

COS30049 - Computing Technology Innovation Project

PROJECT DESIGN REPORT -

ASSIGNMENT 01

(GROUP SET 3-3 & 3-4)



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Campus: Ho Chi Minh City

NOTE: *The length of the report should be at least 800 words (excluding references).*

TABLE OF CONTENTS

Part 1 - Project background and introduction	3
Project Background	3
Project Introduction	3
Part 2 - Team introduction	4
Part 3 - Project requirement list and description	5
Part 04 - Project Design	13
1. Front-end prototypes (Figma)	13
Homepage	14
About us	17
Transaction history	18
Transaction detail	19
Wallet address detail	19
Overview & More information	19
Transaction history	20
Directed graph	21
Part 05 - WEB function	22
Homepage	22
About us	28
Transaction history	29
Transaction detail	38
Wallet address detail	39
Overview & More information	39
Transaction history	39
Directed graph	40
Part 06 - Diagrams	45
Architecture diagram	45
Workflow	46
User story	46
Part 07 - Reference(s)	47

Part 1 - Project background and introduction

<https://testcos34.netlify.app/>

Project Background

Blockchain technology, known for its decentralized, secure, and transparent nature, has significantly impacted industries across the globe. However, the vast complexity of blockchain transactions—encompassing thousands of wallet addresses, intricate smart contract interactions, and numerous interconnected transaction paths—poses challenges for users and developers trying to analyze and interpret this data effectively. As the volume of blockchain transactions continues to grow, so does the need for user-friendly tools to visualize and explore this data in a meaningful way.

This project specifically focuses on the third component—the **Blockchain Transaction Information Visualization System**. The goal of this system is to transform complex blockchain transaction data into a format that is accessible and easy to understand. By offering interactive tools for exploring wallet interactions and transaction histories, the system will enable users to gain valuable insights into transaction patterns, network activities, and smart contract behaviors.

Project Introduction

The **Blockchain Transaction Information Visualization System** seeks to create a highly interactive, easy-to-use platform for exploring and analyzing blockchain transactions. Due to the decentralized nature of blockchain networks, vast amounts of transaction data accumulate between wallet addresses, and navigating this data is often cumbersome for both developers and everyday users. This system addresses that need by presenting blockchain information in an intuitive, graphical form, complemented by detailed transaction tables.

This project not only delivers a tool for visualizing blockchain transactions but also presents a learning opportunity for students. Participants are expected to validate the requirements of the system with their workshop tutors, collaborate as a group to convert these requirements into functional documentation and practical code, and propose enhancements that can be integrated into the system. By doing so, students will contribute to building a platform that simplifies blockchain data analysis for both technical users and the broader public.

The front-end design of the **Blockchain Transaction Information Visualization System** will not only address the immediate need for visualizing blockchain data but also offer flexibility for future enhancements and scalability as blockchain networks continue to grow in complexity. This project stands as a crucial tool in demystifying blockchain networks and providing users with clearer insights into transaction patterns and network dynamics.

Part 2 - Team introduction

No	Team member	Student ID
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2	Truong Dong Nhi	104977535
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Part 3 - Project requirement list and description

Requirement(s)	Description	Checklist
1.1) Users can input a wallet address in the search bar to retrieve basic information about the address.	<p>In the navigation bar, it has a search bar section where users can fill the wallet address to display the information about that address.</p> <p>In the assignment 1, just building the front-end for the web so the user types anything in the search bar then it accesses the wallet address page.</p> <pre> 8 const Navbar: React.FC = () => { 9 const router = useRouter(); 10 const [isMenuOpen, setIsMenuOpen] = useState(false); 11 const [searchInput, setSearchInput] = useState(''); 12 13 const handleSearch = (e: React.KeyboardEvent<HTMLInputElement>) => { 14 if (e.key === 'Enter' && searchInput) [15 router.push(`/wallet_address?query=\${encodeURIComponent(searchInput)})`); 16 setSearchInput(''); 17] 18 }; 19 20 return (21 <Search Bar (darkMode)> 22 <div className="hidden md:flex flex-1 max-w-0 w-0"> 23 <div className="relative font-quantico w-full"> 24 <input 25 type="text" 26 placeholder="Search by address / Tx Hash / Block / Token / Domain" 27 className="w-full py-2 pl-10 pr-4 text-gray-700 bg-gray-100 rounded-full focus:outline-none focus:bg-white focusing:outline-[#F5B7B1] focus:ring-[#F5B7B1] focus:ring-[#F5B7B1] onkeydown=handleSearch" 28 value={searchInput} 29 onChange={(e) => setSearchInput(e.target.value)} 30 onKeyUp=onkeydownHandleSearch 31 /> 32 <div className="absolute inset-y-0 left-0 flex items-center pl-3"> 33 <Search className="h-5 w-5 text-gray-500" /> 34 </div> 35 </div> 36 </div> 37); 38 } </pre>	<input checked="" type="checkbox"/>
1.2) The website will display details such as the wallet's balance and other relevant data related to the address.	<p>This allows users to easily identify and copy the wallet address by writing this code below:</p> <pre> <div className="flex items-center space-x-2"> 0x68ae22fdxx5bx050627456902182900xxa <Clipboard className="w-4 h-4 text-gray-400 cursor-pointer" /> <ExternalLink className="w-4 h-4 text-gray-400 cursor-pointer" /> </div> </pre> <p>In the "Overview" section, it provides users with immediate information about their wallet's holdings and its current value in USD. Additionally, other components show the wallet's balance, total sent and received amounts which helps users an overview of the transaction history at a glance.</p> <pre> <div> <p className="text-gray-600 font-bold">Balance:</p> <p>2840 coin's name</p> </div> <div> <p className="text-gray-600 font-bold">Total Sent:</p> <p>2840 coin's name</p> </div> <div> <p className="text-gray-600 font-bold">Value:</p> <p>\$22,3759 USD</p> </div> <div> <p className="text-gray-600 font-bold">Total Received:</p> <p>1,000,000 JBC</p> </div> </pre> <p>The "More information" section includes information such as when the wallet was first and last seen, funding source, and multichain portfolio value.</p>	<input checked="" type="checkbox"/>

```


Private name tag:</span>
bg-orange-300 text-gray-800 px-3 py-1 rounded-md">Paid</span>



First seen:</span>
May 05, 2024 at 05:06AM</span>



Last seen:</span>
Sep 28, 2024 at 23:59PM</span>



Funded by:</p>
0x2Ad5526...04FB83a70



Multichain info:</p>
$195.47 (Multichain portfolio)


```

Transaction History and Transaction Graph buttons allow users to dive deeper into their transaction history and view it in different formats.

```


Transaction history
Transaction Graph


```

2) When a user accesses a wallet address, the system will display a directed graph, where each node represents a wallet address, and each edge represents a transaction between connected addresses.

Implementation: The transaction graph component utilizes React Flow, a powerful library for creating interactive node-based interfaces, to construct a dynamic directed graph. The graph is centered around a star-shaped node representing the searched wallet address, with circular nodes radiating outward to represent addresses that have transacted with the central address.

```

767   <div className="w-full h-auto">
768     <ReactFlow
769       nodes={nodes}
770       edges={edges}
771       onNodesChange={onNodesChange}
772       onEdgesChange={onEdgesChange}
773       onConnect={onConnect}
774       onNodeClick={onNodeClick}
775       onEdgeClick={onEdgeClick}
776       nodeTypes={nodeTypes}
777       edgeTypes={edgeTypes}
778       fitView
779       attributionPosition="bottom-left"
780       maxZoom={2}
781     >
782     |   <Controls />
783   </ReactFlow>
784 </div>

```

Key components:

- **StarNode:** A custom React component rendering a yellow star SVG, representing the central wallet address.



```

138 const StartNode = ({ data }: nodeProps) => {
139   <div
140     className="flex items-center justify-center w-28 h-28 cursor-pointer"
141     onClick={() => data.onClick(data.id)}
142   >
143     <Handle
144       type="target"
145       position="position:left"
146       className="w-3 h-3 bg-blue-500"
147     />
148     <svg
149       viewBox="0 0 24 24"
150       className="w-full h-full fill-yellow-400 stroke-yellow-600"
151     >
152       <path d="M12 21L15.09 8.26L22 9.27L17 14.14L18.18 21.02L12 17.77L5.82 21.02L7 14.14L2 9.27L8.91 8.26L12 22" />
153     </svg>
154     <Handle
155       type="source"
156       position="position:right"
157       className="w-3 h-3 bg-blue-500"
158     />
159   </div>
160 };

```

- CircleNode: A custom React component rendering orange circular divs, representing transaction partner addresses.

```

122 const CircleNode = ({ data }: NodeProps) => (
123   <div
124     className="flex items-center justify-center w-20 h-20 rounded-full bg-orange-400 text-white border-2 border-orange-500 shadow-lg"
125     <Handle
126       type="target"
127       position="position:left"
128       className="w-3 h-3 bg-blue-500"
129     />
130     <div
131       className="text-xs font-mono">{data.label}</div>
132     <Handle
133       type="source"
134       position="position:right"
135       className="w-3 h-3 bg-blue-500"
136     />
137   </div>
138 );

```

- CustomEdge: A custom edge component showing transaction direction with arrows and displaying transaction amounts along the edge.

```

162 const CustomEdge = ({(
163   id,
164   sourceX,
165   sourceY,
166   targetX,
167   targetY,
168   style = {},
169   markerEnd,
170   data,
171 ): EdgeProps} ) => {
172   const edgePath = `M${sourceX},${sourceY} L${targetX},${targetY}`;
173   const handleClick = () => {
174     if (data && data.onClick) {
175       data.onClick(id);
176     }
177   };
178   return (
179     <>
180       <path
181         id={id}
182         style={style}
183         className="react-flow__edge-path cursor-pointer"
184         d={edgePath}
185         markerEnd={markerEnd}
186         onClick={handleClick}
187       />
188       <text>
189         <textPath
190           href={`#${id}`}
191           style={{ fontsize: 12, fill: "white" }}
192           startOffset="50%"
193           textAnchor="middle"
194         >
195           {data.label}
196         </textPath>
197       </text>
198     </>
199   );
200 };

```

3) Users can interact with the graph and explore the next/previous hop of connected addresses (e.g., clicking on nodes to

The onClick function enables users to expand nodes, revealing connected addresses. This creates a dynamic exploration experience where users can trace transaction paths by clicking on nodes to reveal more connections. Detailed functionality:



explore further transaction paths).

1. When a node is clicked, the function checks if it's already expanded.
2. If not expanded, it generates new connected nodes and edges using the generateConnectedNodes function.
3. The new nodes and edges are added to the graph state.
4. If already expanded, it collapses the connected nodes and edges.
5. The expandedNodes state is updated to keep track of which nodes are currently expanded.

```
462  const onNodeClick = useCallback((event: React.MouseEvent, node: Node) => [ 
463    const collapseConnectedNodes = (nodeId: string) => { 
464      // Delete all nodes and edges related to the currently clicked node 
465      setNodes((nds) => nds.filter((n) => !n.id.startsWith(`${nodeId}-`))); 
466      setEdges((eds) => eds.filter((e) => 
467        !e.source.startsWith(`${nodeId}-`) && 
468        !e.target.startsWith(`${nodeId}-`)) 
469    ); 
470  }; 
471  if (!expandedNodes.includes(node.id)) { 
472    // 
473    collapseConnectedNodes(node.id); 
474    setExpandedNodes(expandedNodes.filter((id) => id !== node.id)); 
475  } else { 
476    // When clicking back on an opened node, closes the branches of that node. 
477    const { nodes: newNodes, edges: newEdges } = generateConnectedNodes(node.id, node.position); 
478    setNodes((nds) => [...nds, ...newNodes]); // Adding new node 
479    setEdges((eds) => [...eds, ...newEdges]); // Adding new edges 
480    setExpandedNodes([...expandedNodes, node.id]); // Save opened node 
481  } 
482 }], [expandedNodes]); 
483 
```

While not in a traditional table format, the system displays transaction details in a popup when an edge is clicked. The onEdgeClick function triggers this popup, showing source, target, and transaction amount.

