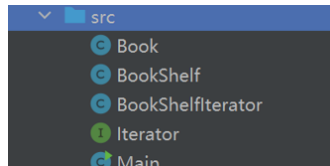


软件体系结构 作业09

22920212204392 黄勛

1 针对Iterator的例子，将存储Book用的数组换成其他Collection并运行。

换成了 ArrayList存储



```
public class Book {
    String name;

    public Book(String str) {
        name = str;
    }
}

public interface Iterator {
    public abstract boolean hasNext();
    public abstract Book next();
}

public class BookShelfIterator implements Iterator{

    BookShelf bookShelf;
    int idx = 0;
    public BookShelfIterator (BookShelf b){
        bookShelf = b;
    }
    public boolean hasNext(){
        return idx < bookShelf.getLength();
    }

    public Book next(){
        return bookShelf.getBookAt(idx++);
    }
}

import java.util.ArrayList;

public class BookShelf {
    ArrayList<Book> book = new ArrayList<>();
```

```

    public void addBook(Book b){
        book.add(b);
    }

    public int getLength(){
        return book.size();
    }

    public Book getBookAt(int i){
        if(i >= book.size()) return null;
        return book.get(i);
    }

    public Iterator getIterator(){
        return new BookShelfIterator(this);
    }
}

public class Main {
    public static void main(String[] args) {
        BookShelf bookShelf = new BookShelf();
        bookShelf.addBook(new Book("The Witcher"));
        bookShelf.addBook(new Book("C++ Primer Plus"));
        bookShelf.addBook(new Book("Effective C++"));
        bookShelf.addBook(new Book("Effective Modern C++"));

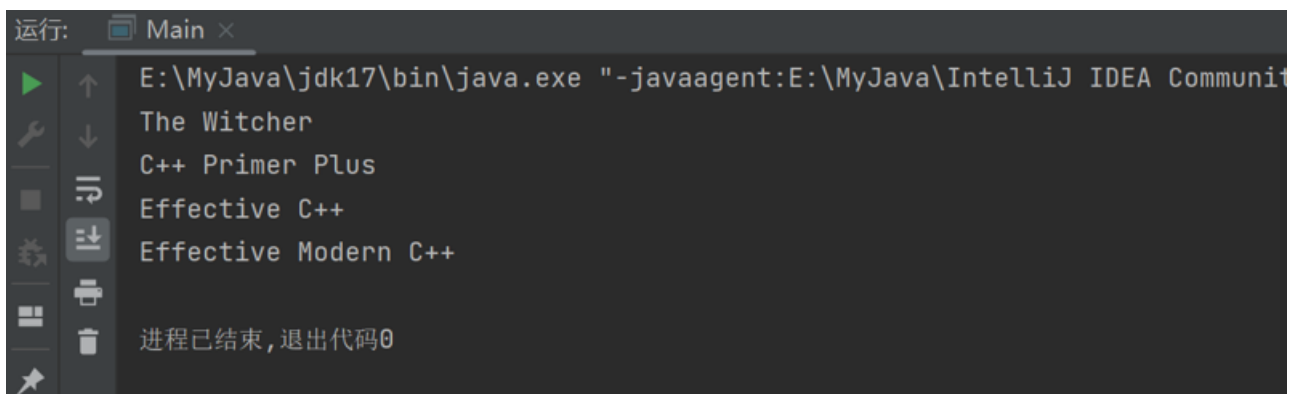
        Iterator itr = bookShelf.getIterator();

        while(itr.hasNext()){
            System.out.println(itr.next().name);
        }

    }
}

```

运行结果:



```

运行: Main x
E:\MyJava\jdk17\bin\java.exe "-javaagent:E:\MyJava\IntelliJ IDEA Community Edition\lib\idea_rt.jar:17.0.10;D:\MyJava\jdk-17.0.10\bin\java.exe"
The Witcher
C++ Primer Plus
Effective C++
Effective Modern C++
进程已结束,退出代码0

```

2 针对Iterator的例子，设计一个Specified的Iterator并运行。

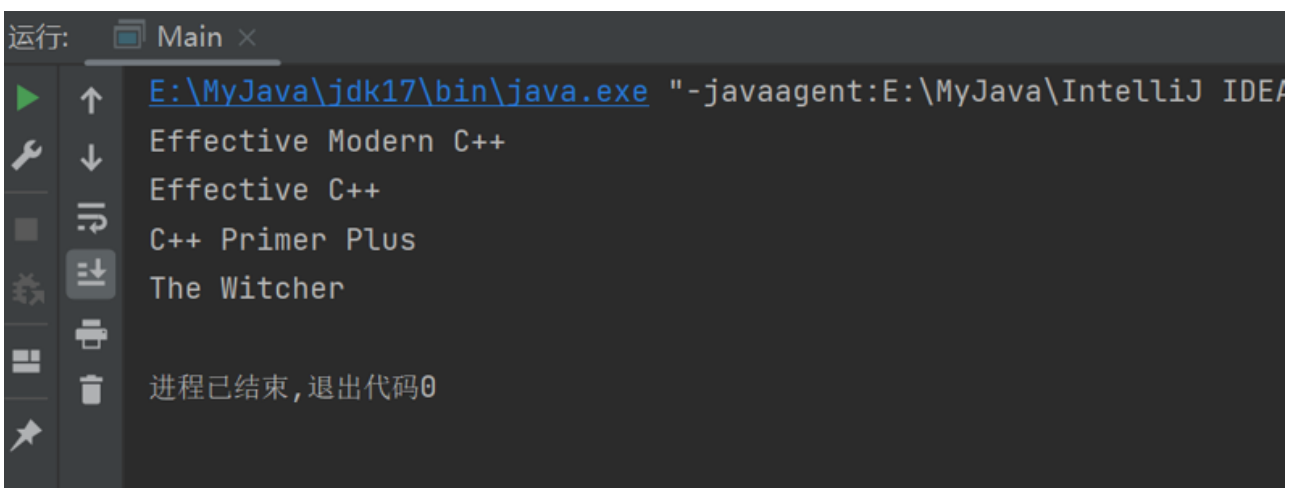
设计了一个倒序的 Iterator

```
public class BookShelfIterator implements Iterator{

    BookShelf bookShelf;
    int idx = 0;
    public BookShelfIterator (BookShelf b){
        bookShelf = b;
        idx = bookShelf.getLength();
    }
    public boolean hasNext(){
        return idx > 0;
    }

    public Book next(){
        return bookShelf.getBookAt(--idx);
    }
}
```

运行结果：



还有一种方法，或者通过Override实现的Iterator

```
import java.util.Iterator;

public class Main {
    public static void main(String[] args) {
        BookShelf bookShelf = new BookShelf();
        bookShelf.addBook(new Book("The Witcher"));
        bookShelf.addBook(new Book("C++ Primer Plus"));
        bookShelf.addBook(new Book("Effective C++"));
        bookShelf.addBook(new Book("Effective Modern C++"));
    }
}
```

```
//      Iterator itr = bookShelf.getIterator();
Iterator<Book> itr = new Iterator<Book>() {
    int idx = 0;
    @Override
    public boolean hasNext() {
        return idx < bookShelf.getLength();
    }

    @Override
    public Book next() {
        return bookShelf.getBookAt(idx++);
    }
};

while(itr.hasNext()){
    System.out.println(itr.next().name);
}

}
```

运行结果:



```
运行: Main x
E:\MyJava\jdk17\bin\java.exe "-javaagent:E:\MyJava\IntelliJ IDEA
The Witcher
C++ Primer Plus
Effective C++
Effective Modern C++
进程已结束,退出代码0
```