WS 23 Projekt GIN1IL_T1

Abgabefrist: 12.1 23:55 **Erreichte Punkte: _____**

Name: Katrin Szikora Zeitaufwand in h: 4-5 Tage

Beachten Sie die Abgakriterien! (siehe LVA Übersicht)

Abschlussprojekt **100 Punkte**

Im Zuge des Abschlussprojektes soll ein Spiel oder eine Applikation zu einem selbst gewählten Thema entwickelt werden.

Erstellen und dokumentieren Sie folgendes:

1. Lösungsidee
   - Beinhaltet die Grundidee und die Hauptfeatures der Applikation.
2. Dekomposition
   - Erläutert das WAS und definiert somit über welche Detailfeatures die Applikation verfügt.
3. Ablaufdiagramm
   - Mindestens 4 Ablaufdiagramme
   - Beschreiben das logische Verhalten von besonders komplexen Teilen der Applikation.
4. Use Case Diagramm
   - Erstellen Sie 1 Use Case Diagramm
   - Beschreibt wie die Aktoren mit dem System interagieren und welche Use Cases es gibt.
5. Code
   - Mindestens 300 Zeilen Code
   - Sich wiederholender und gleicher Code soll vermieden werden (Mustererkennung).
   - Achten Sie auf gute Codequalität
6. Testfälle
   - Mindestens 10 Testfälle
   - Decken die Hauptfunktionalitäten ab
   - Zeigen Sie mit den Testfällen das unterschiedliche Verhalten des Systems.
7. Abschlusspräsentation
   - Erklären Sie die Hauptfeatures Ihrer Applikation mithilfe der erstellten Diagramme
   - Präsentieren Sie Ihre Applikation live und zeigen Sie somit die erstellten Features
   - Dauer: 5 - 7 Minuten

Verwenden Sie erlernte Techniken aus der LVA für die Entwicklung Ihrer Applikation.
(Prosa, Ablaufdiagramm, Problemlösestrategien, Dekomposition, Mustererkennung)

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1. Lösungsidee

Die Grundidee hinter dem Library Organizer ist die Erstellung eines Organisationsprogramms, welches dem User ermöglicht einen Überblick über seine Bücher zu haben. Der User hat die Möglichkeit ein Profil zu erstellen. Im Profil sind folgende Informationen sichtbar:

- Vorname
- Nachname
- Bio
- Favourite Genres

Bevor die Menüauswahl aufscheint, wird immer ein zufälliger Quote of the Day ausgegeben.

Die Menüauswahl setzt sich zusammen aus:

1. Create Profile
2. Manage Books
3. Rate Books
4. View Ratings
5. Discover Page
6. Move Books
7. Sort Books
8. Update Profile
9. Exit Library Organizer

Mit der Funktion „Update Profile“ kann der User seine aktuellen Profilinformationen einsehen und diese bei Bedarf ändern.

Die Bücher werden unter „Manage Books“ getrackt, indem der User sie dem jeweiligen Shelf hinzufügt (Plan to Read, Reading, Currently Read).

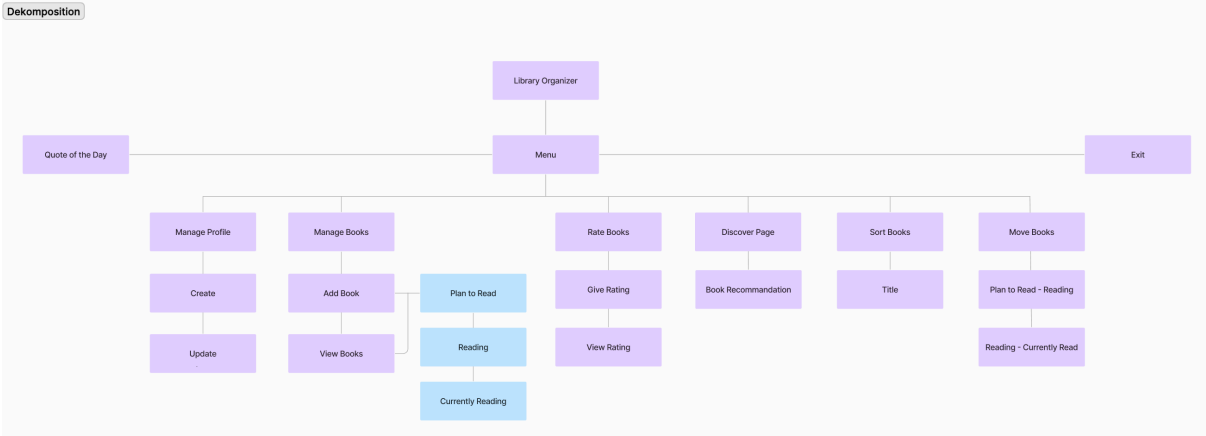
Bücher, die gelesen wurden, können auf einer Skala von 1-5 bewertet werden. Die gesamten abgegebenen Ratings kann sich der User ausgeben lassen unter „View Ratings“.