Detailed functionality:

1. When an edge is clicked, the onEdgeClick function is called.
2. It sets the selectedEdge state with the clicked edge's data.
3. The setIsOpen state is set to true, triggering the rendering of the popup.
4. The popup displays transaction details including source address, target address, and transaction amount.
5. A close button allows users to dismiss the popup.

```
586 
587 const onEdgeClick = useCallback((event, edge) => { 
588   console.log("Edge clicked:", edge); 
589   setSelectedEdge(edge); 
590   setIsOpen(true); 
591 }, []); 
592 
```

```

1043
1042     

({open & selectedIndex: any}) =>
1043       <div className="fixed inset-0 bg-black bg-opacity-50 flex items-center justify-center z-50 backdrop-blur-sm p-4">
1044         <div className="bg-[#1a2ab4] px-4 sm:px-6 pb-6 rounded-lg w-full max-w-4xl mx-auto overflow-hidden">
1045           <h2 className="text-white text-xl sm:text-2xl font-semibold">
1046             Transaction details
1047           </h2>
1048           <button
1049             onClick={() > setisOpen(false)}
1050             className="text-white hover:text-gray-300"
1051             aria-label="Close"
1052           >
1053             <x className="w-6 h-6" />
1054           </button>
1055         </div>
1056       <div className="bg-white rounded-lg overflow-x-auto">
1057         <table className="w-full">
1058           <thead>
1059             <tr className="border-b">
1060               <th>Time (UTC)</th>
1061               <th>Sender</th>
1062               <th>Recipient</th>
1063               <th>Amount</th>
1064               <th>TXID</th>
1065             </tr>
1066           </thead>
1067           <tbody>
1068             {transactions.map((tx, index) => [
1069               <tr key={index} className="border-b" lastBorder="0">
1070                 <td className="px-3 sm:px-4 py-4 flex items-center">
1071                   <div className="rounded p-1 me-2" style={borderRadius: "50%"}>


```

4) The website will present relevant detailed transaction information in a tabular format.

Upon searching for a wallet address, the system provides an interactive directed graph visualization. Each node in the graph represents a wallet address, and each edge indicates a transaction between the connected addresses. This visual representation allows users to trace transaction flows and analyze relationships between wallet addresses within the blockchain network.



```

1 HistoryTable.tsx
2 Users\kay\cos2004p\src\app\design\HistoryTable.tsx ...
3
4 const transactions = [
5   {
6     block: '804945',
7     age: '4 sec ago',
8     from: '0x1a2ab4...', // this is the address we searched for
9     method: 'Transfer',
10    to: '0x1a2ab4...', // this is the address we searched for
11    amount: '5000 GCO',
12    fee: '0.5 GCO',
13  },
14  ...
15 ] // ← remove the extra bracket
16
17 export const HistoryTable = () => {
18   const [isHidden, setHidden] = useState(true);
19   const [isTableVisible, setIsTableVisible] = useState(false);
20
21   const handleTableVisibility = () => {
22     setIsTableVisible(!isTableVisible);
23   }
24
25   return (
26     <div>
27       <table className="w-full text-asm text-left rounded-lg overflow-hidden border-gray-400">
28         <thead>
29           <tr>
30             <th>Transaction Hash</th>
31             <th>Method</th>
32             <th>Age</th>
33             <th>From</th>
34             <th>To</th>
35             <th>Amount</th>
36             <th>Fee</th>
37           </tr>
38         </thead>
39         <tbody>
40           {transactions.map((tx, index) => [
41             <tr key={index} className="border-b" lastBorder="0">
42               <td>{tx.hash}</td>
43               <td>{tx.method}</td>
44               <td>{tx.age}</td>
45               <td>{tx.from}</td>
46               <td>{tx.to}</td>
47               <td>{tx.amount}</td>
48               <td>{tx.fee}</td>
49             </tr>
50           ])}
51         </tbody>
52       </table>
53     </div>
54   );
55 }
56
57 
```

- 1. Transaction Data:** The component uses a hardcoded list of transactions (`transactions` array) as a data source. Each transaction contains fields like:
 - hash:** The unique identifier of the transaction.
 - method:** The method used in the transaction (e.g., Transfer, Claim).
 - block:** The block number where the transaction was recorded.
 - age:** How long ago the transaction occurred.
 - from and to:** The sender's and receiver's wallet addresses.

	<ul style="list-style-type: none"> ○ <code>amount</code>: The amount transferred. ○ <code>fee</code>: The transaction fee. <p>2. Table Header: The header defines the column names for the table, which match the fields in the transaction data.</p> <p>3. Table Body: The component maps through the <code>transactions</code> array, displaying each transaction in a new row. Hover effects and alternating row colors enhance the visual appeal and usability.</p> <p>4. Pagination Controls: The table footer includes 'Previous' and 'Next' buttons for pagination, though they are currently static and not yet functional.</p>	
5) All transaction data needs to be stored in a graph database for efficient retrieval and visualization.	<p>The “Transactions” page will provide and display the overall view of all transactions on the marketplace. Due to limitations to the transaction data, the component uses a list of hardcoded transactions as references and demonstrations for this static web. Despite the limitations, it can be modified to receive transaction data in the future. Each transactions contain fields as following for better visualizations on the website:</p> <p>1. Transaction Data:</p> <ul style="list-style-type: none"> ○ <code>hash</code>: The unique identifier of the transaction. ○ <code>method</code>: The method used in the transaction (e.g., Transfer, Claim). ○ <code>block</code>: The block number where the transaction was recorded. ○ <code>age</code>: How long ago the transaction occurred. ○ <code>from</code> and <code>to</code>: The sender's and recipient's wallet addresses. ○ <code>amount</code>: The amount transferred. ○ <code>fee</code>: The transaction fee 	<input checked="" type="checkbox"/>

```

206      <TableCell className="font-medium text-blue-600">
207        <div className="flex items-center space-x-2">
208          <Link href={`/transaction/detail`}>
209            <span className="cursor-pointer hover:underline">(tx.hash)</span>
210          </Link>
211          <Button
212            variant="ghost"
213            size="icon"
214            onClick={() => copyToClipboard(tx.hash)}
215            className="h-5 w-5 p-0"
216          >
217            <Copy size={12} />
218          </Button>
219        </div>
220      </TableCell>
221
222      <TableCell>
223        <button
224          onClick={() => handleMethodClick(tx.method)}
225          className="px-3 py-1 rounded-full text-base font-medium w-24 h-8 flex items-center justify-center ${selectedMethod === tx.method ? 'bg-purple-100 text-[#F5B069] border-2 border-[#F5B069]' : 'bg-gray-100 text-gray-800 border border-gray-300'}"
226        >
227          {tx.method}
228        </button>
229      </TableCell>
230
231      <TableCell>
232        <TableCell>
233          <TableCell><tx.block></TableCell>
234          <TableCell><tx.to></TableCell>
235          <TableCell> className="text-blue-600">
236            <div className="flex items-center space-x-2">
237              <Link href={`/wallet_address`}>
238                <span className="cursor-pointer hover:underline">(tx.from)</span>
239              </Link>
240              <Button
241                variant="ghost"
242                size="icon"
243                onClick={() => copyToClipboard(tx.from)}
244                className="h-5 w-5 p-0"
245              >
246                <Copy size={12} />
247              </Button>
248            </div>
249          </TableCell>
250        </TableCell>

```

This enables better accessibilities and visualizations of the data being displayed on the web.

- 2. Table Body:** The component maps through the `transactions` array, displaying each transaction in a new row. Hover effects and alternating row colors enhance the visual appeal and usability.
- 3. Copy Button:** The copy button aids the users in efficient retrieval, as they can copy either the hash, the sender's wallet address, or the recipient's wallet address to see other transactions associated with that account.
- 4. Download Button:** The download button allows the user to download a csv file that contains all of the transactions.

```

<div className="flex flex-wrap items-center justify-center gap-2">
  <Button
    variant="outline"
    size="sm"
    className="flex items-center gap-2 px-4 py-2 bg-white text-gray-900 border border-gray-300 rounded-md hover:bg-[#F5B069]"
    onClick={handleDownload}
  >
    <Download size={16} />
    {(listMobile) ? "Download Page Data" : null}
  </Button>

```

A	B	C	D	E	F	G	H
1 Transaction	Method	Block	Age	From	To	Amount	Txn Fee
2 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
3 0xeb2eba:Transfer		50505	5 secs ago	0xA7B72cJ0xdA1958[150 JCO	0.00011		
4 0xJ97BocC Claim		50505	5 secs ago	0xJaK5tR1 0xdKeV0515050 JCO	0.050511		
5 0x8eS0lcO Execute		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
6 0x8J9750C Transfer		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
7 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
8 0xeb2eba:Transfer		50505	5 secs ago	0xA7B72cJ0xdA1958[150 JCO	0.00011		
9 0xeb2eba:Transfer		50505	5 secs ago	0xA7B72cJ0xdA1958[150 JCO	0.00011		
10 0xJ97BocC Claim		50505	5 secs ago	0xJaK5tR1 0xdKeV0515050 JCO	0.050511		
11 0x890255f Execute		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
12 0x8J9750C Transfer		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
13 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
14 0xeb2eba:Transfer		50505	5 secs ago	0xA7B72cJ0xdA1958[150 JCO	0.00011		
15 0x8J9750C Transfer		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
16 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
17 0xJ97BocC Claim		50505	5 secs ago	0xJaK5tR1 0xdKeV0515050 JCO	0.050511		
18 0x890255f Execute		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
19 0x8J9750C Transfer		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
20 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
21 0xeb2eba:Transfer		50505	5 secs ago	0xA7B72cJ0xdA1958[150 JCO	0.00011		
22 0x8J9750C Transfer		50505	5 secs ago	0xA7R12cJ0xdA1958[5000 JCO	0.5		
23 0x02bJ97c Transfer		50505	5 secs ago	0x0496A610x308C3F15000000 JCO	0.050505		
24							

(This is the csv file being displayed on excel)

5. Pagination Controls: Included page navigation buttons that can switch between pages to further display data.

```
<Button
variant="outline"
size="m"
className="px-4 py-2 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F58080]"
onClick={() => setCurrentPage(1)}
disabled={currentPage === 1}>
First
</Button>
<Button
variant="outline"
size="icon"
className="w-9 h-9 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F58080]"
onClick={() => setCurrentPage(currentPage - 1)}
disabled={currentPage === 1}>
<ChevronLeft size={16} />
</Button>
<div className="flex items-center justify-center min-w-[120px] h-9 px-3 bg-white text-gray-900 border border-gray-300 rounded-md">
Page {currentPage} of {totalPages}
</div>
<Button
variant="outline"
size="icon"
className="w-9 h-9 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F58080]"
onClick={() => setCurrentPage(currentPage + 1)}
disabled={currentPage === totalPages}>
<ChevronRight size={16} />
</Button>
<Button
variant="outline"
size="m"
className="px-4 py-2 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F58080]"
onClick={() => setCurrentPage(totalPages)}
disabled={currentPage === totalPages}>
Last
</Button>
```



6. “Back to Top” button: A minor feature that saves time when the user click on it, it will go to the top of the page.

```
<Button
  id="back-to-top"
  variant="link"
  className="mt-4 text-blue-500 hover:text-[#F5B069]"
>
  Back to Top
</Button>
```

Part 04 - Project Design

1. *Front-end prototypes (Figma)*

Homepage

The screenshot shows the homepage of JBIZ. At the top, there is a navigation bar with links for Home, Transaction, About us, and a search bar. The main title "We make crypto clear and simple" is displayed prominently in the center against a dark background with floating crypto icons like Bitcoin and Ethereum.

Below the title is a "Get Started" button. A section titled "Trusted by Leading Companies Worldwide" lists Binance, Solana, polygon, Polkadot, and Algorand. The page features three main service cards: "Discover" (with a "Get Started" button), "Track" (with a "Find an Transaction" link), and "Wallet" (with a "Wallet Check" link). A large graphic of a shield with a padlock is positioned on the left side. In the bottom right, there is a section about "24/7 access to full service customer support" with a "Explore more" button.

Figure 01: It describes the introduction in the Homepage.

Buy and sell with the lowest fees in the industry

Experience hassle-free transactions with unbeatable rates, tailored to enhance your trading success.

[Learn More →](#)

Coin	Symbol	Price	Change (%)	24h Price Chart	Action
Bitcoin	BTC	\$56,290.30	+1.68%		Trade Now →
Ethereum	ETH	\$4,284.81	+4.36%		Trade Now →
Cardano	ADA	\$1.88	+3.43%		Trade Now →
Wax	WAXP	\$0.97	-2.62%		Trade Now →
Polkadot	DOT	\$42.22	+7.56%		Trade Now →

FEATURES AND BENEFITS

User-Friendly Interface

Navigate our intuitive platform with ease, whether you're a seasoned trader or a newcomer

Advanced Security

Your assets are protected with top-tier security protocols, including multi-factor authentication and cold storage

Real-Time Market Data

Stay ahead with real-time updates and in-depth market analysis

Smart Contract Integration

Leverage the power of smart contracts for secure and transparent transactions.

