Рабочая Д. ИУ5-31Б

```python
#pK 1
class Book:
    def __init__(self, book_id, title, author, genre, price, library_id):
        self.book_id = book_id
        self.title = title
        self.author = author
        self.genre = genre
        self.price = price
        self.library_id = library_id

class Library:
    def __init__(self, library_id, name):
        self.library_id = library_id
        self.name = name

class BooksLibrary:
    def __init__(self, book_id, library_id):
        self.book_id = book_id
        self.library_id = library_id

def list_books_by_library(books, libraries):
    books_by_library = {}

    for book in books:
        if book.library_id not in books_by_library:
            books_by_library[book.library_id] = []
        books_by_library[book.library_id].append(book)

    for library in libraries:
        if library.library_id in books_by_library:
            books_in_library = books_by_library[library.library_id]
            books_in_library.sort(key=lambda b: b.title)
            print(f"Библиотека: {library.name}")
            for book in books_in_library:
                print(f" - {book.title} (Автор: {book.author}, Жанр:
{book.genre})")

def list_libraries_by_total_book_price(books, libraries):
    library_prices = {}

    for book in books:
        if book.library_id not in library_prices:
            library_prices[book.library_id] = 0
        library_prices[book.library_id] += book.price

    sorted_libraries = sorted(library_prices.items(), key=lambda x: x[1],
reverse=True)

    for library_id, total_price in sorted_libraries:
```

```python
        library = next(lib for lib in libraries if lib.library_id == library_id)
        print(f"Библиотека: {library.name}, Суммарная цена книг: {total_price}")


def list_libraries_and_books_with_keyword(books, libraries, books_libraries,
keyword):
    relevant_libraries = [lib for lib in libraries if keyword.lower() in
lib.name.lower()]

    for library in relevant_libraries:
        print(f"Библиотека: {library.name}")
        books_in_library = [book for book in books if any(bl.book_id ==
book.book_id for bl in books_libraries if bl.library_id == library.library_id)]

        for book in books_in_library:
            print(f" - {book.title} (Автор: {book.author}, Жанр: {book.genre},
Цена: {book.price})")

# задание 1
print("\nЗадание 1")
books = [
    Book(1, "Книга 1", "Автор 1", "Фантастика", 100, 1),
    Book(2, "Книга 2", "Автор 2", "Роман",150, 1),
    Book(3, "Книга 3", "Автор 3", "Фэнтези",200, 2),
]
libraries = [
    Library(1, "Библиотека 1"),
    Library(2, "Библиотека 2"),
]
list_books_by_library(books, libraries)

#задание 2
print("\nЗадание 2")
list_libraries_by_total_book_price(books, libraries)

#задание 3
print("\nЗадание 3")
books_libraries=[
    BooksLibrary(1,1),
    BooksLibrary(1,2),
    BooksLibrary(2,2),
    BooksLibrary(3,1),
    BooksLibrary(3,2)
]
keyword = "Библиотека"
list_libraries_and_books_with_keyword(books, libraries, books_libraries, keyword)
```

```
Задание 1
Библиотека: Библиотека 1
 - Книга 1 (Автор: Автор 1, Жанр: Фантастика)
 - Книга 2 (Автор: Автор 2, Жанр: Роман)
Библиотека: Библиотека 2
 - Книга 3 (Автор: Автор 3, Жанр: Фэнтези)

Задание 2
Библиотека: Библиотека 1, Суммарная цена книг: 250
Библиотека: Библиотека 2, Суммарная цена книг: 200

Задание 3
Библиотека: Библиотека 1
 - Книга 1 (Автор: Автор 1, Жанр: Фантастика, Цена: 100)
 - Книга 3 (Автор: Автор 3, Жанр: Фэнтези, Цена: 200)
Библиотека: Библиотека 2
 - Книга 1 (Автор: Автор 1, Жанр: Фантастика, Цена: 100)
 - Книга 2 (Автор: Автор 2, Жанр: Роман, Цена: 150)
 - Книга 3 (Автор: Автор 3, Жанр: Фэнтези, Цена: 200)
```