Um sich Inspiration für neue Bücher zu holen, gibt es die Möglichkeit auf die Discover Page zu wechseln, auf der zufällige Buchempfehlungen gezeigt werden

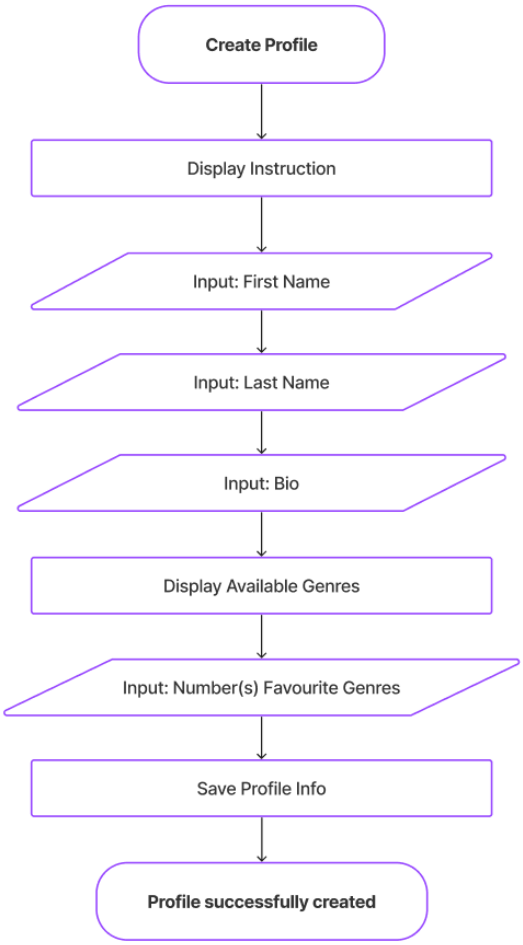
Unter „Move Books“ können die Bücher in ein anderes Book Shelf bewegt werden. Möglich ist die Option „Move from Plan to Read to Reading“ und “Move from Reading to Currently Read”.

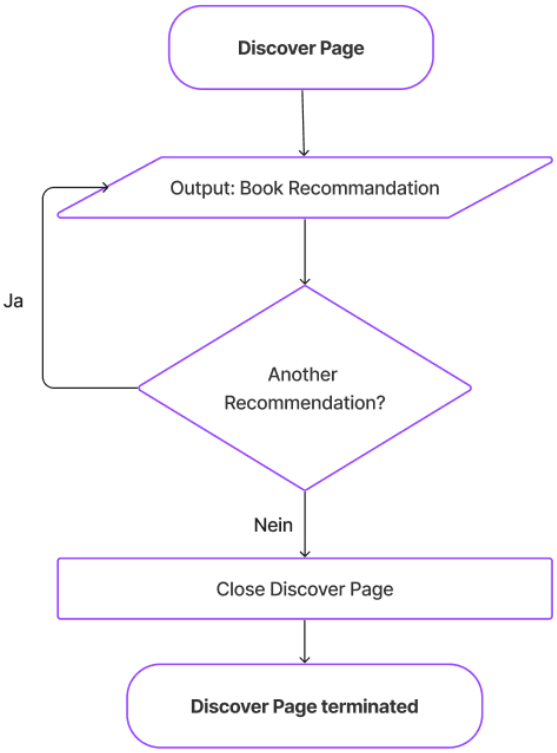
Die eigene Buchliste kann nach dem Buchtitel sortiert werden. Die Bücher und Bewertungen werden in Textfiles gespeichert und bleiben auch über den Neustart hinweg erhalten.