Figure 02: It displays the overall trading and features & benefits in the Homepage.

Frequently Asked Questions

While sometimes overlooked, FAQ pages are an important component of most customer support strategies for both the customer and employee.

What is a transaction on the blockchain defined as?

A blockchain transaction is a digital record of value exchanged between parties, including sender and receiver addresses, the amount, a timestamp, a digital signature, and a unique ID. It is validated by network nodes and added to a block, ensuring transparency and security.

When is a transaction considered confirmed or failed?

What is a blockchain wallet, and how does it work?

Can one wallet be used for multiple types of cryptocurrencies?

**Take your first step
into safe, secure
crypto investing**

Explore cryptocurrency safely with transparent, effective investment solutions that help you build a strong financial future.



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About us

- About Jbiz
- Terms of service
- Privacy notice
- Terms of service
- Contact us

Products

- Buy Crypto
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- Trade
- Convert
- Jbiz wallet
- Web3 marketplace
- All cryptocurrencies
- Trading view

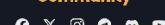
Crypto calculation

- USDT to USD
- BTC to USD
- ETH to USD
- Trade**
- Trading crypto
- Search transaction
- Transaction history

Support

- Support center
- Announcements
- Connect with Jbiz

Community



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Figure 03: It shows the Frequently Asked Questions and other sections.

About us



The screenshot shows the 'About us' section of the Jbiz website. At the top, there's a navigation bar with links for Home, Transaction, About us, and a search bar. The main content area features a dark background with several light-colored circular callouts. One large orange callout on the right contains the mission statement: "The mission of **Jbiz** is to provide users with the most advanced tools and services to trade, invest, and manage crypto assets safely and efficiently. We are committed to building a trusted platform that makes it easy for everyone to access and thrive in the world of cryptocurrency." To the left of this, a blue callout states: "**Jbiz** aims to become a pioneering platform in the decentralized finance space, driving the widespread adoption and application of blockchain technology to billions of people worldwide, creating a transparent, fair, and borderless financial ecosystem." Below these are six circular icons with names: BAO, NHI, AN, KHOA, HUYEN, and HAN. A section titled "Jbiz's Notable Achievements" lists various milestones, including having over 1 million users globally and being ranked among the top 10 crypto exchanges. Testimonials from Trịnh Trần Phương Tuân, Vietnam; Jack, USA; and J97, Italy are shown in separate boxes. A "Join Us" section encourages users to become part of the community. The footer includes links for About us, Products, Crypto calculation, Support, and Community, along with social media icons.

Jbiz is redefining the future of cryptocurrency with unparalleled innovation and a user-centric approach. Powered by blockchain technology, **Jbiz** offers you a seamless platform to trade, invest, and grow your crypto assets with confidence. Explore an expansive selection of tokens and trading pairs, and take advantage of our state-of-the-art financial tools. From spot and margin trading to DeFi solutions, lending, and staking – **Jbiz** puts the power of decentralized finance in your hands. Join millions of users across the globe and experience the future of finance with **Jbiz**, where security, transparency, and opportunity converge.

Jbiz aims to become a pioneering platform in the decentralized finance space, driving the widespread adoption and application of blockchain technology to billions of people worldwide, creating a transparent, fair, and borderless financial ecosystem.

The mission of **Jbiz** is to provide users with the most advanced tools and services to trade, invest, and manage crypto assets safely and efficiently. We are committed to building a trusted platform that makes it easy for everyone to access and thrive in the world of cryptocurrency.

BAO NHI AN KHOA HUYEN HAN

Jbiz's Notable Achievements

Since its launch, **Jbiz** has achieved significant milestones, solidifying its position in the cryptocurrency and decentralized finance (DeFi) space:

- Over 1 million users globally, with a presence in more than 100 countries.
- Ranked among the Top 10 crypto exchanges by trading volume, recognized for transparency and security.
- Strategic partnerships with major tech corporations and renowned blockchain projects such as Ethereum, Binance Smart Chain, and Polkadot.
- Recognized by media and the community with multiple awards for innovation in technology and DeFi development.
- Successfully launched a comprehensive DeFi ecosystem, including spot trading, margin trading, staking, and lending, helping thousands of users maximize returns on their digital assets.
- Sustainable growth with a clear roadmap, committed to delivering groundbreaking and innovative services in the future.

Testimonials

Trịnh Trần Phương Tuân, Vietnam
"Jbiz has made it easy for me to access and manage my crypto assets efficiently. The user-friendly interface and advanced trading tools have truly provided a great experience."

Jack, USA
"I'm really impressed by Jbiz's level of security and transparency. Staking and participating in DeFi on this platform is incredibly easy and offers attractive returns."

J97, Italy
"The support team at Jbiz is truly outstanding. Anytime I encounter an issue, they resolve it quickly and professionally. Jbiz is not just an exchange but a friendly community."

Join Us

Become a part of **Jbiz** and help us redefine the future of decentralized finance. Whether you're an investor, developer, or a cryptocurrency enthusiast, you can join us and grow together.
*Join us today and lead the way in the world of crypto with **Jbiz**!*

Shape the Future of Crypto Together!

About us
About Jbiz
Terms of service
Privacy notice
Terms of service
Contact us

Products
Buy Crypto
P2P trading
Trade
Convert
Jbiz wallet
Web3 marketplace
All cryptocurrencies
Trading view

Crypto calculation
USDT to USD
BTC to USD
ETH to USD
Trading crypto
Search transaction
Transaction history

Support
Support center
Announcements
Connect with Jbiz

Community
[Facebook](#) [X](#) [Instagram](#) [Twitter](#) [YouTube](#)

Figure 04: It illustrates the information in the About Us page.

Transaction history

Figure 05: It shows the overall Transaction History page.

Transaction detail

Transaction details

Overview State

Buy Exchange

Transaction Hash: 0x68ae22fdxx5bxx8472xxxxxxxxxxxx28194050627456902182900xxa

Status: Success

Block: 22102231

Timestamp: 17 days 12 hours ago (Sep-04-2024 10:22:01 AM +UTC)

From: 0x68ae22fdxx5bxx050627456902182900xxa

Interacted with (to): SwinContact (0x22ae1234fdxx5bxx0506278932172182900xxa)

Value: 0.05 <coins' name> (\$110.78 USD)

Transaction fee: 0.000001 <coins' name> (\$0.67 USD)

Gas fee: 9.582 Gwei

Private note: To access the Private Note feature, you must be [Logged In](#).

About us

- About Jbiz
- Terms of service
- Privacy notice
- Terms of service
- Contact us

Products

- Buy Crypto
- P2P trading
- Trade
- Convert
- Jbiz wallet
- Web3 marketplace
- All cryptocurrencies
- Trading view

Crypto calculation

- USDT to USD
- BTC to USD
- ETH to USD

Trade

- Trading crypto
- Search transaction
- Transaction history

Support

- Support center
- Announcements
- Connect with Jbiz

Community

- [Facebook](#)
- [X](#)
- [Instagram](#)
- [Twitter](#)
- [LinkedIn](#)
- [YouTube](#)

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Figure 06: It displays the Transaction Details page.

Wallet address detail

Overview & More information

Address information

Address 0x68ae22fdxx5bxx050627456902182900xxa

Gas: 9.582 Gwei

Buy Exchange

public name tag: # <name>

Overview

Balance:	2840 <coin's name>	Total Sent:	2840 <coin's name>
Value:	\$22.3759 USD	Total Received:	1,000,000 JBC

TOKEN HOLDINGS:

\$12,374 (23 tokens)

More information

Private name tag: + Add	First seen: May 05, 2024 at 05:55AM
Funded by: 0x2Ad5526E...04FB83e70 at txn 0x86df0eeb059...	Last seen: Sep 26, 2024 at 23:59PM

Multichain info: \$189.47 (Multichain portfolio)

Transaction history Transaction Graph

Figure 07: It shows an overview and more information section of the Wallet Information page.

Transaction history

The website will present the transaction history using this table format. As users explore the site:

- They will see transactions displayed with all necessary details in an organized and user-friendly layout.
- Future development can focus on dynamically fetching and displaying real transaction data, enabling pagination, and implementing filtering or search functionalities.

Address information

Gas: 9.582 Gwei

Search by address / Txn Hash / Block / Token / Domain

Address 0x68ae22fdxx5bxx050627456902182900xxa

Buy Exchange

<public name tag> # <name>

History

Transaction Hash	Method	Block	Age	From	To	Amount	Txn Fee
0x02bj97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x0496A61A1...J97500BC	5,000,000 JCO	0.050505
0xeb2ebabac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...8E54d0d	0xA7B72cJ97...8E54d0d	150 JCO	0.0001102
0xJ97BocOn5t...	Claim	050505	5 secs ago	0xJaK5tRIeUY...43J09d9k	0xJaK5tRIeUY...43J09d9k	5050 JCO	0.05051102
0xBeS0lcOnJ97...	Execute	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d	0xA7R12cJ97...R1kR7d0d	5,000 JCO	0.5000000
0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d	0xA7R12cJ97...R1kR7d0d	5,000 JCO	0.5000000
0x02bj97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x0496A61A1...J97500BC	5,000,000 JCO	0.050505
0xeb2ebabac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...8E54d0d	0xA7B72cJ97...8E54d0d	150 JCO	0.0001102
0xeb2ebabalac2...	Claim	050505	5 secs ago	0xA7B72cJ97...8E54d0d	0xA7B72cJ97...8E54d0d	150 JCO	0.0001102
0xJ97BocOn5t...	Execute	050505	5 secs ago	0xJaK5tRIeUY...43J09d9k	0xJaK5tRIeUY...43J09d9k	5050 JCO	0.05051102
0x890255f32c...	Transfer	050505	5 secs ago	0xJaK5tRIeUY...43J09d9k	0xJaK5tRIeUY...43J09d9k	5050 JCO	0.5000000

Previous Next

About us

- About Jbiz
- Terms of service
- Privacy notice
- Terms of service
- Contact us

Products

- Buy Crypto
- P2P trading
- Trade
- Convert
- Jbiz wallet
- Web3 marketplace
- All cryptocurrencies
- Trading view

Crypto calculation

- USDT to USD
- BTC to USD
- ETH to USD

Trade

- Trading crypto
- Search transaction
- Transaction history

Support

- Support center
- Announcements
- Connect with Jbiz

Community

- [Facebook](#)
- [X](#)
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Figure 08: It displays the recent transaction history of the specific address.

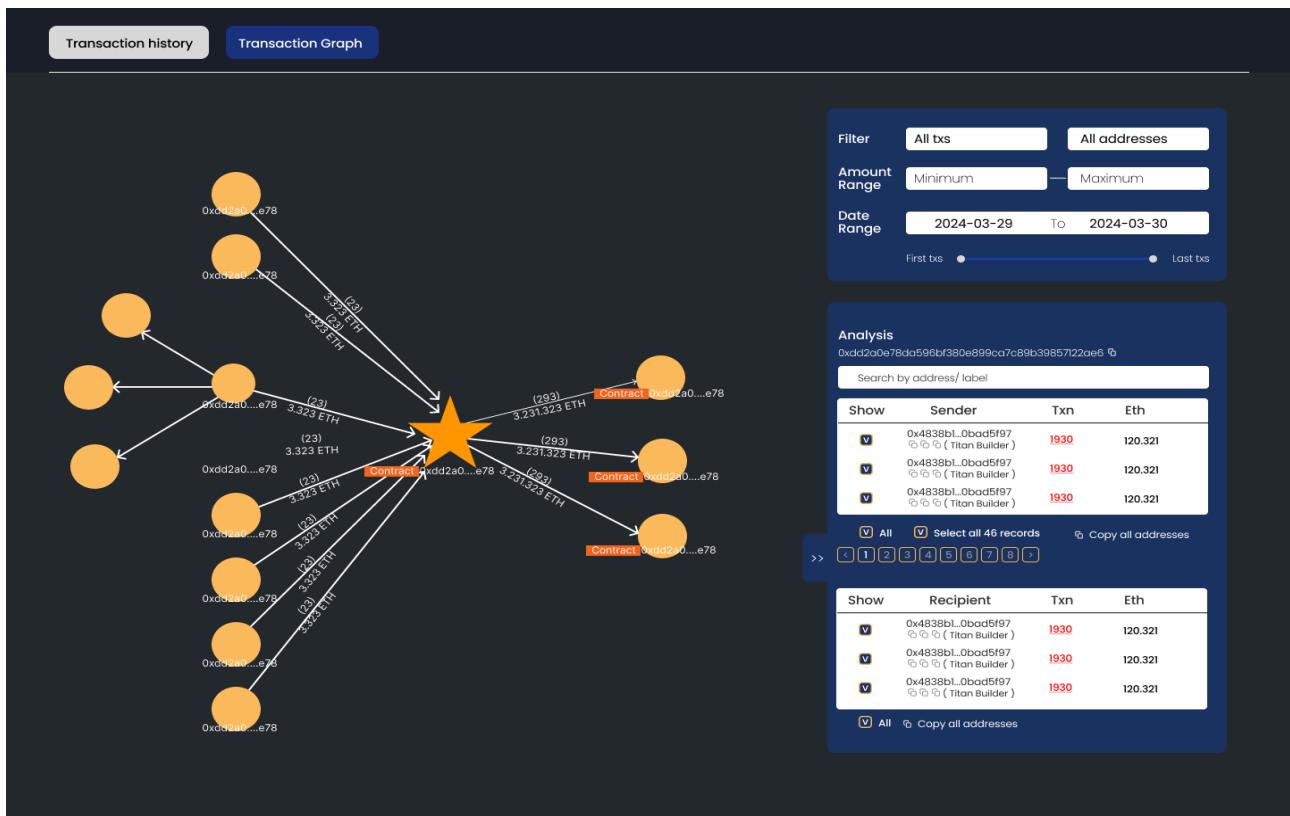


Figure 09: It shows the transaction graph section that belongs to the Address Information.

