РК1

Самбиева Анжела

class Library:

*def* \_\_init\_\_(self, library\_id, name):

self.library\_id = library\_id

self.name = name

self.books = [] *# Список книг в библиотеке*

class ProgrammingLanguage:

*def* \_\_init\_\_(self, language\_id, name, book\_count):

self.language\_id = language\_id

self.name = name

self.book\_count = book\_count

self.libraries = [] *# Список библиотек, где используется язык*

class Book:

*def* \_\_init\_\_(self, book\_id, library\_id, language\_id):

self.book\_id = book\_id

self.library\_id = library\_id

self.language\_id = language\_id

*# Библиотеки*

library1 = Library(1, "Центральная библиотека")

library2 = Library(2, "Городская библиотека")

library3 = Library(3, "Научная библиотека")

*# Языки программирования*

python = ProgrammingLanguage(1, "Python", 10)

java = ProgrammingLanguage(2, "Java", 15)

*# Книги*

book1 = Book(1, 1, 1)

book2 = Book(2, 1, 2)

book3 = Book(3, 2, 1)

book4 = Book(4, 3, 2)

library1.books.extend([book1, book2])

library2.books.append(book3)

library3.books.append(book4)

python.libraries.extend([library1, library2])

java.libraries.append(library3)

*# Списки для обработки запросов*

libraries = [library1, library2, library3]

programming\_languages = [python, java]

*# Запрос 1*

sorted\_libraries = sorted(libraries, key=*lambda* lib: lib.name)

for lib in sorted\_libraries:

print(f"Библиотека: {lib.name}")

for book in lib.books:

lang = next((pl for pl in programming\_languages if pl.language\_id == book.language\_id), None)

print(f" Язык: {lang.name if lang else 'Неизвестный язык'}")

*# Запрос 2*

library\_book\_count = {}

for lib in libraries:

total\_books = len(lib.books)

library\_book\_count[lib.name] = total\_books

sorted\_libraries\_by\_books = sorted(library\_book\_count.items(), key=*lambda* x: x[1], reverse=True)

for lib, count in sorted\_libraries\_by\_books:

print(f"Библиотека: {lib}, Суммарное количество книг: {count}")

*# Запрос 3*

for lib in libraries:

if "библиотека" in lib.name.lower():

print(f"Библиотека: {lib.name}")

for book in lib.books:

lang = next((pl for pl in programming\_languages if pl.language\_id == book.language\_id), None)

Результаты выполнения:

print(f" Язык: {lang.name if lang else 'Неизвестный язык'}")