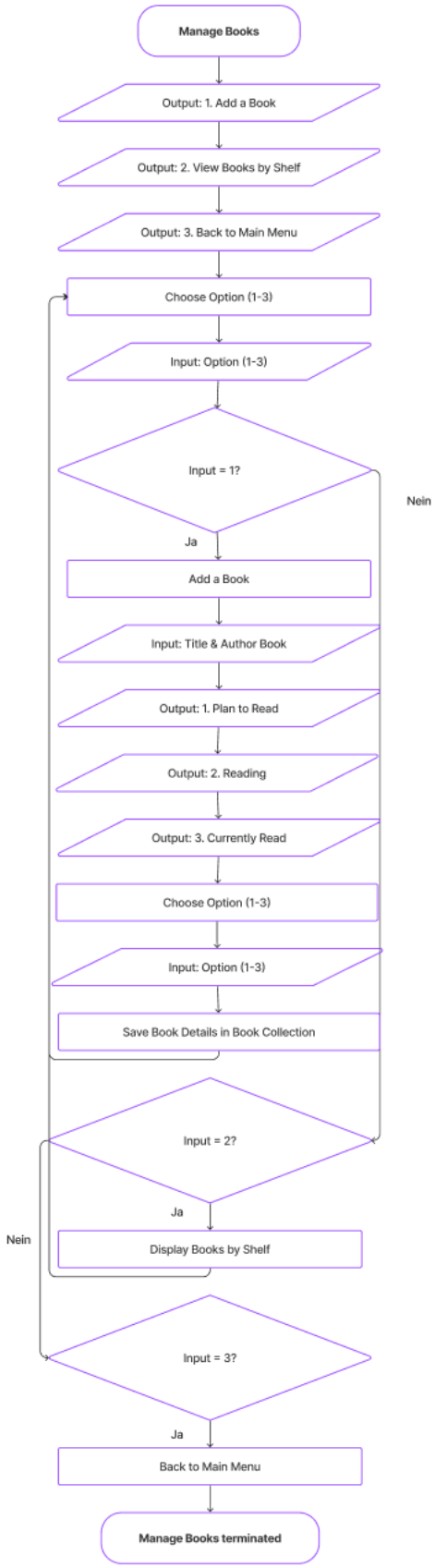
2. Dekomposition

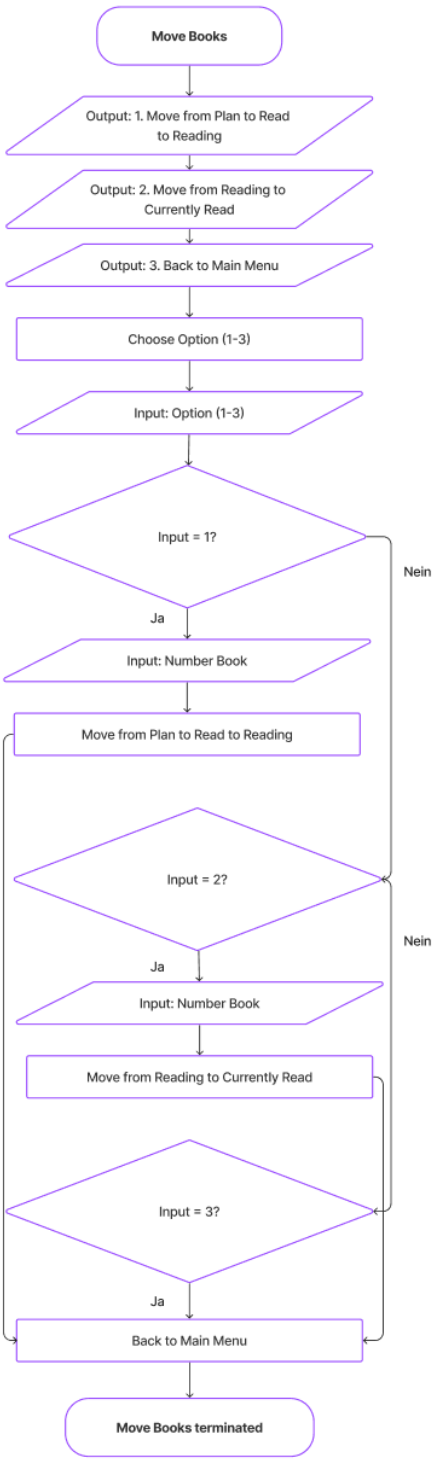


3. Ablaufdiagramme

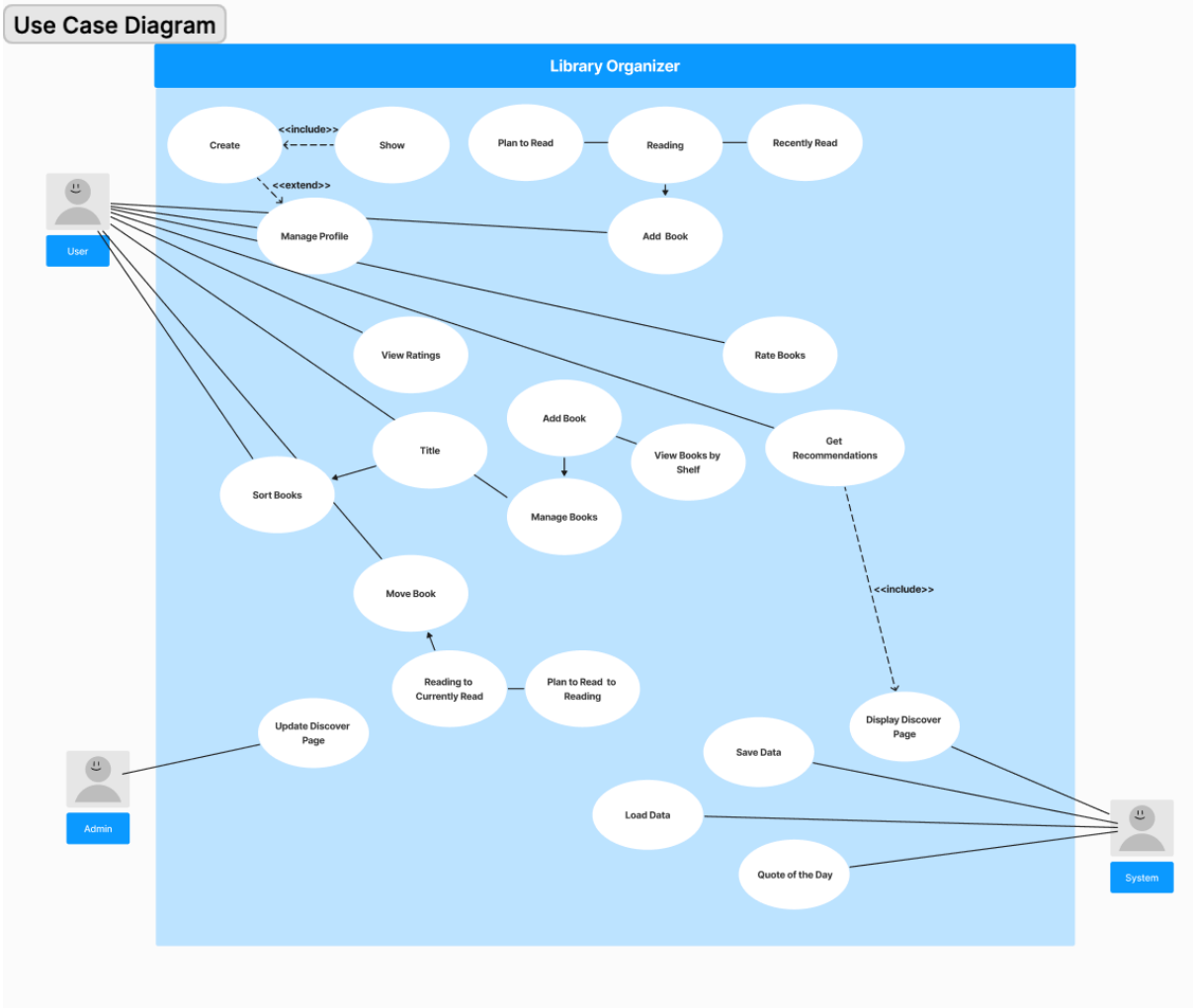





Manage Books
Output: 1. Add a Book
Output: 2. View Books by Shelf
Output: 3. Back to Main Menu
Choose Option (1-3)
Input: Option (1-3)
Input = 1?
Nein
Ja
Add a Book
Input: Title & Author Book
Output: 1. Plan to Read
Output: 2. Reading
Output: 3. Currently Read
Choose Option (1-3)
Input: Option (1-3)
Save Book Details in Book Collection
Input = 2?
Nein
Ja
Display Books by Shelf
Input = 3?
Ja
Back to Main Menu
Manage Books terminated


Move Books
Output: 1. Move from Plan to Read to Reading
Output: 2. Move from Reading to Currently Read
Output: 3. Back to Main Menu
Choose Option (1-3)
Input: Option (1-3)
Input = 1?
Nein
Ja
Input: Number Book
Move from Plan to Read to Reading
Input = 2?
Nein
Ja
Input: Number Book
Move from Reading to Currently Read
Input = 3?
Ja
Back to Main Menu
Move Books terminated

