



LandLedger:

Blockchain-Based Land Registration System

Atesam Abdullah
Huzaiifa Javed

2021114
2021234

Table of Contents

Table of Contents.....	2
Overview.....	3
Setup Instructions.....	3
Step 1: Clone the Repository.....	3
Step 2: Python Dependencies.....	3
Step 3: Install Extra Base Modules.....	3
Step 4: Install Required Python Packages.....	3
Step 5: Install Node.js and npm.....	3
Step 6: Update Node.js to Stable Version.....	3
Step 7: Install Truffle and Ganache.....	4
Step 8: Install MongoDB.....	4
Step 9: Setup MetaMask.....	4
Running the Code.....	5
Step 1: Start Ganache.....	5
Step 2: Setup Accounts.....	5
Admin Account.....	5
Other Accounts.....	5
Step 3: Migrate Smart Contracts.....	5
Step 4: Start MongoDB.....	5
Step 5: Run the Application.....	5
Server for Users.....	5
Server for Revenue Department.....	5

Code available at: <https://github.com/ATESAM-ABDULLAH/LandLedger>

Overview

LandLedger is a blockchain-based application designed for efficient land registry and transaction management. This manual guides you through setting up, configuring, and running the application on your system.

Setup Instructions

Step 1: Clone the Repository

```
git clone https://github.com/ATESAM-ABDULLAH/LandLedger.git/  
cd LandLedger
```

Step 2: Python Dependencies

Create a virtual environment and install the required Python packages:

```
sudo apt install python3-venv  
python3 -m venv env  
source env/bin/activate
```

Step 3: Install Extra Base Modules

Install additional system dependencies:

```
sudo apt install pkg-config libfuse-dev curl
```

Step 4: Install Required Python Packages

Redo the package installation:

```
pip install -r requirements.txt
```

Step 5: Install Node.js and npm

Ensure Node.js and npm are installed:

```
sudo apt install nodejs npm
```

Step 6: Update Node.js to Stable Version

```
npm install n -g  
n stable  
# Restart the terminal to verify the updated Node.js version  
node -v
```

Step 7: Install Truffle and Ganache

Install Truffle and Ganache CLI globally:

```
sudo npm install -g truffle ganache-cli
```

Step 8: Install MongoDB

Replace "jammy" with your Ubuntu version in the following commands

```
curl -fsSL https://www.mongodb.org/static/pgp/server-8.0.asc | sudo gpg -o  
/usr/share/keyrings/mongodb-server-8.0.gpg --dearmor  
echo "deb [ arch=amd64,arm64 signed-by=/usr/share/keyrings/mongodb-server-8.0.gpg ]  
https://repo.mongodb.org/apt/ubuntu jammy/mongodb-org/8.0 multiverse" | sudo tee  
/etc/apt/sources.list.d/mongodb-org-8.0.list  
sudo apt update  
sudo apt-get install -y mongodb-org
```

Step 9: Setup MetaMask

Install and configure the MetaMask browser extension.

Running the Code

Step 1: Start Ganache

Run Ganache in a separate terminal:

```
ganache-cli --networkId 5777
```

Step 2: Setup Accounts

Admin Account

1. Assign Ganache account `{0}` as the contract admin.
2. Update the "Address_Used_To_Deploy_Contract" field in `Server_For_Revenue_Dept/config.json` with the private key of Ganache account `{0}`.
3. Import this account as a new account in MetaMask.

Other Accounts

1. Assign Ganache accounts `{1}`, `{2}`, and `{3}` to roles: Seller, Buyer, and Employee_1.
2. Import these accounts as new accounts in MetaMask using their respective private keys.

Step 3: Migrate Smart Contracts

Navigate to the `Smart_contracts` directory and migrate contracts:

```
cd Smart_contracts
rm -r build
truffle migrate
```

Step 4: Start MongoDB

Run MongoDB in a separate terminal:

```
sudo systemctl start mongod
mongosh
```

Step 5: Run the Application

Server for Users

```
cd Server_For_Users
python3 app.py
```

Server for Revenue Department

```
cd Server_For_Revenue_Dept
python3 app.py
```