Solidity Assignment: 23
Gas Cost Report

Solidity Code:

```solidity
//SPDX-License-Identifier:MIT
pragma solidity 0.8.7;

contract structure{
    struct Book{
        string title;
        string author;
        uint256 bookID;
        uint256 price;
    }

    // define a struct- name of the struct variable to represent the struct
    Book book;

    function setBook() public {
        book= Book("Blockchain for beginners","Ineuron",4,1000);
    }

    function getBookId() public view returns(uint) {
        return book.bookID;
    }

    function getPrice() public view returns(uint){
        return book.price;
    }

    function getTitle() public view returns(string memory){
        return book.title;
    }

    function getAuthor() public view returns(string memory){
        return book.author;
    }
```

```
}
```

Non-Optimize Gas Report

1. Contact Deployment Gas 388579 Gas
2. Function call Gas

```
function setBook() public {
        book= Book("Blockchain for beginners","Ineuron",4,1000);
    }
```
Function call: 127417 gas

```
function getBookId() public view returns(uint) {
        return book.bookID;
    }
```
Function call: 23485 gas

```
function getPrice() public view returns(uint){
        return book.price;
    }
```
Function call: 23507gas

```
function getTitle() public view returns(string memory){
        return book.title;
    }
```
Function call: 24599 gas

```
function getAuthor() public view returns(string memory){
        return book.author;
    }
```
Function call: 24555 gas

Optimization Steps which I have used:
1. **Enabled optimizer: 200**
2. **Optimizing the setBook() function by making a temporary struct in memory.**
3. **Making all public functions into an external function call**

Optimize Gas Report

Deployment Gas: 276948

```solidity
function setBook() external {
    Book memory addBook= Book("Blokchain for
beginners","Ineuron",4,1000);
    book = addBook;
}
```

Function call: 127395

```solidity
function getBookId() external view returns(uint) {
    return book.bookID;
}
```

Function call: 23345

```solidity
function getPrice() external view returns(uint){
    return book.price;
}
```

Function call: 23312

```solidity
function getTitle() external view returns(string memory){
    return book.title;
}
```

Function call: 24341

```solidity
function getAuthor() external view returns(string memory){
    return book.author;
}
```

Function call: 24297

Sir, I have tried to do the best optimization. But can't able to do more. Have also read the gas optimization document which you have shared on the Solidity detailed notes.

Could you please share the best optimize code ??