4. Use Case Diagramm



5. Code - Implementierung

library_organizer.py > ...

```python
my_profile_info = []
book_collection = []

def menu():
    print("\nYour Library Organizer")
    print("1. Create Profile")
    print("2. Manage Books")
    print("3. Rate Books")
    print("4. View Ratings")
    print("5. Discover Page")
    print("6. Move Books")
    print("7. Sort Books")
    print("8. Show Profile")
    print("9. Exit Library Organizer")

# Random Quote Generator

import random

def random_quote():
    file = open("quotes.txt")
    quotes = file.readlines()
    file.close()
    return random.choice(quotes)

# Profile

def create_profile():

    print("\nIt's time to create your Profile. Fill in the requests below and get right into it.")

    profile_fields = [
        ("first name", "Enter your first name: "),
        ("last name", "Enter your last name: "),
        ("bio", "Enter a short Bio: "),
    ]
```

```python

    for index, (field, prompt) in enumerate(profile_fields, start=1):
        user_input = input(f"{index}. {field.capitalize()}: ")
        my_profile_info.append(user_input)

    save_my_profil_info(my_profile_info)

    available_genres = ["Classics", "Fantasy", "Non-Fiction", "Romance", "History", "Thriller", "Philo
    print("\nAvailable Genres:")
    for index, genre in enumerate(available_genres, start=1):
        print(f"{index}. {genre}")

    favorite_genres = input("\nEnter the Numbers of your favorite Genres: ")

    favorite_genres = [int(index) for index in favorite_genres.split(",")]

    favorite_genres = ', '.join([available_genres[index - 1] for index in favorite_genres])
    my_profile_info.append(favorite_genres)
    save_my_profil_info(my_profile_info)

def save_my_profil_info(my_profile_info):          # Inhalt des Arrays my_profile_info wird im File my
    file = open("my_profile_info.txt", "w")
    for item in my_profile_info:
        file.write(item + "\n")
    file.close()
```

```
63  def load_profil_info():       # Profilinfo über Neustart hinweg speichern
64      my_profile_info = []
65      file = open("my_profile_info.txt", "r")
66      my_profile_info = file.readlines()
67      file.close()
68      return my_profile_info
69
70  # Manage Books
71
72  def manage_books():
73      while True:
74          print("\nManage Books Options:")
75          print("1. Add a Book")
76          print("2. View Books by Shelf")
77          print("3. Back to Main Menu")
78
79          choice = input("Select your option (1-3): ")
80          print() # Leerzeile
81
82          if choice == "1":
83              add_book()
84          elif choice == "2":
85              view_books_by_shelf()
86          elif choice == "3":
87              break
88          else:
89              print("Invalid input. Please choose an option from 1 to 3.")
90
91  def add_book():
92      title = input("Enter the title of the book: ")
93      author_first_name = input("Enter the first name of the author: ")
94      author_last_name = input("Enter the last name of the author: ")
95
```

```
96      print("\nSelect the shelf:")
97      print("1. Plan to Read")
98      print("2. Reading")
99      print("3. Currently Read")
100
101     shelf_choice = input("Enter the number of the shelf (1-3): ")
102     shelves = ["Plan to Read", "Reading", "Currently Read"]
103
104     shelf_choice = int(shelf_choice)
105     if 1 <= shelf_choice <= 3:
106         shelf = shelves[shelf_choice - 1]
107         with open("book_collection.txt", "a") as file:
108             file.write(f"{title} by {author_first_name} {author_last_name} - Shelf: {shelf}\n")
109             print("Book successfully added.")
110     else:
111         print("Invalid shelf number. Please enter a number between 1 and 3.")
112
113 def view_books_by_shelf():
114     with open("book_collection.txt", "r") as file:
115         books = file.readlines()
116         if not books:
117             print("No books available.")
118         else:
119             print("Book Collection:")
120             for book in books:
121                 print(book.strip())
122
```

```python
# Rate Books

def rate_books():
    book_title = input("\nEnter the title of the book: ")
    author = input("Enter the author of the book: ")
    rating = input("Enter your rating for the book (1-5): ")

    try:
        rating = int(rating)
        if rating < 1 or rating > 5:
            print("Invalid rating. Please enter a number between 1 and 5.")
            return
    except ValueError:
        print("Invalid input. Please enter a valid number.")
        return

    with open("book_ratings.txt", "a") as file:
        file.write(f"{book_title} by {author} - Rating: {rating}\n")

    print("Rating successfully saved.\n")

# View Ratings

def view_ratings():
    with open("book_ratings.txt", "r") as file:
        ratings = file.readlines()
        if not ratings:
            print("\nNo ratings available.\n")
        else:
            print("\nBook Ratings:")
            for rating in ratings:
                print(rating.strip())

```

```python
# Discover Page

import random

def discover_page():
    print("\nDiscover Page:\n")

    recommended_book = get_random_book()
    if recommended_book:
        print(f"Recommended Book: {recommended_book}")

        while True:
            response = input("Do you want another recommendation? (yes/no): ")
            print() # Leerzeile
            if response.lower() == "yes":
                recommended_book = get_random_book()
                if recommended_book:
                    print(f"Recommended Book: {recommended_book}")
                else:
                    print("No more recommendations available.")
                    break
            elif response.lower() == "no":
                print("Discover Page closed.\n")
                break
            else:
                print("Invalid response. Please enter 'yes' or 'no'.")

```

```python
def get_random_book():
    file = open("recommended_books.txt")
    books = file.readlines()
    file.close()
    return random.choice(books)

# Move Books

def move_book():
    print("\nMove Book Options:")
    print("1. Move from Plan to Read to Reading")
    print("2. Move from Reading to Currently Read")
    print("3. Back to Main Menu")

    choice = input("\nSelect your option (1-3): ")

    if choice == "1":
        move_book_between_shelves("Plan to Read", "Reading")
    elif choice == "2":
        move_book_between_shelves("Reading", "Currently Read")
    elif choice == "3":
        return
    else:
        print("Invalid input. Please choose an option from 1 to 3.")

def move_book_between_shelves(source_shelf, target_shelf):
    with open("book_collection.txt", "r") as file:
        books = [book.strip() for book in file.readlines()]

    if not books:
        print("No books available.")
        return

```

```python
    source_books = [book for book in books if f"Shelf: {source_shelf}" in book] # Filtern der Büche

    if not source_books:
        print(f"\nNo books in the {source_shelf} shelf.\n")
        return

    print(f"\nSelect the book to move from {source_shelf}:")
    for index, book in enumerate(source_books, start=1):
        print(f"{index}. {book}")

    book_index = input("\nEnter the number of the book to move: ")

    book_index = int(book_index)
    if 1 <= book_index <= len(source_books):
        selected_book = source_books[book_index - 1]

        updated_book = selected_book.replace(f"Shelf: {source_shelf}", f"Shelf: {target_shelf}")
        books[books.index(selected_book)] = updated_book

        with open("book_collection.txt", "w") as file:
            for book in books:
                file.write(f"{book}\n")

        print("\nBook successfully moved.")
    else:
        print(f"\nInvalid book number. Please enter a number between 1 and {len(source_books)}.")