Directed graph

Transaction detail pop-up (This will appear when clicking on the connection between the nodes)

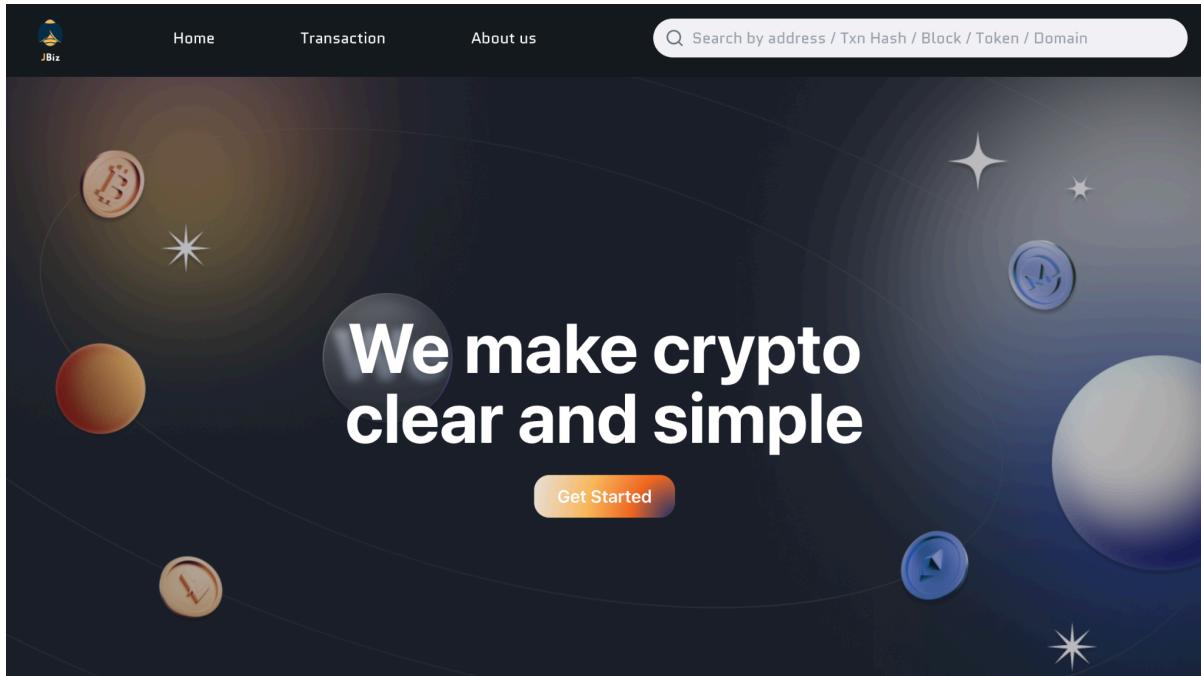
Transaction details					
	Time (UTC)	Sender	Recipient	Amount	TXID
<input checked="" type="checkbox"/>	Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3
<input checked="" type="checkbox"/>	Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3
<input checked="" type="checkbox"/>	Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3

[Export](#)

Figure 10: It shows the transaction detail pop-up section when a user clicks to view the connection between the nodes.

Part 05 - WEB function

Homepage



The hero section of the website is designed to grab the user's attention immediately with a clear and direct headline: "We make crypto clear and simple." This headline is central to the platform's value proposition, addressing a major barrier to entry for many users—understanding cryptocurrency. By focusing on making crypto "clear" and "simple," the platform positions itself as user-friendly and accessible, especially to beginners. The space-themed visuals in the background, featuring planets and stars, add a futuristic feel, possibly representing the vastness and complexity of the crypto world that this platform aims to simplify.

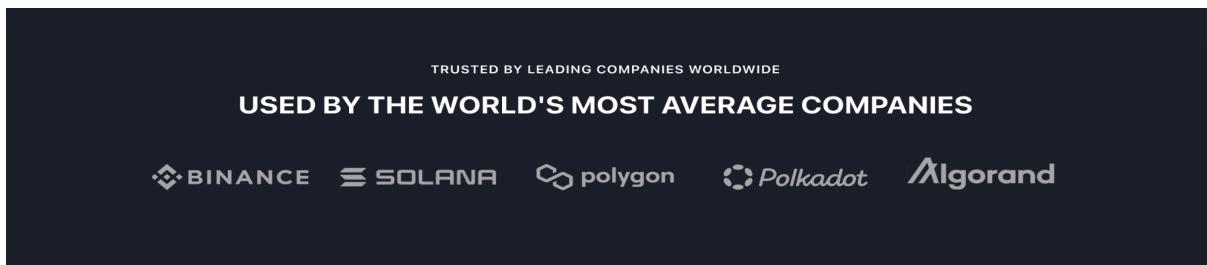
The call to action (CTA) button, "Get Started" is strategically placed just below the headline, encouraging users to take immediate action. When clicking into the button it will automatically scroll down to the next page. First, `useRef` to get a DOM element reference. `useRef` is a React hook used to store a reference to a DOM element or any value that persists across renders without causing re-renders and `trustedCompaniesRef` is being used to reference an HTML element. And the `handleGetStartedClick` function will be called when the user clicks the "Get Started" button. `trustedCompaniesRef.current` retrieves the referenced DOM element and calls `scrollIntoView` to scroll to that element. The option `{ behavior: 'smooth' }` enables smooth scrolling. The "Get Started" Button triggers the `handleGetStartedClick` function to perform the scroll action. This is the `<section>` element that the `trustedCompaniesRef` points to. When the user clicks the button, the page scrolls smoothly to this element.

```
const trustedCompaniesRef = useRef<HTMLDivElement>(null)
const handleGetStartedClick = () => {
  trustedCompaniesRef.current?.scrollIntoView({ behavior: 'smooth' })
}
```

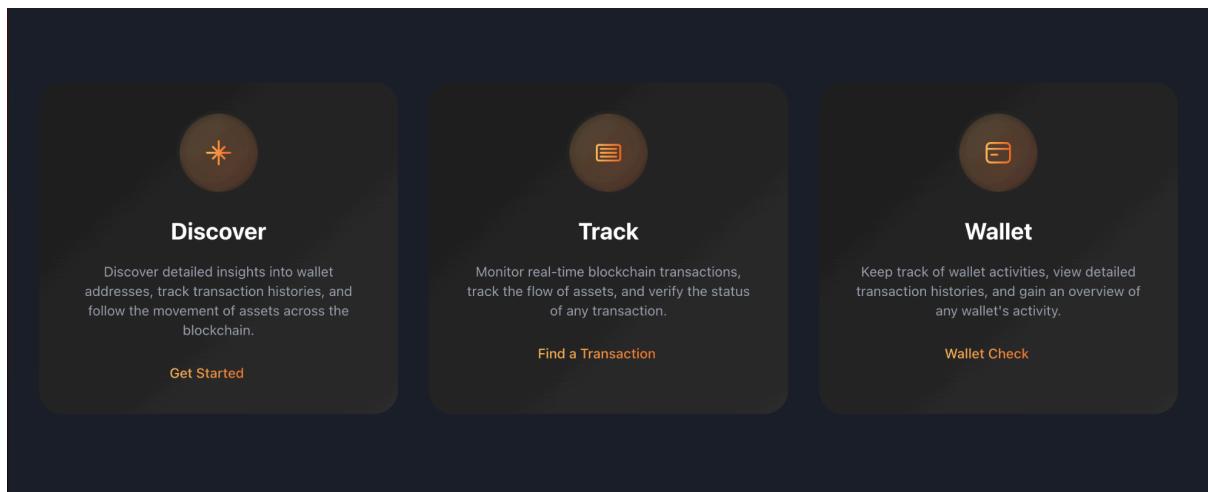
```
<Button
  size="lg"
  className="get-started-button w-full sm:w-auto text-base sm:text-lg"
  onClick={handleGetStartedClick}
>
  Get Started
</Button>
</div>
</section>

<section ref={trustedCompaniesRef} className="text-white py-10 px-4">
```

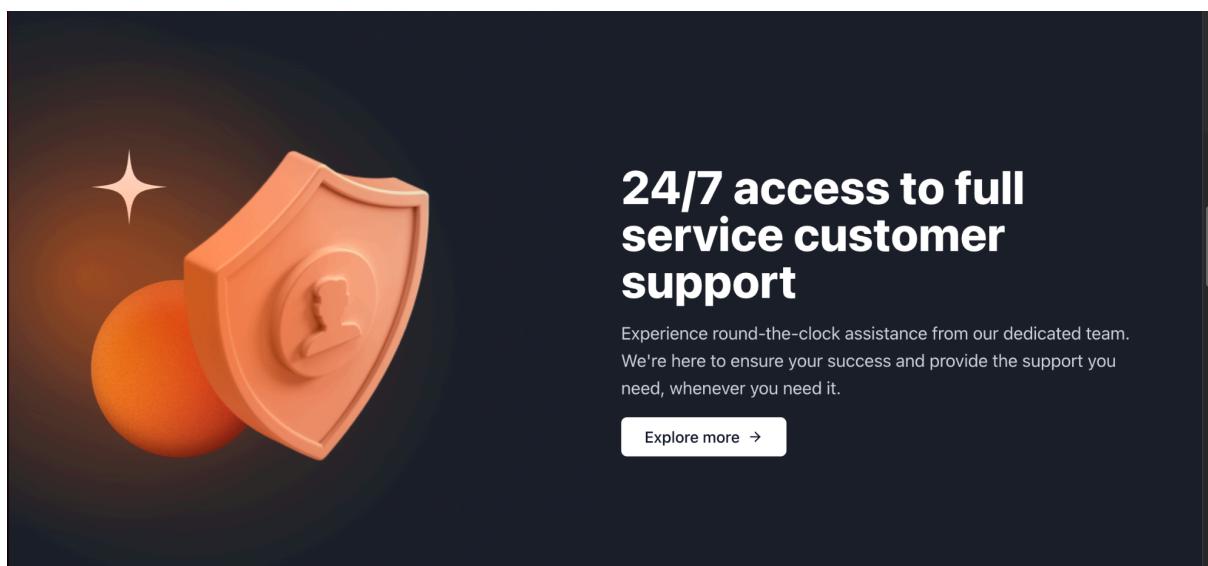
In this section, the platform builds credibility by showcasing logos of well-known cryptocurrency companies such as Binance, Solana, and Polygon. These are highly recognized names in the crypto industry, and by associating with them, the platform aims to increase its trustworthiness among users. The playful phrase, "Used by the world's most average companies," hints at the platform's goal to be approachable and accessible, targeting not just crypto experts but also everyday users who are looking for a straightforward platform.



