# UbuntuX Documentation

A Blockchain-Powered Educational platform for Learning African History and gaining rewards

## 1. Introduction

### Overview

UbuntuX is a blockchain-powered educational platform that combines interactive storytelling, quizzes, and puzzles to teach African history. It rewards users with cryptocurrency tokens and NFTs based on their quiz performance. The platform integrates Web3 technology, enabling users to connect crypto wallets and track their learning progress.

### Purpose and Vision

The goal of UbuntuX is to make learning African history engaging, rewarding, and accessible. By gamifying historical education and integrating blockchain incentives, UbuntuX aims to create a sustainable ecosystem that promotes knowledge retention while offering financial rewards.

### Key Features

- Interactive storytelling about African historical events

- Quizzes and puzzles based on historical topics

- Crypto token rewards for correct answers and progress

- Web3 integration for wallet-based authentication

- Traditional login (username/password)

- A structured leaderboard and profile tracking

- Secure backend with quiz tracking and user management

## 2. Project Setup

### Prerequisites

- Frontend: React.js (or plain HTML/CSS/JS)

- Backend: Node.js with Express.js (or PHP with MySQL for XAMPP setup)

- Database: MySQL (via XAMPP)

- Blockchain Integration: MetaMask, Web3.js,

- Version Control: Git & GitHub

### Installation & Setup Steps

- Clone the Repository: git clone https://github.com/abdul-aziz165/Ubuntux\_project

- Navigate to the project folder: cd ubuntux

- Install Dependencies: npm install

- Run the Development Server: npm start

- Backend Setup: If using XAMPP, create a MySQL database and import the necessary tables.

## 3. Frontend Development

### Technologies Used

- React.js (for component-based UI)

- Web3.js or ethers.js (for blockchain interactions)

### UI Structure

- Landing Page – Displays a description of UbuntuX

- Login Page – Allows traditional login and Web3 authentication

- Learn Page – Shows different historical topics in collapsible cards

- Quiz Page – Provides interactive quizzes per topic

Leaderboard Page - Shows players who are leaders

- Profile Page – Displays user progress and rewards

### Navigation and Components

The navigation bar includes Home, Learn, Quiz, Leaderboard, Profile, and Connect Wallet.

## 4. Backend Development

### Database Setup

The MySQL database structure consists of users, quizzes, and user\_scores tables.

### MySQL Database Schema

CREATE TABLE users (  
 id INT AUTO\_INCREMENT PRIMARY KEY,  
 username VARCHAR(255),  
 email VARCHAR(255),  
 password VARCHAR(255),  
 wallet\_address VARCHAR(255)  
);  
  
CREATE TABLE quizzes (  
 id INT AUTO\_INCREMENT PRIMARY KEY,  
 title VARCHAR(255),  
 description TEXT  
);  
  
CREATE TABLE user\_scores (  
 id INT AUTO\_INCREMENT PRIMARY KEY,  
 user\_id INT,  
 quiz\_id INT,  
 score INT,  
 FOREIGN KEY (user\_id) REFERENCES users(id),  
 FOREIGN KEY (quiz\_id) REFERENCES quizzes(id)  
);

## 5. Blockchain Integration

### Web3 Login & Wallet Connection

UbuntuX uses Web3 authentication through MetaMask. Below is an example of connecting a wallet using ethers.js.

import { ethers } from "ethers";  
  
async function connectWallet() {  
 if (!window.ethereum) {  
 alert("MetaMask is required!");  
 return;  
 }  
 const provider = new ethers.providers.Web3Provider(window.ethereum);  
 const accounts = await provider.send("eth\_requestAccounts", []);  
 console.log("Connected Wallet:", accounts[0]);  
}

## 6. Quiz System

### Quiz Structure & Logic

Each quiz consists of multiple-choice questions. Users must answer all questions before getting a score, which is stored in the database.

### Sample Quiz Code (React.js)

const questions = [  
 { question: "Who was Mansa Musa?", options: ["King of Mali", "Zulu Leader"], answer: "King of Mali" },  
];  
  
function Quiz() {  
 const [score, setScore] = useState(0);  
 const [currentQuestion, setCurrentQuestion] = useState(0);  
  
 function checkAnswer(option) {  
 if (option === questions[currentQuestion].answer) {  
 setScore(score + 1);  
 }  
 if (currentQuestion + 1 < questions.length) {  
 setCurrentQuestion(currentQuestion + 1);  
 } else {  
 alert(`Quiz Complete! Your Score: ${score}`);  
 }  
 }  
  
 return (  
 <div>  
 <h3>{questions[currentQuestion].question}</h3>  
 {questions[currentQuestion].options.map((opt, index) => (  
 <button key={index} onClick={() => checkAnswer(opt)}>{opt}</button>  
 ))}  
 </div>  
 );  
}

## 7. Deployment & Hosting

### Frontend Hosting

Options for hosting GitHub Pages.

### Backend Hosting

Options for backend hosting include or XAMPP for local development.

### Blockchain Network Deployment

Smart contracts can be deployed on Ethereum Testnets (Goerli, Sepolia) before moving to the mainnet.

## 8. Future Enhancements

-Interactive storytelling (visuals)

- Supporting NFT-based achievements and puzzles

- Introducing community discussions

- Referrals

## 9. Conclusion

UbuntuX aims to revolutionize learning by merging education, entertainment, and blockchain technology. By making African history interactive and rewarding, it provides a sustainable way to learn and earn. Future iterations will expand content, enhance user engagement, and integrate more Web3 features.

### Next Steps

- Finalize backend API integration

- Complete smart contract deployment

- Optimize frontend UI/UX