```

```python
# Sort Books

def sort_and_display_books(sort_key):
    with open("book_collection.txt", "r") as file:
        books = [book.strip() for book in file.readlines()]

        if not books:
            print("No books available.")
            return

        if sort_key == "title":
            sorted_books = sorted(books, key=lambda book: book.split(" by ")[0] if " by " in book else "
        else:
            print("Invalid sort key. Please choose 'title'.")
            return

        print("Sorted Book Collection:")
        for book in sorted_books:
            print(book)

def sort_books():
    print("\nSort Books:")
    print("1. Sort by Title")
    print("2. Back to Manage Books")

    choice = input("Select your option (1-2): ")
    print() #Leerzeile
```

```python

    if choice == "1":
        sort_and_display_books("title")
    elif choice == "2":
        return
    else:
        print("Invalid input. Please choose an option from 1 to 2.")

def load_profil_info():
    my_profile_info = []
    try:
        with open("my_profile_info.txt", "r") as file:
            my_profile_info = file.readlines()
        if my_profile_info:
            print("\nYour Profile Information:")
            fields = ["First Name", "Last Name", "Bio", "Favorite Genres"]
            for field, value in zip(fields, my_profile_info):   # fields und my_profile_info paarweise
                print(f"{field}: {value.strip()}")
    except FileNotFoundError:
        print("No profile information available.")

    return my_profile_info

```

```python
def main():

    existing_profile = load_profil_info()

    print("\nQuote of the Day: ")     # Random Quote direkt am Beginn zeigen
    print(random_quote())

    while True:
        menu()
        choice = input("Select your choice (1-9). ")

        if choice == "1":
            if not existing_profile:
                create_profile()
                existing_profile = True
            else:
                print("\nProfile already exists. Choose another option.")
        elif choice == "2":
            manage_books()
        elif choice == "3":
            rate_books()
        elif choice == "4":
            view_ratings()
        elif choice == "5":
            discover_page()
        elif choice == "6":
            move_book()
        elif choice == "7":
            sort_books()
        elif choice =="8":
            load_profil_info()
        elif choice == "9":
            print("\nProgram terminated.")
            break
```

```python
        elif choice == "9":
            print("\nProgram terminated.")
            break
        else:
            print("\nInvalid input. Please choose an option from 1 to 9")

main()
```

6. Testfälle

Testfall 1
Input
choice = 1
first_name = Katrin
last_name = Szikora
bio = for me to keep track of my books
favorite_genres = 1, 3, 7, 8

```
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 1

It's time to create your Profile. Fill in the requests below and get right into it.
1. First name: Katrin
2. Last name: Szikora
3. Bio: for me to keep track of my books

Available Genres:
1. Classics
2. Fantasy
3. Non-Fiction
4. Romance
5. History
6. Thriller
7. Philosophy
8. Psychology

Enter the Numbers of your favorite Genres: 1, 3, 7, 8

Your Library Organizer
```

Testfall 2
Input
choice = 2

```
Your Library Organizer
1. Create Profile
2. Manage Books
3. Rate Books
4. View Ratings
5. Discover Page
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 2

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3):
```

Testfall 3
Input
choice = 2
choice = 1
title = The Secret History
author_first_name = Donna
author_last_name = Tartt
shelf_choice = 1

```
9. Exit Library Organizer
Select your choice (1-9). 2

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3): 1

Enter the title of the book: The Secret History
Enter the first name of the author: Donna
Enter the last name of the author: Tartt

Select the shelf:
1. Plan to Read
2. Reading
3. Currently Read
Enter the number of the shelf (1-3): 1
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3):
```

Testfall 4
Input
choice = 1
title = Berserk
author_first_name = Kentaro
author_last_name = Miura
shelf_choice = 2

```
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3): 1

Enter the title of the book: Berserk
Enter the first name of the author: Kentaro
Enter the last name of the author: Miura

Select the shelf:
1. Plan to Read
2. Reading
3. Currently Read
Enter the number of the shelf (1-3): 2
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3):
```

Testfall 5
Input
choice = 1
title = No Longer Human
author_first_name = Osamu
author_last_name = Dazai
shelf_choice = 3

```
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3): 1

Enter the title of the book: No Longer Human
Enter the first name of the author: Osamu
Enter the last name of the author: Dazai

Select the shelf:
1. Plan to Read
2. Reading
3. Currently Read
Enter the number of the shelf (1-3): 3
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
```

Testfall 6
Input
choice = 2

```
Book successfully added.

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
Select your option (1-3): 2

Book Collection:
The Secret History by Donna Tartt - Shelf: Plan to Read
Berserk by Kentaro Miura - Shelf: Reading
No Longer Human by Osamu Dazai - Shelf: Currently Read

Manage Books Options:
1. Add a Book
2. View Books by Shelf
3. Back to Main Menu
```

