FK_Artist_Name
FK FK_Password
FK FK_User_Name
FK FK_Detail_ContractAddres
FK FK_User_Address
FK FK_Offer
FK FK_BuyNow
FK FK_BuyWithCard
TRANSACTION
PK Transaction_address
FK Offer
FK BuyNow
FK BuyWithCard
FK Wallet_Address
UNIQUE
PK Unique_name
FK Properties
FK Image
USER
PK User_Name
Address
ID
Password
Email
DETAIL
PK Detail_TokenID
FK FK_Detail_ContractAddres
TokenStandard
BlockChain
MetaData

SQL COMMANDS:

```
INSERT or IGNORE INTO NFT(
NFTUnique,WalletID,Owner,Description,Activity,About,Item,Listing,Offe
rs,PriceHistory,Collection,DetailTokenID,Purchase,UniqueName,UniqueI
mage,UniqueProperties)
VALUES
('CryptoPunk#7747','0x837454383dcbcd44d54a5d5f72b8cc93c6dac203
','InSlothWeTrust','C352B5',0,'CryptoPunks launched as a fixed set of
10,000 items in mid-2017 and became one of the inspirations for the
ERC-721 standard. They have been featured in places like The New York
Times, Christie's of London, Art|Basel Miami, and The PBS
NewsHour.','CryptoPunks ','No Listings Yet', 'No Offers
Yet',0,'Collectibles',7747,0,'CryptoPunk#7747','https://lh3.googleuserco
ntent.com/msPnPQsGtUGKhlGL40QRFV_56CVxJ2ZV1TIgiHTlQxV1DrgFV
fWk5UNm8VuEkhj0aGna4SaGDLT4Kf_JFjOfDBjw1VZNfLhu8avOB3k=w6
00',' Eye Patch, Messy Hair, Normal Beard and Male');
OUTPUT inserted.UniqueImage
INTO UNIQUEE
VALUES(1,7747)
GO
SELECT * FROM NFT;
GO
SELECT * FROM UNIQUEE ;
GO
```

SCREENSHOT FROM APPLICATION:

OUTPUT

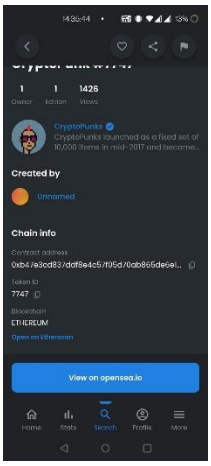
	NFTUnique	WalletID	Owner	Description	Activity	About	Item	Listing	Offers	PriceHistory	Collection	DetailTokenID
1	CryptoPunk#7747	0x837454383dcbcd44d54a5d5f72b8cc93c6dac203	InSlothWeTrust	Created by...	0	CryptoPunks launched as a fixed set of 10,000 ...	CryptoPunks	No Listings Yet	No Offers Yet	0	Collectibles	7747

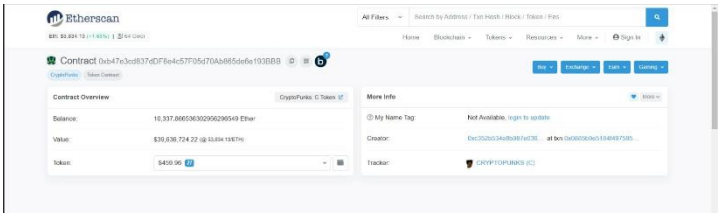
Explanation: This command returns information on the Unique NFT in the database. #7747, for example.

2nd Command:

```
SELECT
DETAIL.BlockChain,DETAIL.DetailContractAddress,DETAIl.MetaData,DETAIL.TokenStandard,DETAIL.DetailTokenID,WALLET.ArtistName,WALLET.BuyNow,WALLET.BuyWithCard,WALLET.Extension,WALLET.Offer,WALLET.SecurityBackup,WALLET.Type,WALLET.UserAddress,WALLET.UserName,WALLET.WalletAddress,WALLET.WalletID
FROM DETAIL,WALLET
WHERE DETAIL.DetailContractAddress = WALLET.DetailContractAddress
;
```

SCREENSHOT FROM APPLICATION:





OUTPUT:

