

Assignment5

DDL:4.18

Introduction

Hi every one 👋.\

In this homework you will be define some classes in C++ and help TA to sort and categorized his bookshelf.\

He has a csv file that it shows details of his books.\

You should read a csv file and store it in vector of string vector.\

Note: Suppose this type definition in this homework.

```
typedef std::vector<std::vector<std::string>> Dataframe;
```

then define below function.

```
Dataframe table = read_csv(std::string filename);
```

At first you need to define some classes:

- Book
- Author
- Publisher

Author Class

This class represents each Author. It has the following method and member variables.

```
class Author{
public:
    Author(std::string _name);
    void setListOfBooks(std::vector<Book&> all_books);
private:
    std::string name;
    std::vector<Book&> list_of_books;
};
```

Publisher Class

This class represents each Publisher. It has the following method and member variables.

```

class Publisher{
public:
    Publisher(std::string _name);
    void setListOfBooks(std::vector<Book> all_books);

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

};

```

Book Class

This class represents each Book. It has the following method and member variables.

```

class Book{
public:
    Book(std::string _title,
        std::string _genre,
        double _price,
        Author& author,
        std::shared_ptr<Publisher> publisher);

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

    Author& author;
    std::shared_ptr<Publisher> publisher;

};

```

Making Objects

Ok after you define classes you need to create objects. Thus, at first create and define all books from the table which you read by `read_csv` function. then set author's list of books and publisher's.

```

std::vector<Book> defineBooks(Dataframe* Table);

```

after all definitions you should write a function to sort the books by their price(ascending).

```

void sortBooksByPrice(std::vector<Book> & list_of_books );

```

to show table declare a function like below:

```

void showTable(Dataframe* table, int start, int stop);

```

Title	Author(s)	Genre	Price	Publisher
Fundamentals of Wavelets	Goswami, Jaideva	signal_processing	\$22.80	Wiley
Data Smart	Foreman, John	data_science	\$23.50	Wiley
God Created the Integers	Hawking, Stephen	mathematics	\$19.70	Penguin

DO NOT change main.cpp.

You should create Makefile.

In unittest there are some methods that you need to add them in the classes.