Testfall 7
Input
choice = 3
book_title = Narziss und Goldmund
author = Hermann Hesse
rating = 4

```
4. View Ratings
5. Discover Page
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 3

Enter the title of the book: Narziss und Goldmund
Enter the author of the book: Hermann Hesse
Enter your rating for the book (1-5): 4
Rating successfully saved.


Your Library Organizer
1. Create Profile
2. Manage Books
3. Rate Books
```

Testfall 8
Input
choice = 4

```
4. View Ratings
5. Discover Page
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 4

Book Ratings:
Narziss und Goldmund by Hermann Hesse - Rating: 4
Uzumaki by Junji Ito - Rating: 5
1984 by George Orwell - Rating: 4

Your Library Organizer
1. Create Profile
```

Testfall 9
Input
choice = 3
book_title = Die Verwandlung
author = Franz Kafka
rating = 6

```
  7. Sort Books
  8. Show Profile
  9. Exit Library Organizer
  Select your choice (1-9). 3

  Enter the title of the book: Die Verwandlung
  Enter the author of the book: Franz Kafka
  Enter your rating for the book (1-5): 6
  Invalid rating. Please enter a number between 1 and 5.

  Your Library Organizer
  1. Create Profile
  2. Manage Books
  3. Rate Books
  4. View Ratings
  5. Discover Page
```

Testfall 10
Input
choice = 5
response = yes
response = yes
response = no

```
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 5

Discover Page:

Recommended Book: "The Great Gatsby" by F. Scott Fitzgerald (Classics) - A tale of excess, love, and the American Dream set against the backdrop of
.

Do you want another recommendation? (yes/no): yes

Recommended Book: "The Count of Monte Cristo" by Alexandre Dumas (Classics) - An epic tale of revenge, betrayal, and redemption set in early 19th-ce

Do you want another recommendation? (yes/no): yes

Recommended Book: "The Shining" by Stephen King (Horror) - King's iconic tale of supernatural horror and psychological suspense in an isolated hotel

Do you want another recommendation? (yes/no): no

Discover Page closed.


Your Library Organizer
```

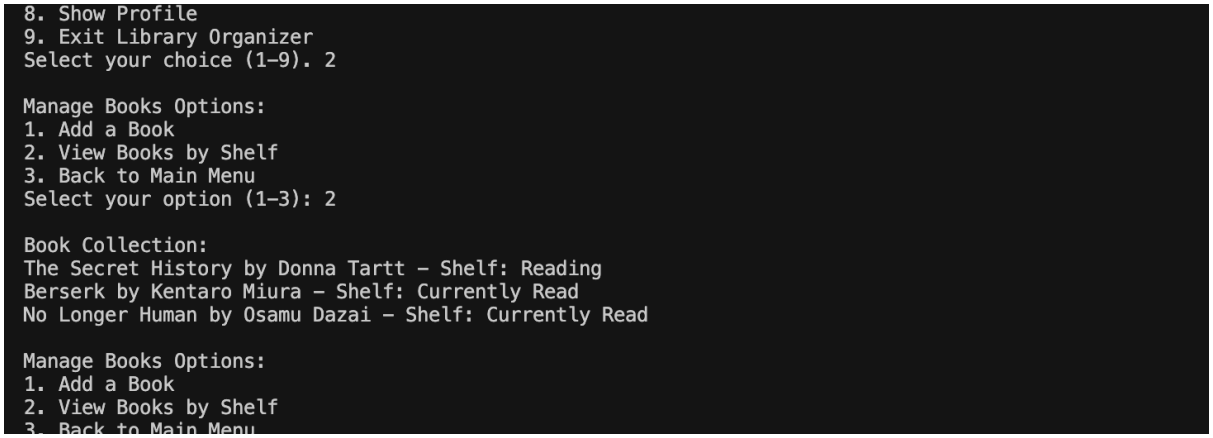
Testfall 11
Input
choice = 6
choice = 1
book_index = 1

```
5. Discover Page
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 6

Move Book Options:
1. Move from Plan to Read to Reading
2. Move from Reading to Currently Read
3. Back to Main Menu

Select your option (1-3): 1

Select the book to move from Plan to Read:
1. The Secret History by Donna Tartt - Shelf: Plan to Read

Enter the number of the book to move: 1

Book successfully moved.


Your Library Organizer
1. Create Profile
```

