

```
import hashlib
import json
import os
from time import time
```

```
class Block:
    def init(self, index, previous_hash, timestamp, data, hash):
        self.index = index
        self.previous_hash = previous_hash
        self.timestamp = timestamp
        self.data = data
        self.hash = hash
```

```
def calculate_hash(block):
    """Calculate the SHA-256 hash of a block."""
    block_string = json.dumps(block.dict, sort_keys=True)
    return hashlib.sha256(block_string.encode()).hexdigest()
```

```
class Blockchain:
    def init(self):
        self.chain = []
        self.create_genesis_block()
```

```
def create_genesis_block(self):
    """Creates the first block in the blockchain."""
    genesis_block = Block(0, "0", time(), "Genesis Block", "")
    genesis_block.hash = calculate_hash(genesis_block)
    self.chain.append(genesis_block)
```

```
def add_block(self, data):
    """Adds a new block to the blockchain."""
    previous_block = self.chain[-1]
    new_index = previous_block.index + 1
    new_timestamp = time()
    new_block = Block(new_index, previous_block.hash, new_timestamp, data, "")
    new_block.hash = calculate_hash(new_block)
    self.chain.append(new_block)
```

```
def display_chain(self):
    """Displays the entire blockchain."""
    for block in self.chain:
        print(f"Index: {block.index}")
        print(f"Timestamp: {block.timestamp}")
        print(f>Data: {block.data}")
        print(f"Hash: {block.hash}")
        print(f"Previous Hash: {block.previous_hash}\n")
```

```
class BlockchainFileHandler:
    def init(self, filename='blockchain_data.txt'):
        self.filename = filename

    def save_blockchain(self, blockchain):
        """Saves the blockchain to a JSON file."""
        with open(self.filename, 'w') as file:
            chain_data = [block.dict for block in blockchain.chain]
            json.dump(chain_data, file, indent=4)
        print(f"Blockchain saved to {self.filename}.")
```

```
def load_blockchain(self):
    """Loads the blockchain from a JSON file."""
    if not os.path.exists(self.filename):
        print("No existing blockchain found. Creating a new one.")
        return Blockchain()

    with open(self.filename, 'r') as file:
        chain_data = json.load(file)
        blockchain = Blockchain()
        blockchain.chain = [Block(**block) for block in chain_data]
    print(f"Blockchain loaded from {self.filename}.")
    return blockchain
```

# Example usage

if name == "main":

# File handling object

blockchain\_handler = BlockchainFileHandler()

# Load existing blockchain or create a new one

health\_blockchain = blockchain\_handler.load\_blockchain()

# Adding new health records

health\_blockchain.add\_block({"patient\_name": "gowtham", "age": 18, "condition": "Heart problem", "treatment": "Get quality sleep and manage stress"})

health\_blockchain.add\_block({"patient\_name": "santhosh", "age": 18, "condition": "Cold and fever", "treatment": "Rest and hydration"})

health\_blockchain.add\_block({"patient\_name": "sagar", "age": 18, "condition": "Covid-19", "treatment": "Isolation and vaccination"})

health\_blockchain.add\_block({"patient\_name": "sanjay", "age": 18, "condition": "Diabetes", "treatment": "Insulin and diet management"})

health\_blockchain.add\_block({"patient\_name": "prem", "age": 18, "condition": "Throat infection", "treatment": "Drinking warm water and

```
antibiotics"))
```

```
    health_blockchain.add_block({"patient_name": "karthik", "age": 18, "condition": "Nose infection", "treatment": "Drinking warm water and antibiotics"})
```

```
# Display the blockchain
```

```
health_blockchain.display_chain()
```

```
# Save the blockchain to a file
```

```
blockchain_handler.save_blockchain(health_blockchain)
```