The next section introduces three key features of the platform: Discover, Track, and Wallet, each of which caters to different user needs. "Discover" likely offers tools for users to explore and research cryptocurrency markets or trends. "Track" suggests portfolio management tools that help users monitor transactions or market movements. "Wallet" indicates that the platform provides secure storage for users' digital assets, a crucial feature for anyone investing in cryptocurrency. If you click "Find a Transaction" or "Wallet Check," it will link you directly to the transaction history page or transaction details, respectively.



A major selling point highlighted in this section is the 24/7 access to customer support. This is an essential feature for any platform dealing with financial transactions, especially in the fast-moving cryptocurrency market, where issues could arise at any time. By offering round-the-clock support, the platform assures users that they will always have help available, reducing potential anxiety about using the service. The call to action (CTA) button, "Explore more" uses the same method as the "Get started" button. It will scroll down when clicking at the button. Floating images enhance the user's experience by adding a visual element that captures their attention and makes the content more engaging. Whether it's a subtle animation or a full-screen graphic, floating images can draw the user in and keep them interested in the website



The platform offers the "lowest fees in the industry," attracting users concerned about transaction costs. It also provides real-time price data for popular cryptocurrencies like

Bitcoin and Ethereum, providing transparency and a clear sense of market changes. This makes the platform feel up-to-date and responsive to market changes.

Buy and sell with the lowest fees in the industry

Experience hassle-free transactions with unbeatable rates, tailored to enhance your trading success.

[Learn More →](#)

Asset	Symbol	Price	Change	Chart	Trade
Bitcoin	BTC	\$56,290.30	+1.68%		Trade Now →
Ethereum	ETH	\$4,284.81	+4.36%		Trade Now →
Cardano	ADA	\$1.88	+3.43%		Trade Now →
Wax	WAXP	\$0.97	-2.62%		Trade Now →
Polkadot	DOT	\$42.22	+7.56%		Trade Now →

This section builds on the technical and functional strengths of the platform with a focus on four key features: integration of smart contracts, real-time market data, advanced security, and an intuitive interface. While the platform's advanced security features appeal to users who may be concerned about the safety of their digital assets, the user-friendly interface is in line with the platform's mission to simplify cryptocurrency. The platform's wide appeal can be attributed to its integration of smart contracts and real-time market data, which accommodate users of varying skill levels. These advantages highlight the platform's dependability and usability, which are essential elements for keeping users on board.

FEATURES AND BENEFITS

Our platform offers a comprehensive suite of tools and features designed to empower both novice and experienced traders in the cryptocurrency market.

User-Friendly Interface

Navigate our intuitive platform with ease, whether you're a seasoned trader or a newcomer.



Advanced Security

Your assets are protected with top-tier security protocols, including multi-factor authentication and cold storage.



Real-Time Market Data

Stay ahead with real-time updates and in-depth market analysis.



Smart Contract Integration

Leverage the power of smart contracts for secure and transparent transactions.



The FAQ section on the platform provides answers to common cryptocurrency-related questions, such as transaction definitions and if a single wallet can manage multiple cryptocurrencies. It serves as an educational tool, reducing the learning curve for new users and enhancing their confidence and informedness, thus reinforcing the platform's role as an accessible entry point into the cryptocurrency world.

```
interface FAQItem {
  question: string
  answer: string
}

const faqData: FAQItem[] = [
  {
    question: "What is a transaction on the blockchain defined as?",
    answer: "A blockchain transaction is a digital record of value exchanged between parties, including sender and receiver addresses, the amount, a timestamp, a digital signature, and a unique identifier." },
  {
    question: "When is a transaction considered confirmed or failed?",
    answer: "A blockchain transaction is confirmed when it's included in a block and receives additional confirmations, ensuring it's secure and irreversible. It can fail due to low fees, rule violations, or network issues." },
  {
    question: "What is a blockchain wallet, and how does it work?",
    answer: "A blockchain wallet is a digital tool for storing and managing cryptocurrencies. It generates a public key for receiving funds and a private key for signing transactions, ensuring secure access and control." },
  {
    question: "Can one wallet be used for multiple types of cryptocurrencies?",
    answer: "Yes, one wallet can be used for multiple types of cryptocurrencies, especially if it supports various blockchain protocols. Many multi-currency wallets allow users to manage different assets in a single interface." }
]
```

Frequently Asked Questions

While sometimes overlooked, FAQ pages are an important component of most customer support strategies for both the customer and employee.

What is a transaction on the blockchain defined as?

A blockchain transaction is a digital record of value exchanged between parties, including sender and receiver addresses, the amount, a timestamp, a digital signature, and a unique ID. It is validated by network nodes and added to a block, ensuring transparency and security.

When is a transaction considered confirmed or failed?

What is a blockchain wallet, and how does it work?

Can one wallet be used for multiple types of cryptocurrencies?

In the closing section, the platform encourages users to "Take your first step into safe, secure crypto investing." This call to action is not only a prompt for users to sign up, but it also emphasizes the safety and security of the platform, which are essential concerns for anyone entering the cryptocurrency space. The phrasing suggests that the platform is designed to help users begin their investment journey with peace of mind, reinforcing trust and ease of use. By providing a visual component that draws the user in and increases the engagement level of the material, floating images improve the user experience. Floating images can entice a visitor in and maintain their interest in the website, whether it's through a subtle motion or a full-screen image.

Take your first step into safe, secure crypto investing

Explore cryptocurrency safely with transparent, effective investment solutions that help you build a strong financial future.

[Register now](#)



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Email Address



About us

When accessing the About Us page, users will have the opportunity to explore detailed information about JBiz.

First, they will discover what JBiz is, along with our aim and mission in building a decentralized financial ecosystem.

Jbiz is redefining the future of cryptocurrency with unparalleled innovation and a user-centric approach. Powered by blockchain technology, **Jbiz** offers you a seamless platform to trade, invest, and grow your crypto assets with confidence. Explore an expansive selection of tokens and trading pairs, and take advantage of our state-of-the-art financial tools. From spot and margin trading to DeFi solutions, lending, and staking - **Jbiz** puts the power of decentralized finance in your hands. Join millions of users across the globe and experience the future of finance with **Jbiz**, where security, transparency, and opportunity converge.

Jbiz aims to become a pioneering platform in the decentralized finance space, driving the widespread adoption and application of blockchain technology to billions of people worldwide, creating a transparent, fair, and borderless financial ecosystem.

The mission of **Jbiz** is to provide users with the most advanced tools and services to trade, invest, and manage crypto assets safely and efficiently. We are committed to building a trusted platform that makes it easy for everyone to access and thrive in the world of cryptocurrency.

Next, users will get to know the founding team – the visionaries behind JBiz, their contributions, and their vision for the future.

Our Team



BAO



NHI



AN



KHOA



HUYEN



HAN

Additionally, we will showcase the remarkable achievements JBiz has accomplished, from our global user base to industry awards for excellence in cryptocurrency.

Jbiz's Notable Achievements

Since its launch, **Jbiz** has achieved significant milestones, solidifying its position in the cryptocurrency and decentralized finance (DeFi) space:

- Over 1 million users globally, with a presence in more than 100 countries.
- Ranked among the Top 10 crypto exchanges by trading volume, recognized for transparency and security.
- Strategic partnerships with major tech corporations and renowned blockchain projects such as Ethereum, Binance Smart Chain, and Polkadot.
- Recognized by media and the community with multiple awards for innovation in technology and DeFi development.
- Successfully launched a comprehensive DeFi ecosystem, including spot trading, margin trading, staking, and lending, helping thousands of users maximize returns on their digital assets.
- Sustainable growth with a clear roadmap, committed to delivering groundbreaking and innovative services in the future.

Finally, users can read authentic testimonials and feedback from those who have actively engaged with and benefited from the JBiz platform, giving them a comprehensive and objective perspective.

Testimonials



"Jbiz has made it easy for me to access and manage my crypto assets efficiently. The user-friendly interface and advanced trading tools have truly provided a great experience."

Trinh Tran Phuong Tuan, Vietnam



"I'm really impressed by Jbiz's level of security and transparency. Staking and participating in DeFi on this platform is incredibly easy and offers attractive returns."

Jack, USA



"The support team at Jbiz is truly outstanding. Anytime I encounter an issue, they resolve it quickly and professionally. Jbiz is not just an exchange but a friendly community."

J97, Italy

Transaction history

Designed to offer users a comprehensive and interactive view of cryptocurrency transactions, the "Transactions" portion of the website. This page functions as a potent instrument for users to investigate, analyze, and comprehend the flow of transactions within the blockchain network. The platform is incredibly engaging, primarily because of its implementation of reusable React components. These components streamline the development process by enabling the division of UI elements such as tables, cards, and buttons into distinct, modular blocks. This method offers a streamlined and effective means to handle the site's user interface, encouraging growth and ease of upkeep. This document is distinguished by the following important features:

- 1. Real-time Market Overview:** Users are welcomed with the most recent market information at the top of the page. This comprises the current price of JCO, the platform's native token, as well as its 24-hour price change percentage. Furthermore, the current petroleum price is displayed, providing users with immediate insight into transaction costs and network congestion.

Transactions

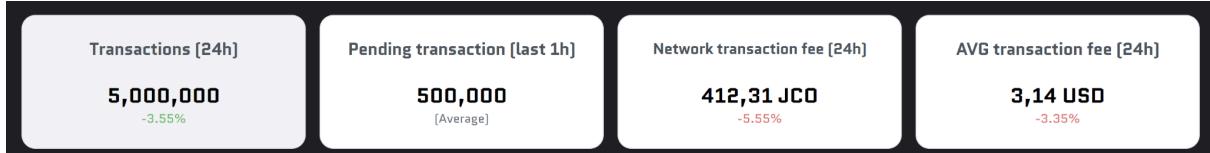
JCO: \$5,000,000 [+1.25%]

Gas: 9.592 Gwei

- 2. Transaction Statistics Cards:** The page showcases a collection of four cards that offer users instant, easy-to-read insights into the network's transaction dynamics. These cards showcase:

- Total transactions completed in the past day
- Transactions awaiting confirmation in the last hour
- Fees associated with transactions over the last 24 hours
- Average fee for transactions over the last 24 hours

Every card features prominent, striking numbers and color-coded percentage shifts, enabling users to swiftly assess the network's present condition and recent movements.



```
/* Transaction statistics cards */


/* Card for 24h transactions */
  <Card className="■bg-gray-100 border rounded-2xl font-quantico">
    <CardHeader>
      <CardTitle className="text-xl text-center □text-gray-600 font-quantico">Transactions (24h)</CardTitle>
    </CardHeader>
    <CardContent>
      <p className="text-2xl text-center font-bold □text-black font-quantico">5,000,000</p>
      <p className="■text-green-500 text-sm text-center">-3.55%</p>
    </CardContent>
  </Card>
  /* Card for pending transactions */
  <Card className="■bg-white border rounded-2xl font-quantico">
    <CardHeader>
      <CardTitle className="text-xl text-center □text-gray-600">Pending transaction (last 1h)</CardTitle>
    </CardHeader>
    <CardContent>
      <p className="text-2xl text-center font-bold □text-black">500,000</p>
      <p className="■text-gray-500 text-sm text-center">(Average)</p>
    </CardContent>
  </Card>
  /* Card for network transaction fee */
  <Card className="■bg-white border rounded-2xl font-quantico">
    <CardHeader>
      <CardTitle className="text-lg text-center □text-gray-600">Network transaction fee (24h)</CardTitle>
    </CardHeader>
    <CardContent>
      <p className="text-2xl text-center font-bold □text-black">412,31 JCO</p>
      <p className="■text-red-400 text-sm text-center">-5.55%</p>
    </CardContent>
  </Card>
  /* Card for average transaction fee */
  <Card className="■bg-white border rounded-2xl font-quantico">
    <CardHeader>
      <CardTitle className="text-xl text-center □text-gray-600">AVG transaction fee (24h)</CardTitle>
    </CardHeader>
    <CardContent>
      <p className="text-2xl text-center font-bold □text-black">3,14 USD</p>
      <p className="■text-red-400 text-sm text-center">-3.35%</p>
    </CardContent>
  </Card>


```

3. Dynamic Table Rendering

A standout aspect of the website is the implementation of dynamic tables to showcase information like transaction details. These tables are crafted to manage potentially vast datasets while ensuring a well-organized, intuitive format.

Transaction data encompasses various elements like hash, method, block, age, sender/receiver addresses, amount, and transaction fees.

