

2303A51939

BATCH-27

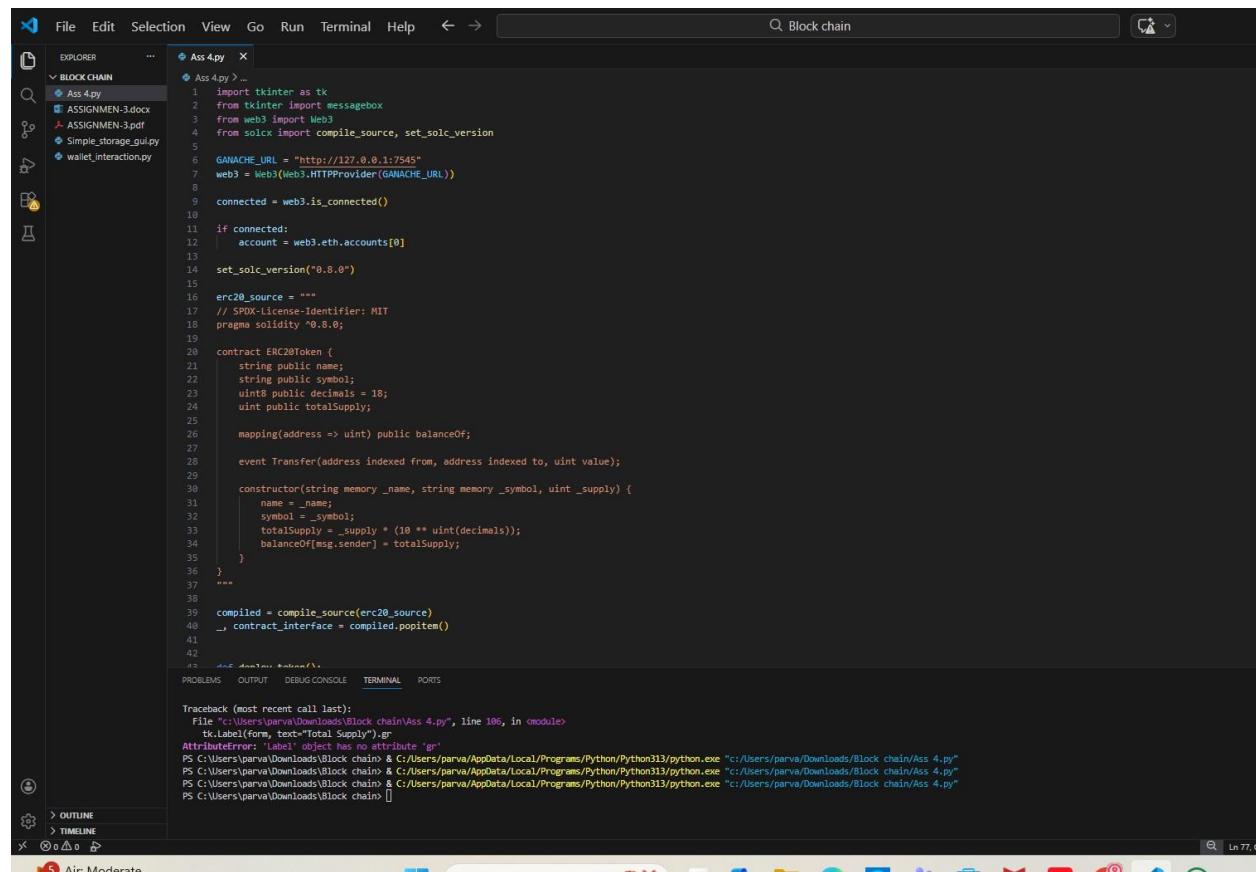
ASSIGNMENT-04

PROBLEM:

Develop a basic ERC-20 token smart contract using Solidity that allows users to:

- Define token details such as name, symbol, decimals, and total supply
- Transfer tokens between Ethereum accounts
- Store and manage user token balances
- Emit events to record token transfer activities on the blockchain

This practical helps understand state variables, mappings, constructors, events, and functions in Solidity, as well as the basics of Ethereum token standards.



