

BLOCKCHAIN

ASSIGNMENT-1

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BATCH-30

Question-1:

Objective:

To learn blockchain interaction by creating a cryptocurrency wallet, checking wallet balance, and simulating transactions using Python and Web3

Requirements:

- Install Python 3.x
- Set up VS Code with Python extension
- Install required Python libraries:
 - pip install web3
- Use a test blockchain network (Ethereum Sepolia / Ganache local blockchain)
- Basic understanding of blockchain wallets and private keys

Practical Description:

Step 1: Environment Setup

- Install Python and VS Code
- Install Web3.py library
- Create a Python file named wallet_interaction.py

Step 2: Wallet and Blockchain Interaction Script

Create a Python script that:

- Connects to a blockchain network
- Loads a wallet using a private key
- Fetches wallet address

- Checks wallet balance
 - Demonstrates transaction preparation (without real funds)

Code:

```
import tkinter as tk  
from tkinter import messagebox  
from web3 import Web3
```

----- Blockchain Setup -----

```
GANACHE_URL = "http://127.0.0.1:7545"
```

try:

```
web3 = Web3(Web3.HTTPProvider(GANACHE_URL))

connected = web3.is_connected()

except:

    connected = False
```

----- Functions -----

```
def check_balance():
```

```
if not connected:
    messagebox.showinfo("Simulation Mode",
        "Blockchain not connected.\nSimulated Balance: 10 ETH")
    return

try:
    balance_wei = web3.eth.get_balance(SAMPLE_ADDRESS)
    balance_eth = web3.from_wei(balance_wei, 'ether')
    messagebox.showinfo("Wallet Balance",
        f"Wallet Address:\n{SAMPLE_ADDRESS}\n\nBalance: {balance_eth} ETH")
except Exception as e:
    messagebox.showerror("Error", str(e))

def simulate_transaction():
    tx_details = (
        "Transaction Simulation\n\n"
        "From: Your Wallet\n"
        "To: Receiver Wallet\n"
        "Amount: 1 ETH\n\n"
        "Note: This is only a simulation.\n"
        "No real transaction is performed."
    )
    messagebox.showinfo("Transaction", tx_details)

# ----- GUI Setup -----
```

```
root = tk.Tk()
root.title("Blockchain Wallet Simulator")
root.geometry("400x300")
root.resizable(False, False)

title_label = tk.Label(
    root,
    text="Blockchain Wallet (Python + Web3)",
    font=("Arial", 14, "bold")
)
title_label.pack(pady=15)

status_text = "Connected to Blockchain" if connected else "Simulation Mode (Offline)"
status_label = tk.Label(root, text=status_text, fg="green" if connected else "red")
status_label.pack(pady=5)

balance_btn = tk.Button(
    root,
    text="Check Wallet Balance",
    width=25,
    command=check_balance
)
balance_btn.pack(pady=10)

tx_btn = tk.Button(
    root,
    text="Simulate Transaction",
    width=25,
```

```

    command=simulate_transaction

)

tx_btn.pack(pady=10)

exit_btn = tk.Button(
    root,
    text="Exit",
    width=25,
    command=root.destroy
)

exit_btn.pack(pady=10)

root.mainloop()

```

OUTPUT:

```

File Edit Selection View Go Run Terminal Help
Blockchain Wallet Simulator
Blockchain Wallet (Python + Web3)
Simulation Mode (Offline)
Check Wallet Balance
Simulate Transaction
Exit
y:1 x
py >-
import tkinter as tk
from tkinter import messagebox
from web3 import Web3
GANACHE_URL = "http://127.0.0.1:7545"
web3 = Web3(Web3.HTTPProvider(GANACHE_URL))
connected = web3.is_connected()
if not connected:
    connected = False
# Sample wallet (Ganache default account)
SAMPLE_ADDRESS = "0x0000000000000000000000000000000000000000"
# Functions
def check_balance():
    if not connected:
        messagebox.showinfo("Simulation Mode", "Blockchain not connected.\nSimulated Balance: 10 ETH")
        return
try:
    balance_wei = web3.eth.get_balance(SAMPLE_ADDRESS)
    balance_eth = web3.from_wei(balance_wei, 'ether')
    messagebox.showinfo("Wallet Balance", f"Your current balance is {balance_eth} ETH")
except Exception as e:
    messagebox.showerror("Error", str(e))

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

PS C:\Users\Jashwanth\block_chain & C:/Users/Jashwanth/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/Jashwanth/block_chain/wallet_ui.py"

PS C:\Users\Jashwanth\block_chain & C:/Users/Jashwanth/AppData/Local/Microsoft/WindowsApps/python3.12.exe "c:/Users/Jashwanth/block_chain/wallet_ui.py"

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20% Summary