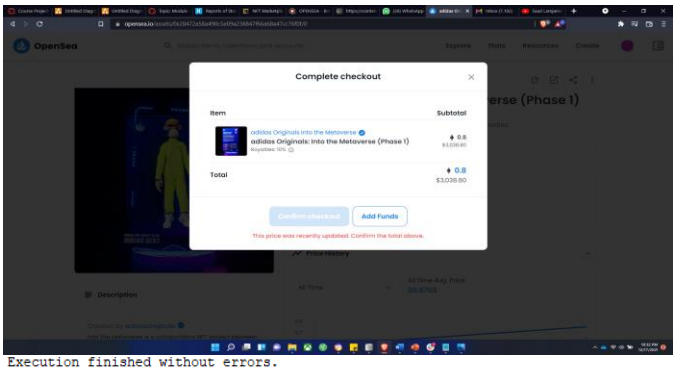
hain	DetailContractAddress	MetaData	TokenStandard	DetailTokenID	ArtistName	BuyNow	BuyWithCard	Extension	Offer	SecurityBackup	Type	UserAddress	UserName
	0xb47e3cd837dDF8e4c57F05d70Ab865de6e193BBB	Yes	CryptoPunks	7747	CryptoPunks	Not Available	Powered by Moonpay	MetaMask	No Offers Yet	Cannot be seen	Hot Wallet	NULL	PabloPunkas
	0xb47e3cd837dDF8e4c57F05d70Ab865de6e193BBB	Yes	CryptoPunks	7747	CryptoPunks	Not Available	Powered by Moonpay	MetaMask	No Offers Yet	Cannot be seen	Hot Wallet	NULL	na

Explanation: This operation links the DETAIL and WALLET tables to get the Contract address. This provides information about the transaction from both the user's and the buyer's perspectives.

3rd Command:

INSERT or IGNORE INTO TRANSACTION1(TransactionAddress,Offer,BuyNow,BuyWithCard,WalletAddress) VALUES ('0x96338149E9f6c262D4CB7aeec1CF4c652079a11C','No Offers Yet','Not Available','Powered by Moonpay ','0x51ec89f1fcfed8c69a1b0865a7550ece0677cf5f');

SCREENSHOT FROM APPLICATION:




```
Execution finished without errors.
Result: query executed successfully. Took 0ms, 0 rows affected
At line 1:
INSERT or IGNORE INTO TRANSACTION1( TransactionAddress,Offer,BuyNow,BuyWithCard,WalletAddress)
VALUES ( '0x96338149E9f6c262D4CB7aeec1CF4c652079a11C','No Offers Yet','Not Available','Powered by Moonpay ','0x51ec89f1fcfed8c69a1b0865a7550ece0677cf5f');
```

Explanation: During the transaction, this command adds data from the user-end. Specific values are added to complete a transaction, as seen in this data.

ANALYTICS, REPORTS AND METRICS:

GOALS:

- Decrease the cost of minting
- Reduce the cost of energy for Ethereum transaction
- Increase the number of sales whose NFTs are less than 100 dollars

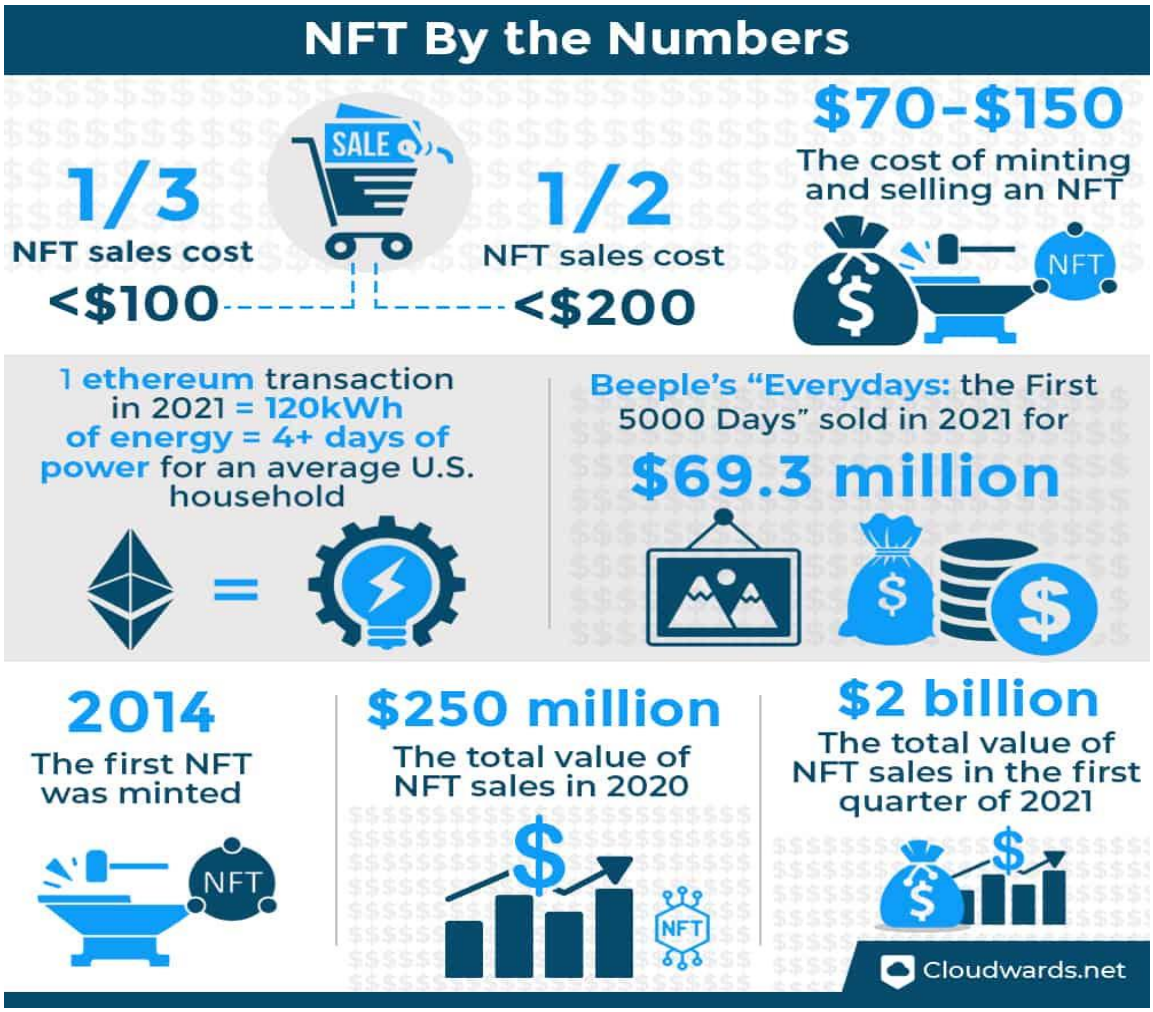
QUESTIONS:

