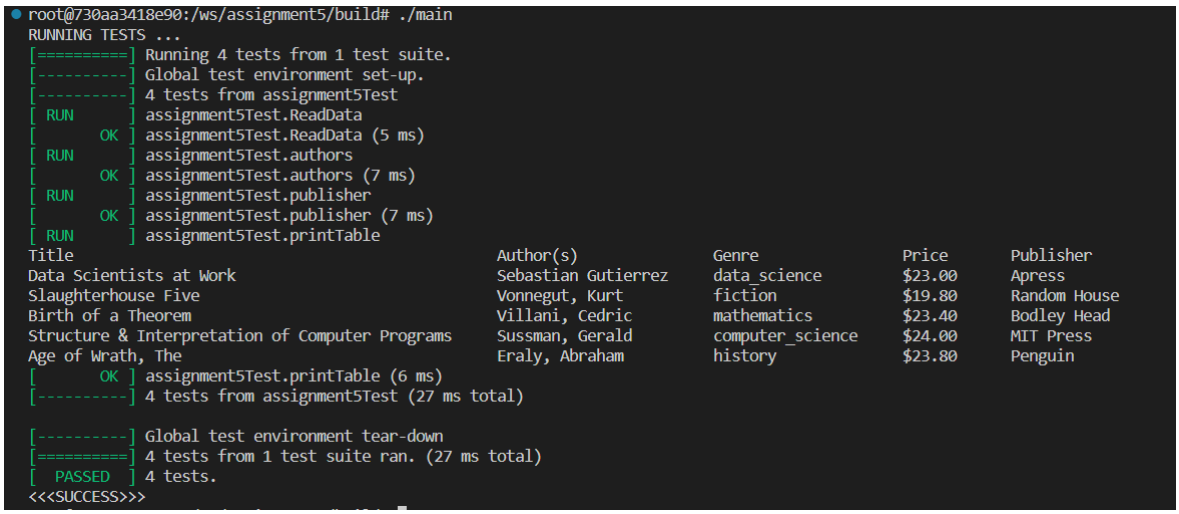
# 杨欣渝-2022141650160-assignment5

## 1 unit test




# 2 核心代码解释

## 2.1 生成makefile

```
#CMakeLists.txt节选
#链接到GoogleTest
target_link_libraries(main PRIVATE assignment5_lib GTest::gtest GTest::gmock)
include(GoogleTest)
add_test(GoogleTest main)
gtest_discover_tests(main)
```

## 2.2 assignment5.h

```
#ifndef ASSIGNMENT_H
#define ASSIGNMENT_H

#include<bits/stdc++.h>
#include"author.h"
#include"book.h"
#include"publication.h"
typedef std::vector<std::vector<std::string>> Dataframe;

Dataframe read_csv(std::string filename);//从.csv中读取
Book add_book(Book x);//加入总书单
Author* get_author(std::string _name);//判断作者是否已经出现过了，有就直接返回Author指针，没有则先创建再返回
std::shared_ptr<Publisher> get_pub(std::string _name);//判断出版社是否已经出现过了，有就直接返回指针，没有则先创建再返回
std::vector<Book> defineBooks(Dataframe* Table);
```

```
void sortBooksByPrice(std::vector<Book>* list_of_books );//用书记的价格排序，升序（注意排序的类对象的成员变量中不能有其他类的引用
void showTable(Dataframe* table,int start, int stop);
#endif
```

## 2.3 author.h

```
#ifndef AUTHOR_H
#define AUTHOR_H

#include<bits/stdc++.h>
class Book;
class Author{
    public:
        Author(std::string _name);//初始化
        void setListOfBooks(std::vector<Book*> all_books);//对作者的书单进行初始化
        bool operator ==(const Author& y);//这里重载==是用于判断是否出现过该作者
        void add_one_book(Book* x);//往这个作者的书单里加一本书
        std::string getAuthorName();//返回作者名字

    private:
        friend Author* get_author(std::string _name);//判断作者是否出现过的函数，需要访问
private

        std::string name;//作者名字
        std::vector<Book*> list_of_books;//作者的书单
};

#endif
```

## 2.4 book.h

```
#ifndef BOOK_H
#define BOOK_H

#include<bits/stdc++.h>
#include "author.h"
#include "publication.h"
typedef std::vector<std::vector<std::string>> Dataframe;
class Book{
    public:
        Book();
        Book(std::string _title,
             std::string _genre,
             double _price,
             Author* _author,
             std::shared_ptr<Publisher> _publisher);//书的初始化
        std::string getAuthorName();
        std::string getPublisherName();
        bool operator ==(Book& y);
```

```
        bool operator<(Book& y);//排序sort的重载<

    private:
        friend Book add_book(Book* x);
        friend void sortBooksByPrice(std::vector<Book> & list_of_books );

        std::string title;
        std::string genre;
        double price;

        Author* author;
        std::shared_ptr<Publisher> publisher;
};

#endif
```

## 2.5 publisher.h

```
#ifndef PUBLICATION_H
#define PUBLICATION_H

#include<bits/stdc++.h>
class Book;
class Publisher{
    public:
        Publisher(std::string _name);
        void setListOfBooks(std::vector<Book*> all_books);
        bool operator ==(const Publisher& y);
        void add_one_book(Book* x);
        std::string getPublisherName();

    private:
        friend std::shared_ptr<Publisher> get_pub(std::string _name);//判断出版社是否出现过的函数，需要访问private

        std::string name;
        std::vector<Book*> list_of_books;

};

#endif
```