The screenshot shows a code editor interface with a dark theme. The left sidebar has a tree view labeled 'EXPLORER' with items like 'BLOCK CHAIN', 'Ass 4.py', 'ASSIGNMEN-3.docx', 'ASSIGNMEN-3.pdf', 'Simple_storage_gui.py', and 'wallet_interaction.py'. The main area contains the following Solidity code:

```
import tkinter as tk
from tkinter import messagebox
from web3 import Web3
from solc import compile_source, set_solc_version

GANACHE_URL = "http://127.0.0.1:7545"
web3 = Web3(Web3.HTTPProvider(GANACHE_URL))

connected = web3.is_connected()

if connected:
    account = web3.eth.accounts[0]

set_solc_version("0.8.0")

erc20_source = """
// SPDX-License-Identifier: MIT
pragma solidity >0.8.0;

contract ERC20Token {
    string public name;
    string public symbol;
    uint8 public decimals = 18;
    uint public totalSupply;

    mapping(address => uint) public balanceOf;

    event Transfer(address indexed from, address indexed to, uint value);

    constructor(string memory _name, string memory _symbol, uint _supply) {
        name = _name;
        symbol = _symbol;
        totalSupply = _supply * (10 ** uint(decimals));
        balanceOf[msg.sender] = totalSupply;
    }
}

compiled = compile_source(erc20_source)
_, contract_interface = compiled.popitem()
```

The bottom status bar shows 'Ln 77, C' and a terminal tab with a traceback:

```
Traceback (most recent call last):
  File "C:\Users\parva\Downloads\Block chain\Ass 4.py", line 106, in <module>
    tk.Label(form, text="Total Supply").grid()
AttributeError: 'Label' object has no attribute 'grid'
PS C:\Users\parva\Downloads\Block chain> & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block chain> & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block chain> & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block chain>
```

```
File "C:\Users\parva\Downloads\Block chain\Ass 4.py", line 106, in <module>
    tk.Label(form, text="Total Supply").gr
AttributeError: 'Label' object has no attribute 'gr'
PS C:\Users\parva\Downloads\Block chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "C:\Users\parva\Downloads\Block chain\Ass 4.py"
PS C:\Users\parva\Downloads\Block chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "C:\Users\parva\Downloads\Block chain\Ass 4.py"
PS C:\Users\parva\Downloads\Block chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "C:\Users\parva\Downloads\Block chain\Ass 4.py"
PS C:\Users\parva\Downloads\Block chain [
```

```

File Edit Selection View Go Run Terminal Help ← → ⌂ Block chain
EXPLORER ... Ass 4.py ...
BLOCK CHAIN Ass 4.py
ASSIGNMEN-3.docx
ASSIGNMEN-3.pdf
Simple_storage_gui.py
wallet_interaction.py

tk.Label(form, text="Token Name").grid(row=0, column=0, sticky="w", pady=5)
name_entry = tk.Entry(form, width=25)
name_entry.grid(row=0, column=1)

tk.Label(form, text="Token Symbol").grid(row=1, column=0, sticky="w", pady=5)
symbol_entry = tk.Entry(form, width=25)
symbol_entry.grid(row=1, column=1)

tk.Label(form, text="Total Supply").grid(row=2, column=0, sticky="w", pady=5)
supply_entry = tk.Entry(form, width=25)
supply_entry.grid(row=2, column=1)

deploy_btn = tk.Button(
    root,
    text="Deploy Token",
    width=20,
    bg="#4CAF50",
    fg="white",
    command=deploy_token
)
deploy_btn.pack(pady=20)

root.mainloop()

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

```

Traceback (most recent call last):
  File "c:/Users/parva/Downloads/Block_chain/Ass 4.py", line 106, in <module>
    tk.Label(form, text="Total Supply").gr
AttributeError: 'Label' object has no attribute 'gr'
PS C:\Users\parva\Downloads\Block_chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block_chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block_chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block_chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block_chain []

```

> OUTLINE > TIMELINE

File Edit Selection View Go Run Terminal Help ← → ⌂ Block chain

EXPLORER ... Ass 4.py ...

ERC20 Token Generator

Token Name:

Token Symbol:

Total Supply:

Deploy Token

```

source, set_solc_version
0.0.1:7545"
der(GANACHE_URL))
ted()

16 erc20_source = """
17 // SPDX-License-Identifier: MIT
18 pragma solidity ^0.8.0;
19
20 contract ERC20Token {
21     string public name;
22     string public symbol;
23     uint8 public decimals = 18;
24     uint public totalsupply;

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS

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PS C:\Users\parva\Downloads\Block_chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block_chain/Ass 4.py"
PS C:\Users\parva\Downloads\Block_chain & C:/Users/parva/AppData/Local/Programs/Python/Python313/python.exe "c:/Users/parva/Downloads/Block_chain/Ass 4.py"

```

SESSIONS + v ... | ☰ x

You've reached the limit for... Upgrade

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powershell

Describe what to build next

Ln 77, Col 1 Spaces: 4 UTF-8 CRLF {} Python Chat quota reached 3.13.7 ☰

Observation:

- **State variables** = name, symbol, decimals, totalSupply, balanceOf
- **Constructor** = constructor(uint initialSupply)
- **Token transfer function** = transfer(address to, uint value)
- **Balance storage** = mapping(address => uint) balanceOf
- **Event used** = Transfer(address from, address to, uint value)