- How can we reduce the cost of minting?
- How can we change the blockchain before minting (Eth to Poly) ?
- How can we promote the sales of NFT less than 100 dollars?
- How many NFTs are sold for less than 100 dollars?
- How can we increase the number of Active Wallet Users?

METRICS:

- Average Cost per NFT
- Average No. of NFT Conversions from Eth to poly

- Average No. of Active Wallet Users



SQL COMMANDS:

- Average Cost per NFT

```
SELECT AVG(PriceHistory)
FROM NFT
WHERE PriceHistory <= 100;
```

ScreenShot:

	AVG(PriceHistory)
1	9.4695

- Number of Active Wallet Users

  SELECT COUNT(1) as Count, UserName as Users from WALLET
  GROUP by UserName
  ORDER by COUNT(1)

  ScreenShot:

	count	Users
1	1	DC9E11
2	1	HodlPonkz
3	1	Kenney
4	1	PabloPunkasso
5	1	bartdecrem
6	1	na
7	4	InSlothWeTrust

- Average No. of Conversions from Eth to Poly

  SELECT * FROM ARTIST
  WHERE
  BlockChainType = " Eth " /
  SELECT * FROM DETAIL
  WHERE
  BlockChain = " Eth "

  ScreenShot:

BlockChain	MetaData
Filter	Filter
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes
Eth	Yes

SECURITY CONCERNS:

As noted under the business difficulties, NFT Marketplaces are vulnerable to assaults. Users save sensitive information about their payment wallets and NFTs on their devices. Hot Wallets are convenient and simple to use, but when it comes to storing, they provide the least amount of protection. Open Sea recently had a data breach because of flaws in the OpenSea marketplace that allowed fraudulent NFT uploads. Users are experiencing security difficulties as result of their hot wallets being exposed. By delivering fraudulent NFTs through various techniques, hackers have hijacked users' accounts and stolen crypto wallets. As soon as hackers get access through a user's login, they become susceptible. They steal NFTs, money, install bugs, and dump NFTs, among other things. There have been several articles written on how hackers create so much havoc in markets.

Safety Measures: It is critical to select a safe wallet by conducting research online, creating a difficult password, and frequently backing up your wallet. Give away sensitive information, such as signatures and

passwords, only when necessary. It is critical that a third party that does not have access to the marketplace never enters your private.