The table is constructed with a blend of React and tailored UI components, allowing for seamless updates and refreshes in line with the most current data.

```

    <Link href={`/transaction_detail/${tx.hash}`}>
      <span className="cursor-pointer hover:underline">{tx.hash}</span>
    </Link>
    <Button
      variant="ghost"
      size="icon"
      onClick={() => copyToClipboard(tx.hash)}
      className="h-5 w-5 p-0">
      >
        <Copy size={12} />
      </Button>
    </div>
  </TableCell>

  <TableCell>
    <button
      onClick={() => handleMethodClick(tx.method)}
      className="px-3 py-1 rounded-full text-base font-medium w-24 h-8 flex items-center justify-center ${selectedMethod === tx.method ? 'bg-purple-100 text-[#F5B069] border-2 border-[#F5B069]' : 'bg-gray-100 text-gray-800 border border-gray-300'}">
      {tx.method}
    </button>
  </TableCell>
  <TableCell>{tx.block}</TableCell>
  <TableCell>{tx.age}</TableCell>
  <TableCell className="text-blue-600">
    <div className="flex items-center space-x-2">
      <Link href="/wallet_address">
        <span className="cursor-pointer hover:underline">{tx.from}</span>
      </Link>
      <Button
        variant="ghost"
        size="icon"
        onClick={() => copyToClipboard(tx.from)}
        className="h-5 w-5 p-0">
        >
          <Copy size={12} />
        </Button>
    </div>
  </TableCell>

```

Utilizing state management techniques to hold transaction information and employing mapping functions to loop through the data allows the site to dynamically display transaction tables as new information becomes accessible. This guarantees that users consistently receive the latest information available.

Transaction Hash	Method	Block	Age	From	To	Amount	Txn Fee
⑧ 0x02bj97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x308C3F1...B0505CaF5b2d	5,000,000 JCO	0.050505
⑧ 0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cj97...8E54d0d	0xdA1958D...C13D831ec71102	150 JCO	0.00011
⑧ 0xJ97BocCon5t...	Claim	050505	5 secs ago	0xJaK5tR1EuY...43J09d9k	0xdKeV05b...51kRrD3ec3505	5,050 JCO	0.050511
⑧ 0x8e50lcOnJ97...	Execute	050505	5 secs ago	0xA7R12cj97...R1kR7d0d	0xdA1958D...C13D831ec71102	5,000 JCO	0.5
⑧ 0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cj97...R1kR7d0d	0xdA1958D...C13D831ec71102	5,000 JCO	0.5
⑧ 0x02bj97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x308C3F1...B0505CaF5b2d	5,000,000 JCO	0.050505
⑧ 0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cj97...8E54d0d	0xdA1958D...C13D831ec71102	150 JCO	0.00011
⑧ 0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cj97...8E54d0d	0xdA1958D...C13D831ec71102	150 JCO	0.00011

- Functional Copy Button

⑧ 0x02bj97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x308C3F1...B0505CaF5b2d	5,000,000 JCO	0.050505
-------------------	----------	--------	------------	------------------------	--------------------------	---------------	----------

In the transaction table, every entry contains crucial data like transaction hash and wallet addresses from senders/receivers. These cells are designed to be interactive and include a copy button feature, enabling users to effortlessly copy the value (e.g., hash or address) to their

clipboard with just one click. This feature is particularly useful in situations where users may need to reference or share specific transactions or addresses.

```
<Button
  variant="ghost"
  size="icon"
  onClick={() => copyToClipboard(tx.hash)}
  className="h-5 w-5 p-0"
>
  <Copy size={12} />
</Button>

const copyToClipboard = (text: string) => {
  navigator.clipboard.writeText(text).then(() => {
    toast({
      title: "Copied to clipboard",
      description: "The text has been copied to your clipboard.",
    })
  }).catch((err) => {
    console.error('Failed to copy: ', err)
    toast({
      title: "Failed to copy",
      description: "An error occurred while copying the text.",
      variant: "destructive",
    })
  })
}
```

How it works:

- `copyToClipboard` is a function that performs the copy action. It uses the `navigator.clipboard.writeText()` method to copy the selected text.
- The `CopyIcon` component visually represents the copy button.
- When the button is clicked, the corresponding transaction hash is copied to the clipboard, and typically a **toast notification** or some form of feedback confirms the successful action.

This feature is particularly beneficial in cryptocurrency or blockchain-related applications that frequently reference hash sequences and addresses, as it simplifies the user experience by enabling fast access to transactional details.

- Method filters

Users can interactively filter transactions by their classifications (e.g., "Transfer" and "Claim") by selecting the "Method" icon in the transaction table. This feature improves the table's usability by enabling users to isolate specific transaction categories. When a method is selected, a visual cue (a color change and border highlight) is provided.

Method of Operation: The method icon is dynamically stylized in accordance with the current selection of the method. The button's appearance is altered by the comparison between the transaction method (`tx.method`) and the presently selected method (`selectedMethod`), which results in a highlighted background and border when the button is active. Upon clicking the icon, a filtering mechanism is initiated, which narrows the table to transactions of the designated method type.

```
<button
  onClick={() => handleMethodClick(tx.method)}
  className={`px-3 py-1 rounded-full text-base font-medium w-24 h-8 flex items-center justify-center ${(
    selectedMethod === tx.method
      ? 'bg-purple-100 text-[#F5B069] border-2 border-[#F5B069]'
      : 'bg-gray-100 text-gray-800 border border-gray-300'
  )}`}
>
  {tx.method}
</button>
```

```
const handleMethodClick = (method: string) => {
  setSelectedMethod(method === selectedMethod ? null : method)
}
```

Primary Characteristics:

Button Styling: The button's background color, text color, and border style are adjusted according to its status as the active method. This visual alteration facilitates the user's rapid identification of the active filter.

Filtering Functionality: The handleMethodClick function is invoked upon clicking the button, which modifies the state with the designated method, thereby filtering the transactions displayed in the table.

②	0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d
②	0x02bJ97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC
②	0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...8E54d0d
②	0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...8E54d0d
②	0xJ97BocCon5t...	Claim	050505	5 secs ago	0xaJaK5tR1EuY...43J09d9k
②	0x890255f32c...	Execute	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d
②	0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d
②	0x02bJ97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC
②	0xeb2eba1ac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...8E54d0d
②	0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d
②	0x02bJ97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC
②	0xJ97BocCon5t...	Claim	050505	5 secs ago	0xaJaK5tR1EuY...43J09d9k
②	0x890255f32c...	Execute	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d

This user-friendly feature simplifies transaction data analysis and navigation with straightforward design and functional filtering, boosting user experience.

- **Pagination Controls**

The website's dynamic data table is outfitted with pagination controls, which enable users to effortlessly navigate through extensive data sets. In order to enhance performance and guarantee that users can promptly access pertinent data without being inundated with an excessive amount of information at once, pagination is indispensable in data-intensive applications.

Key Features of the Pagination Controls: The pagination functionality is built using a combination of **buttons** and **React state** to manage the current page number. This improves the table's usability, particularly when displaying large datasets. Key features include:

- **First and Last Buttons:** These take the user to the first or last page and are disabled when the user is already on that respective page.

- **Previous and Next Buttons:** Users can move to the previous or next page, with the buttons disabled if the user is on the first or last page. They include intuitive arrow icons for visual guidance
- **Page Indicator:** Displays the current page and total number of pages, giving the user clear feedback about their position in the dataset.
- **Visual Feedback:** Buttons feature hover effects and are styled to be easily clickable, providing a smooth user experience while navigating.

Pagination Code Detailed Explanation: The pagination functionality is implemented by utilizing React state and buttons to regulate the current page number.

```
<Button
  variant="outline"
  size="sm"
  className="px-4 py-2 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F5B069]"
  onClick={() => setCurrentPage(1)}
  disabled={currentPage === 1}
>
  First
</Button>
<Button
  variant="outline"
  size="icon"
  className="w-9 h-9 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F5B069]"
  onClick={() => setCurrentPage(currentPage - 1)}
  disabled={currentPage === 1}
>
  <ChevronLeft size={16} />
</Button>
<div className="flex items-center justify-center min-w-[120px] h-9 px-3 bg-white text-gray-900 border border-gray-300 rounded-md">
  Page {currentPage} of {totalPages}
</div>
<Button
  variant="outline"
  size="icon"
  className="w-9 h-9 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F5B069]"
  onClick={() => setCurrentPage(currentPage + 1)}
  disabled={currentPage === totalPages}
>
  <ChevronRight size={16} />
</Button>
<Button
  variant="outline"
  size="sm"
  className="px-4 py-2 bg-white text-black border border-gray-300 rounded-md hover:bg-[#F5B069]"
  onClick={() => setCurrentPage(totalPages)}
  disabled={currentPage === totalPages}
>
  Last
</Button>
```

These controls improve table navigation, especially when dealing with large datasets, offering a seamless and user-friendly interface.

- Functional Download Button

The dynamic table's efficacy is improved by the data export/download feature on the website, which enables users to effortlessly obtain the data displayed on the current page. This feature is especially beneficial for users who wish to save or analyze transaction data in external applications, such as spreadsheets, or offline.

```

<Button
  variant="outline"
  size="sm"
  className="flex items-center gap-2 px-4 py-2 bg-white text-gray-900 border border-gray-300 rounded-md hover:bg-[#F5B069]"
  onClick={handleDownload}
>
  <Download size={16} />
  {!isMobile && "Download Page Data"}
</Button>

```

Key Characteristics of the Download Button:

- Download Icon and Label: The button is equipped with a download icon () for visual representation and a text label ("Download Page Data") that is visible on larger displays. In order to maintain a clear and responsive interface, this text is concealed on mobile devices (!isMobile).
- Responsive Design: The button's appearance is adjusted to match the device. The full label ("Download Page Data") is displayed on larger displays, while only the download icon is visible to mobile users.
- Download Action: The handleDownload function is initiated when the icon is selected, resulting in the exportation of the data from the current page.

The Data export/download feature offers several key advantages:

- Convenience: The data that is displayed can be downloaded by users with a single click, facilitating the archiving or analysis of the data offline.
- Efficiency: The button's responsive design guarantees that it functions seamlessly on all devices, regardless of whether they are desktop or mobile.
- Visual Feedback: The responsive button text and hover effect offer a visually engaging and user-friendly experience.

The dynamic table's usability is enhanced by the data export/download icon, which enables users to effortlessly and rapidly download page-specific data. It is a valuable instrument for users who require the analysis or storage of transaction data due to its responsive design, clear visual indicators, and efficient functionality.

- Functional Back-to-the-Top Button

The "Back to Top" function is a critical user experience improvement for web pages that contain lengthy scrollable content. This function enables users to effortlessly return to the top of the page with a single click, thereby eradicating the necessity of painstakingly scrolling upward.

Key Components of the "Back to Top" Button:

- Button Design: The button is designed as a link with a unique color (text-blue-500). When the user hovers over the button, it transitions to a highlighted color (hover:text-[#F5B069]), providing the user with a clear visual cue.

- Positioning: This icon is advantageous when the user has navigated far down the page, as it is situated at the bottom of the page with the margin top (mt-4) class.

```
<Button
  id="back-to-top"
  variant="link"
  className="mt-4 text-blue-500 hover:text-[#F5B069]"
>
  Back to Top
</Button>
```

- useEffect Hook: The useEffect hook is employed to manage side effects in React, specifically the addition and removal of event observers. In order to prevent memory breaches, the event listener is introduced upon component mounting and removed upon component unmounting.
- scrollToTop Function: Although the scrollToTop function is not expressly defined in this excerpt, it typically employs browser-native methods, such as window. To guarantee a seamless and user-friendly scroll action, use the { behavior:'smooth' } option when calling scrollTo().
- User Experience: This feature significantly enhances user navigation, particularly for pages that are lengthy or contain a significant amount of data. Users can effortlessly return to the summit after examining the content. The website's refined appearance is further enhanced by the seamless scrolling effect.

```
useEffect(() => {
  const backToTopButton = document.getElementById('back-to-top')
  if (backToTopButton) {
    backToTopButton.addEventListener('click', scrollToTop)
  }

  return () => {
    if (backToTopButton) {
      backToTopButton.removeEventListener('click', scrollToTop)
    }
  }
}, [scrollToTop])
```

“Back to Top” button is a simple yet powerful UI feature that enhances user-friendliness

- Responsive Designs

This page's responsive design significantly enhances the user experience by ensuring it is mobile-friendly and compatible with various screen resolutions across devices. This adaptability allows users to seamlessly interact with the page whether they are on a desktop, tablet, or mobile phone.