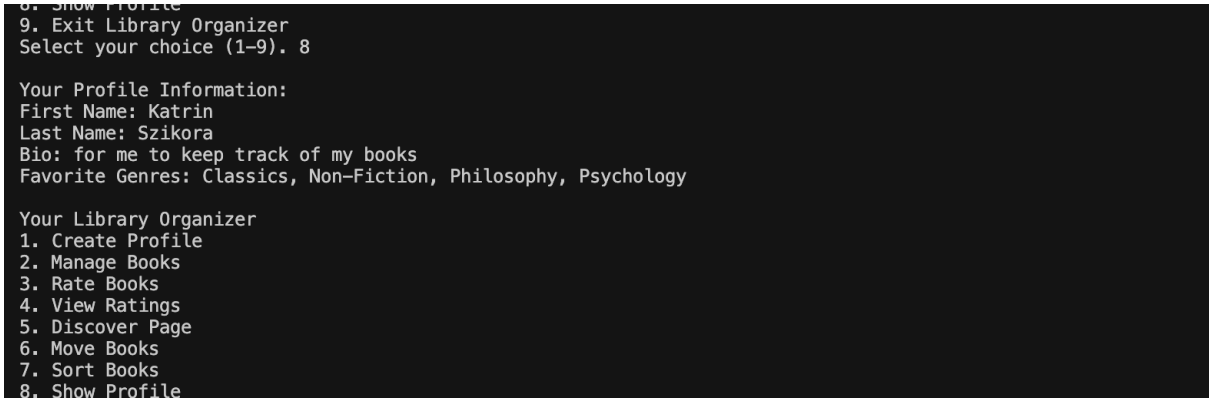
Testfall 12
Input
choice = 6
choice = 2
book_index = 2

```
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 6

Move Book Options:
1. Move from Plan to Read to Reading
2. Move from Reading to Currently Read
3. Back to Main Menu

Select your option (1-3): 2

Select the book to move from Reading:
1. The Secret History by Donna Tartt - Shelf: Reading
2. Berserk by Kentaro Miura - Shelf: Reading

Enter the number of the book to move: 2

Book successfully moved.


Your Library Organizer
```

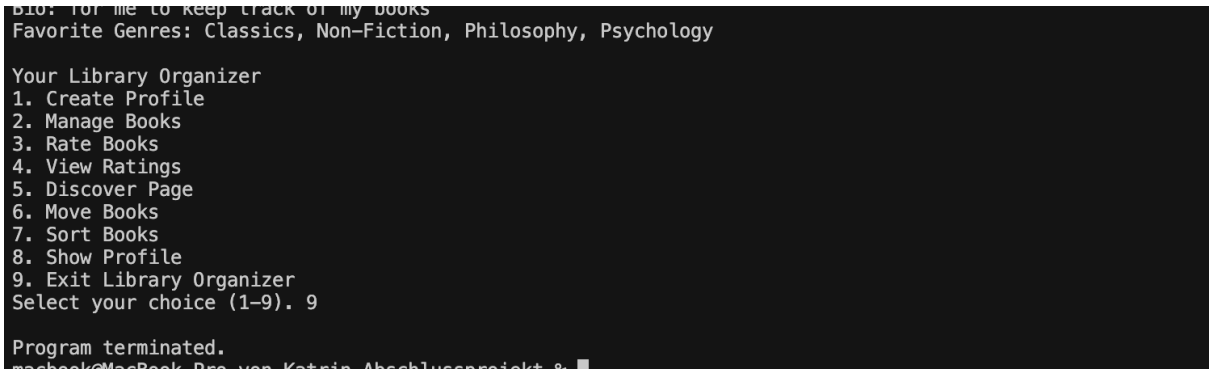
Testfall 13
Input
choice = 2
choice = 2



Testfall 14
Input
choice = 8



Testfall 15
Input
choice = 9



Testfall 16
Input
choice = 7
choice = 1

```
9. Exit Library Organizer
Select your choice (1-9). 7

Sort Books:
1. Sort by Title
2. Back to Manage Books
Select your option (1-2): 1

Sorted Book Collection:
Berserk by Kentaro Miura - Shelf: Currently Read
No Longer Human by Osamu Dazai - Shelf: Currently Read
The Secret History by Donna Tartt - Shelf: Reading

Your Library Organizer
1. Create Profile
2. Manage Books
3. Rate Books
4. View Ratings
```

Testfall 17
Input
choice = 7
choice = 3

```
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9). 7

Sort Books:
1. Sort by Title
2. Back to Manage Books
Select your option (1-2): 3

Invalid input. Please choose an option from 1 to 2.

Your Library Organizer
1. Create Profile
2. Manage Books
3. Rate Books
4. View Ratings
```

Testfall 18
Nach Neustart Programm

```
/usr/local/bin/python3 /Users/macbook/Documents/FH/GIN1IL/Fellner/Abschlussprojekt/library_organizer.py
macbook@MacBook-Pro-von-Katrin Abschlussprojekt % /usr/local/bin/python3 /Users/macbook/Documents/FH/GIN1IL/Fellner/Abschlu

Your Profile Information:
First Name: Katrin
Last Name: Szikora
Bio: for me to keep track of my books
Favorite Genres: Classics, Non-Fiction, Philosophy, Psychology

Quote of the Day:
"The only way to do great work is to love what you do." - Steve Jobs


Your Library Organizer
1. Create Profile
2. Manage Books
3. Rate Books
4. View Ratings
5. Discover Page
6. Move Books
7. Sort Books
8. Show Profile
9. Exit Library Organizer
Select your choice (1-9).
```