ARCHITECTURE:

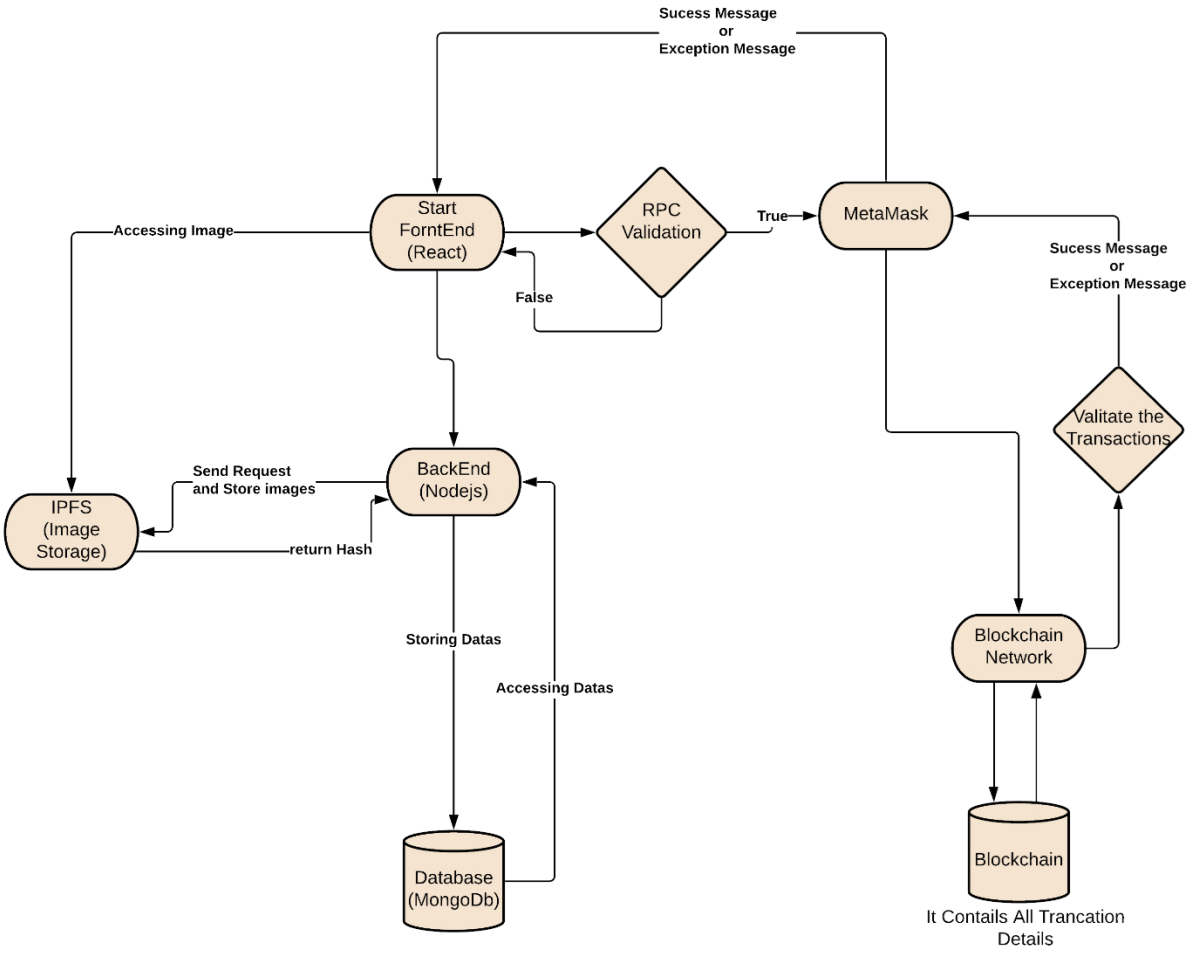
The Wyvern Protocol powers OpenSea (Ethereum smart contracts specifically designed for buying and selling unique digital assets).

Layers of Architecture:

Presentation Layer: The engineers created a graphical user interface (GUI) with tabs, menus, and many settings for the backend's multiple functions. They create user interfaces using Node.js (JavaScript SDK). Like other digital building blocks such as the JPEG or PNG file format for pictures, HTTP for computer queries, and HTML / CSS for presenting material on the web. On top of that, blockchains offer a layer that provides developers with a brand-new set of stateful primitives to construct apps on.

Application Layer: The NFT marketplace is based on several functionalities, all of which are built using smart contracts. Smart contracts are written in the Solidity programming language and are intended for usage with EVM. In this marketplace, Smart Contacts are used for all functions.

Data Layer: IPFS is a widely used file storage system that includes backup and automated versioning. This well-designed database ensures that information can be accessed and retrieved quickly.



PROJECT WRAP-UP AND FUTURE CONSIDERATIONS:

First and foremost, I want to express my gratitude to the Professor for providing me with the chance to work on this one-of-a-kind project. Learning about Blockchain and its applications has given me several ideas for how this sector might enhance the commercial elements of organizations who use it. After completing this assignment, I learned about the ins and outs of Marketplace, as well as privacy and security issues. Overall, the measures and targets outlined above will result in a 20 percent increase in active users over the next two years. Advances in this field are happening at a breakneck pace, including lower minting costs. As this is my first foray into this field, I'm taking all I've learned

and experienced about combining data analytics with blockchain with me and will continue to work on it whenever the chance arises.

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