Key components, including responsive text sizing, media queries, and flexbox layouts, guarantee that the content scales appropriately and remains legible on smaller screens, while still providing a comprehensive experience on larger displays.

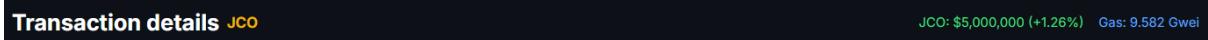
For instance, conditional rendering is implemented in the download button to conceal superfluous text on smaller displays, thereby displaying only the icon to preserve a tidy, uncluttered appearance.

Transaction detail

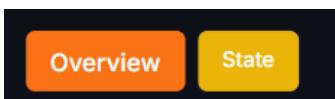
As a user, I want to be able to view detailed information about my transactions to track and verify my financial activities. When I access the Transaction Details page, I expect a comprehensive overview of a specific transaction, including its unique hash, current status, block number, and timestamp. It helps me specify the sender and recipient addresses, the transaction value in both cryptocurrency and USD and any associated fees. The page should also display the gas fee for the transaction and allow me to add private notes if logged in. Additionally, I want the chance to perform related actions, such as buying more cryptocurrency or exchanging it directly from this page.

Layout: It creates a full-height page with a dark background (`bg-[#0D1117]`) and white text. The content is centered and has a maximum width of 3xl (48rem or 768px).

Header Section: it displays "Transaction details" as a title and shows the JCO price and gas fee information.



Action Buttons: Two buttons are rendered: "Overview" (orange) and "State" (yellow). These likely allow users to switch between different views of the transaction data.



Transaction Details Card: The main content is wrapped in a `Card` component with a light background (`bg-[#FOFOFO]`) and dark text.

Transaction Information: Each piece of transaction information is rendered using a custom `TransactionDetail` component. This component takes a `label` and a `value` prop and displays them in a consistent format.

Special Formatting: These are three special formatings inserted in the website, such as:

- The "Status" field uses a green checkmark icon to indicate success.
- The "Timestamp" field includes a clock icon.
- Some fields (like Transaction Hash) use `break-all` to ensure long strings wrap properly.

Transaction Hash:	0x68ae22fdax5bxx8472xxxxxxxxxxxx281940506274569902182900xxa
Status:	 Success
Block:	22102231
Timestamp:	⌚ 17 days 12 hours ago (Sep-04-2024 10:22:01 AM +UTC)
From:	0x68ae22fdax5bxx050627456902182900xxa
Interacted with (to):	SwinContact (0x22ae1234fdax5bxx050627893217218290xxa)
Value:	0.05 <coins' name> (\$110.78 USD)
Transaction fee:	0.000001 <coins' name> (\$0.67 USD)
Gas fee:	9.582 Gwei
Private note:	To access the Private Note feature, you must be Logged in.

Responsive Design: The component uses Flexbox and responsive classes to ensure it looks good on various screen sizes.

Reusable Components: The `TransactionDetail` component is defined at the bottom of the file. It's a reusable component that creates a consistent layout for each piece of transaction information.

Accessibility: The component uses semantic HTML elements and provides clear visual indicators for different types of information.

Wallet address detail

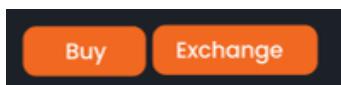
Overview & More information

As a user, I want to access a comprehensive **Address Information** page that provides an overview and more detailed information about a specific wallet address. In the Overview section, I expect to see the current balance, total amounts sent and received, and a breakdown of token holdings with their corresponding values. The More Information section should display additional details such as the private name tag for easy identification, the key dates when the address was first and last seen active, and any multichain information if applicable. I also want the ability to quickly buy or exchange cryptocurrencies directly from this page, link to the transaction history, and view a transaction graph of the wallet's activity. This detailed view will help me better understand and manage my cryptocurrency assets or analyze other addresses of interest.

The component uses the Poppins font from Google Fonts for consistent typography. Additionally, it uses the `useState` hook to manage the expanded state of the token holdings section:

```
export default function WalletInfo() {
  const [isTokenHoldingsExpanded, setIsTokenHoldingsExpanded] = useState(false)
```

The address information section displays the wallet address and buttons for buying and exchanging.



The overview section shows the wallet's balance, total sent, value, and total received. It also includes an expandable token holdings section:

```
<p className="text-gray-600 mb-2 font-bold">TOKEN HOLDINGS:</p>
<button
  ....
  ><span>
```

Transaction history

History Table:

- This section shows the transaction history for the wallet. It includes the following columns:
 - **Transaction Hash:** The unique identifier for each transaction (e.g., `0x02bJ97ca75...`).
 - **Method:** Indicates the type of transaction, such as "Transfer," "Claim," or "Execute."
 - **Block:** The block number (`050505`) where the transaction was recorded.
 - **Age:** The time since the transaction took place (e.g., "5 secs ago").
 - **From:** The originating wallet address of the transaction.
 - **To:** The recipient wallet address.
 - **Amount:** The amount of cryptocurrency involved (e.g., `5,000 JCO` or `150 JCO`).
 - **Txn Fee:** The transaction fee paid, shown in JCO.

Pagination:

- At the bottom of the history table, there are "Previous" and "Next" buttons to navigate through the transaction history pages.

Transaction Hash	Method	Block	Age	From	To	Amount	Txn Fee
0x02bJ97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x0496A61A1...J97500BC	5,000,000 JCO	0.050505
0xeb2ebalac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...BE54d0d	0xA7B72cJ97...BE54d0d	150 JCO	0.0001102
0xJ97BocOn5t...	Claim	050505	5 secs ago	0xJaK5tR1euY...43J09d9k	0xJaK5tR1euY...43J09d9k	5050 JCO	0.05051102
0xBc90ic0nJ97...	Execute	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d	0xA7R12cJ97...R1kR7d0d	5,000 JCO	0.5000000
0x8J97500f32c...	Transfer	050505	5 secs ago	0xA7R12cJ97...R1kR7d0d	0xA7R12cJ97...R1kR7d0d	5,000 JCO	0.5000000
0x02bJ97ca75...	Transfer	050505	5 secs ago	0x0496A61A1...J97500BC	0x0496A61A1...J97500BC	5,000,000 JCO	0.050505
0xeb2ebalac2...	Transfer	050505	5 secs ago	0xA7B72cJ97...BE54d0d	0xA7B72cJ97...BE54d0d	150 JCO	0.0001102
0xJ97BocOn5t...	Claim	050505	5 secs ago	0xA7B72cJ97...BE54d0d	0xA7B72cJ97...BE54d0d	150 JCO	0.0001102
0xJ97BocOn5t...	Execute	050505	5 secs ago	0xJaK5tR1euY...43J09d9k	0xJaK5tR1euY...43J09d9k	5050 JCO	0.05051102
0x890255f32c...	Transfer	050505	5 secs ago	0xJaK5tR1euY...43J09d9k	0xJaK5tR1euY...43J09d9k	5050 JCO	0.5000000

Previous Next

Directed graph

The transaction network visualization feature allows users to explore and analyze blockchain transactions visually. It provides an interactive graph representation of wallet addresses and their transactions, centered around a specific searched address.

1. Graph Visualization

When a user enters a wallet address, the system generates a graph with:

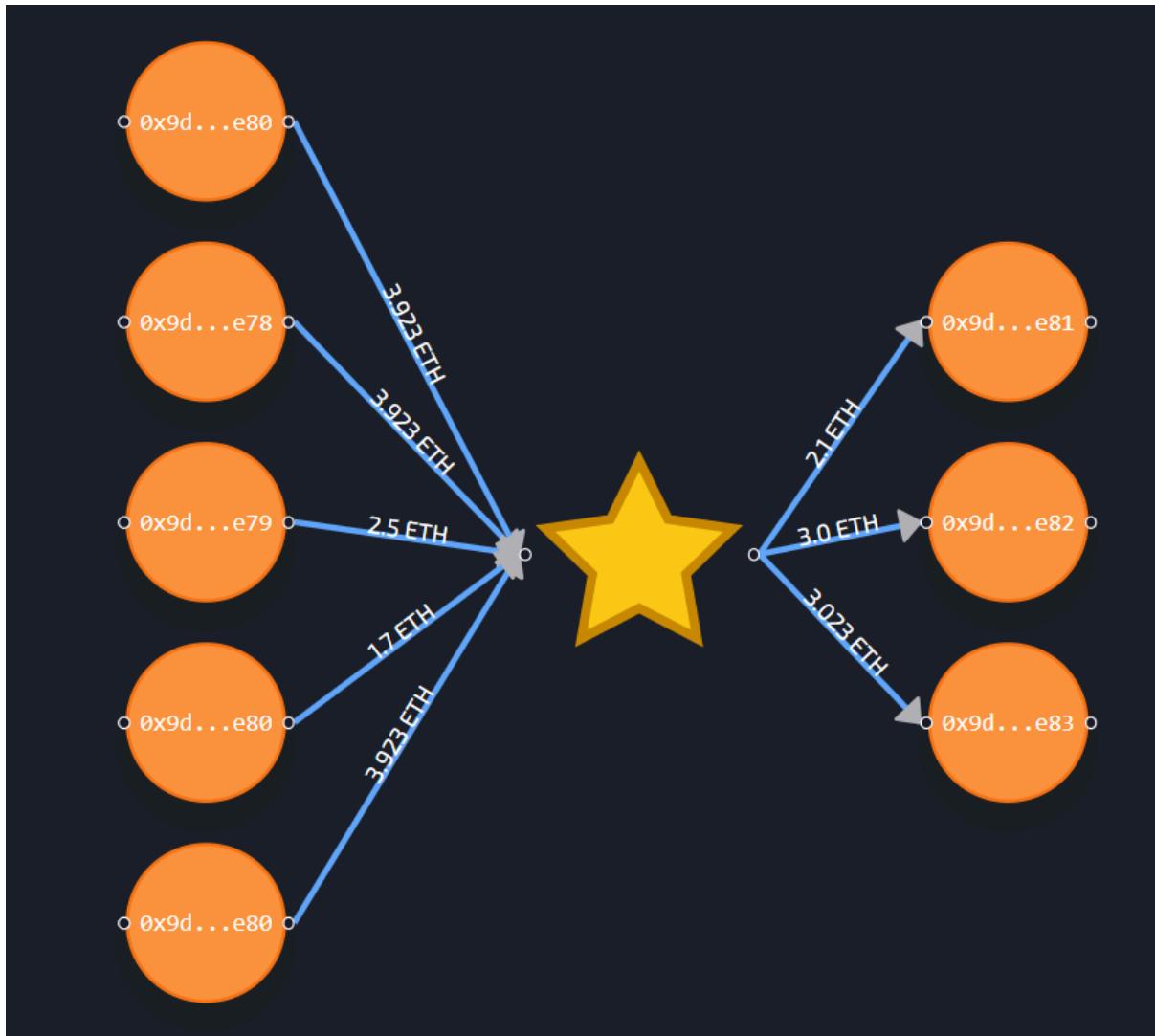
- The searched address as a central star node
- Immediate connections represented as circular nodes

The graph is implemented using React Flow, with custom node and edge components:

a) Nodes:

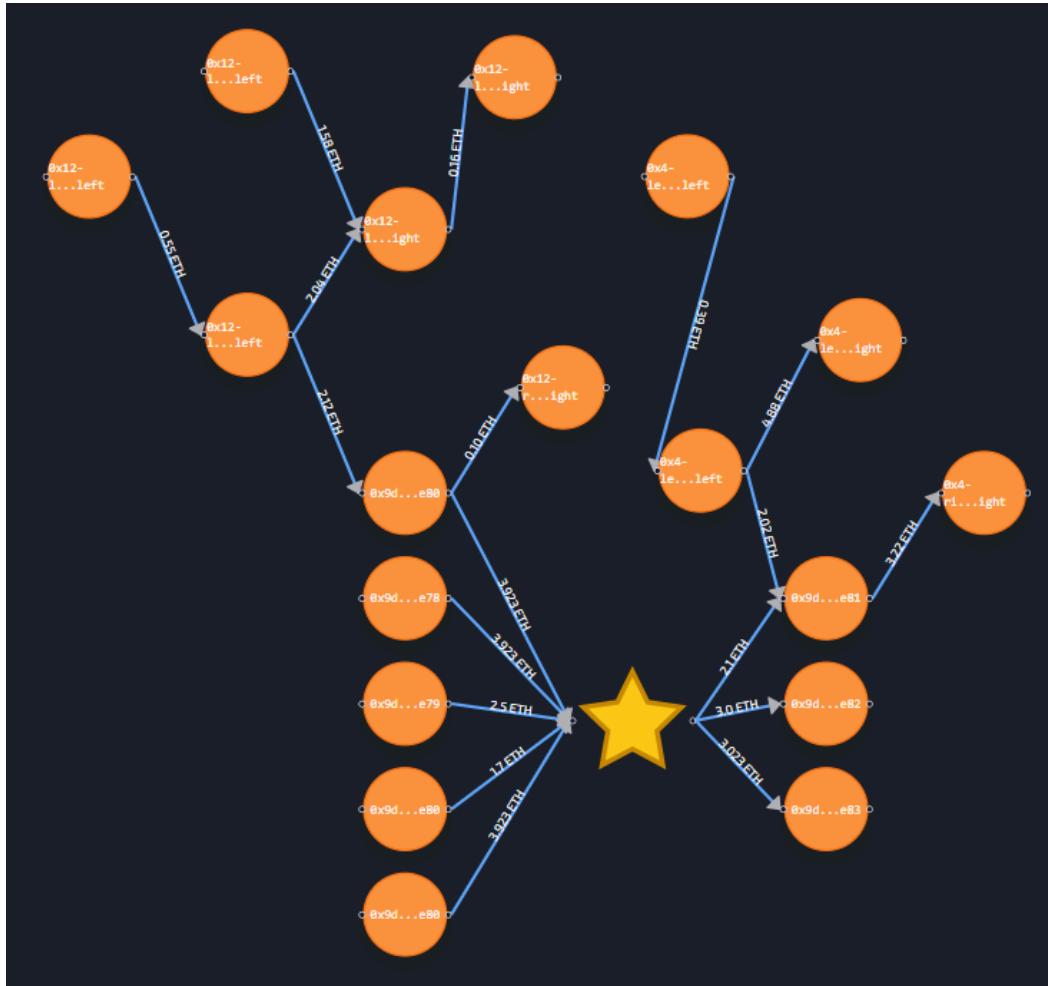
- StarNode: Represents the central searched wallet address.
- CircleNode: Represents addresses that have transacted with the central address.

b) Edges: CustomEdge component shows transaction direction and amount.



2. Interactivity

- Node Expansion: Users can click on any node to expand it and reveal its connections
- Node Collapse: Ability to collapse expanded nodes to declutter the view
- Edge Details: Clicking on an edge displays detailed transaction information



Transaction details

Time (UTC)	Sender	Recipient	Amount	TXID
Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3
Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3
Aug 18, 03:49 AM	0xe6b1de...f92033a3	0xe6b1de...f92033a3	0.23 ETH	0xe6b1de...f92033a3

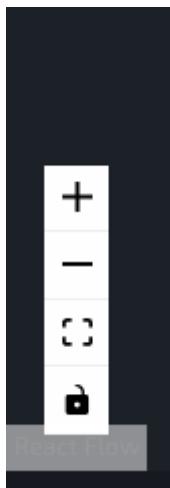
< 1 > Export

The interactive visualization aids in:

- Understanding transaction patterns
- Identifying key players in the network
- Potentially flagging suspicious activities

3. User Interface Features

- Zoomable and draggable graph view



- Filter section:

Show	Sender	Txn	Eth
<input type="checkbox"/>	0x483...f997	19.10	120.321
<input type="checkbox"/>	0x483...f997	19.10	120.321
<input type="checkbox"/>	0x483...f997	19.10	120.321

- Transaction Type Filter: A dropdown to select specific types of transactions.
- Address Filter: Allows filtering by address categories.
- Value Range: Users can set minimum and maximum transaction values.
- Date Range: Two date pickers for selecting a specific time period.

- Search Function: A search bar for finding specific addresses or labels within results.
- Results Display: A table showing filtered transactions with sender, transaction amount, and Ethereum value.
- Bulk Actions: Options to select all results or copy addresses.

This interactive visualization will help users understand transaction patterns, identify key players in the network, and potentially flag suspicious activities more efficiently than looking at raw transaction data.

Part 06 - Diagrams

Architecture diagram

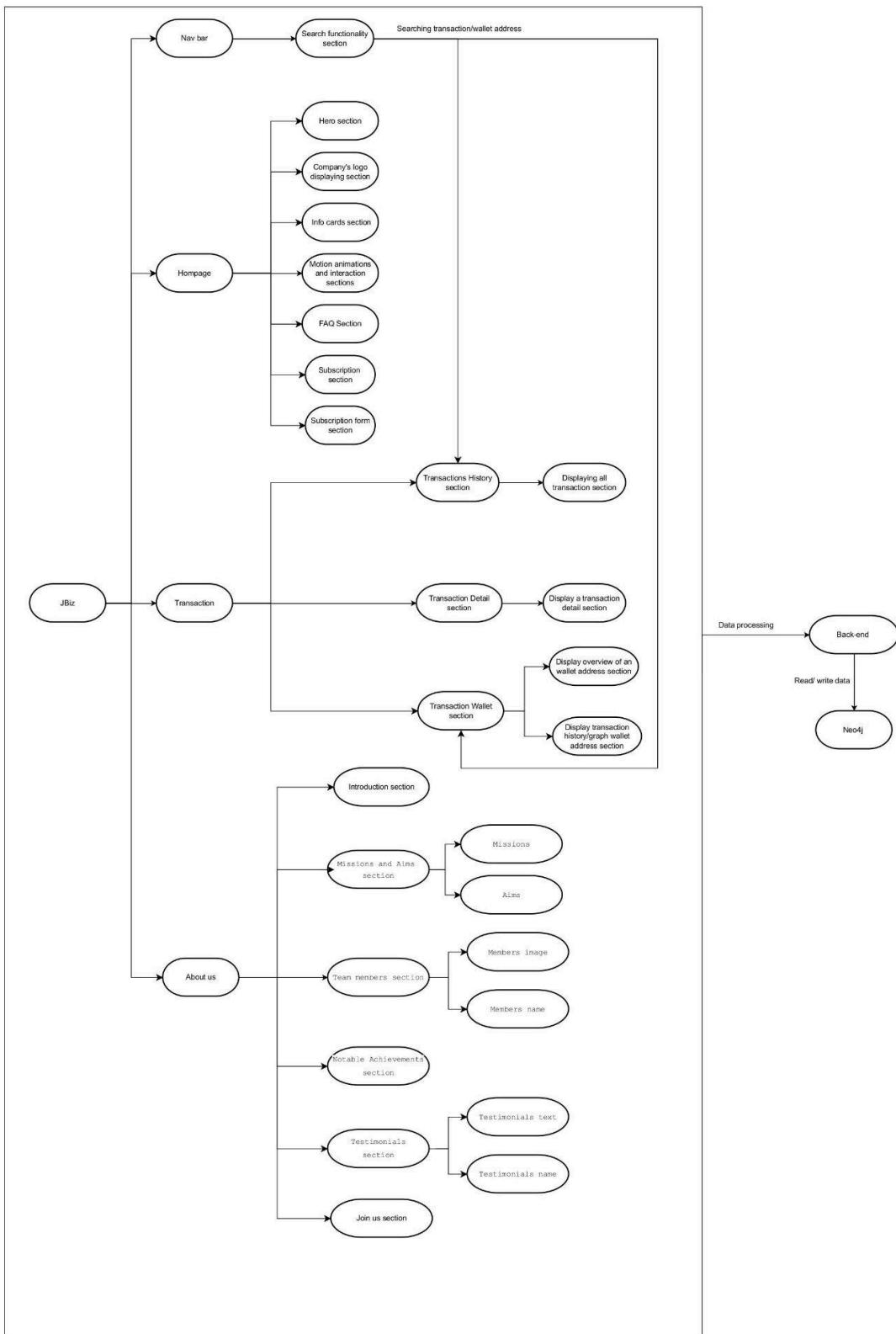


Figure 11: It shows the architecture diagram.

Workflow

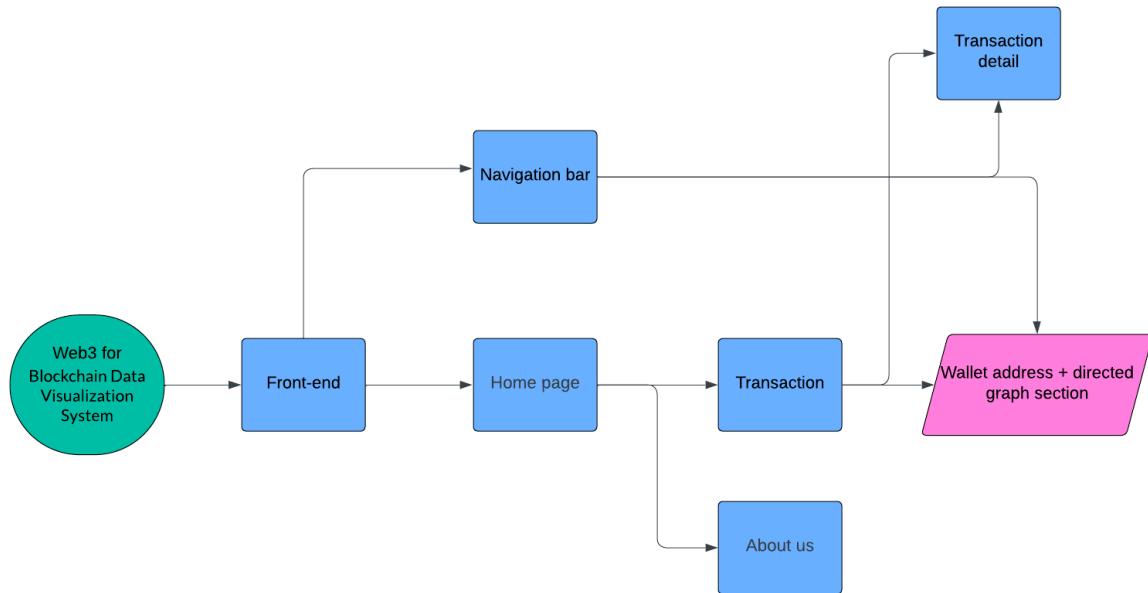


Figure 12: It displays the workflow of the assignment 1.

User story

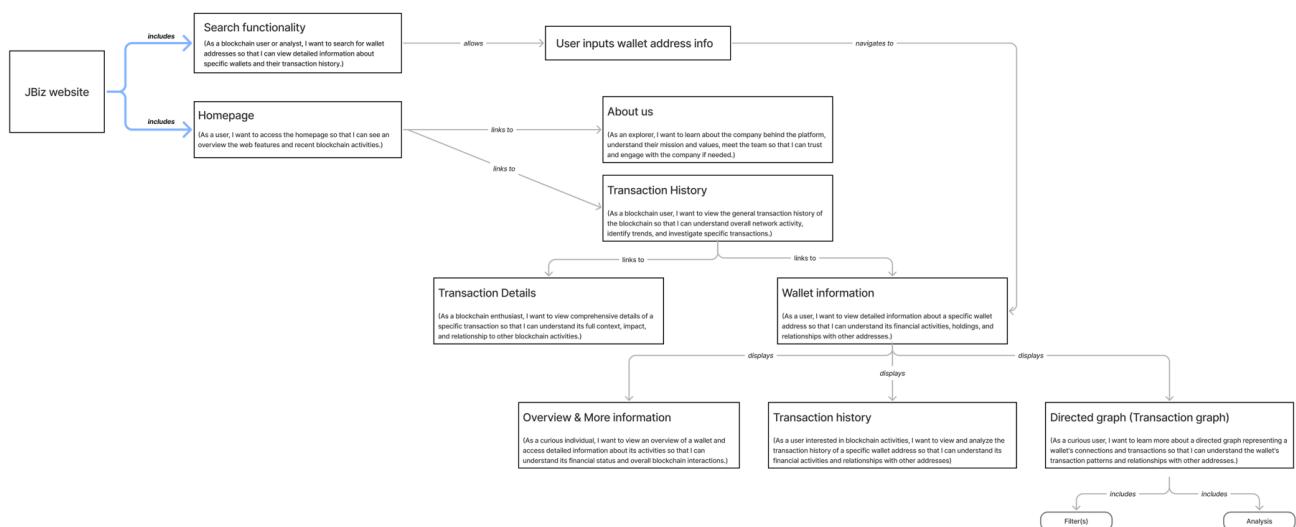


Figure 13: It illustrates the user story of the assignment 1.

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