Министерство образования и науки РФ

НОВОСИБИРСКИЙ ГОСУДАРСТВЕННЫЙ ТЕХНИЧЕСКИЙ УНИВЕРСИТЕТ

Кафедра теоретической и прикладной информатики

Расчетно-графическое задание

по дисциплине «Объектно-ориентированное программирование»

**Факультет:**                     ПМИ

**Группа:**                           ПМ-92

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Новосибирск

2020

**1. Описание предметной области**

Реализован книжный магазин. В книжном магазине есть товар, будем рассматривать ситуацию, когда в книжном магазине продаются только книги. В любом случае, можно без проблем добавить другой класс, в котором будет реализован другой товар.

Основные классы, реализующие книжный магазин:

1) store - класс магазин, имеет атрибуты список книг (book\_list), адрес (address), количество работников (amount\_of\_employee), количество книг (amount\_books) и соответствующие им get и set операции.

2) book - товар книжного магазина, имеет атрибуты имя (name), цена (price), рейтинг (rating).

3) human - человек, самый высокий уровень абстракции, имеет атрибут имя (name), операции установить и получить имя.

3.1) client - клиент имеет операцию купить (buy), спросить совет у консультанта (ask\_advice), а также оставить отзыв о книге (review).

3.2) supplier - имеет операцию привезти товар в магазин (deliver).

3.3) employee - работник магазина, имеет атрибут зарплаты (salary).

3.3.1) manager - имеет операцию проверить количество товара (провести ревизию), заказать товар (ask\_supplier), проверить количество денег (get\_store\_money), выдать зарплату (pay\_salary), выплатить налоги (pay\_taxes) и атрибут количество денег (shop\_money).

3.3.2) administrator - класс администратора, имеет операции управлять (management), создать бизнес-план (write\_plan).

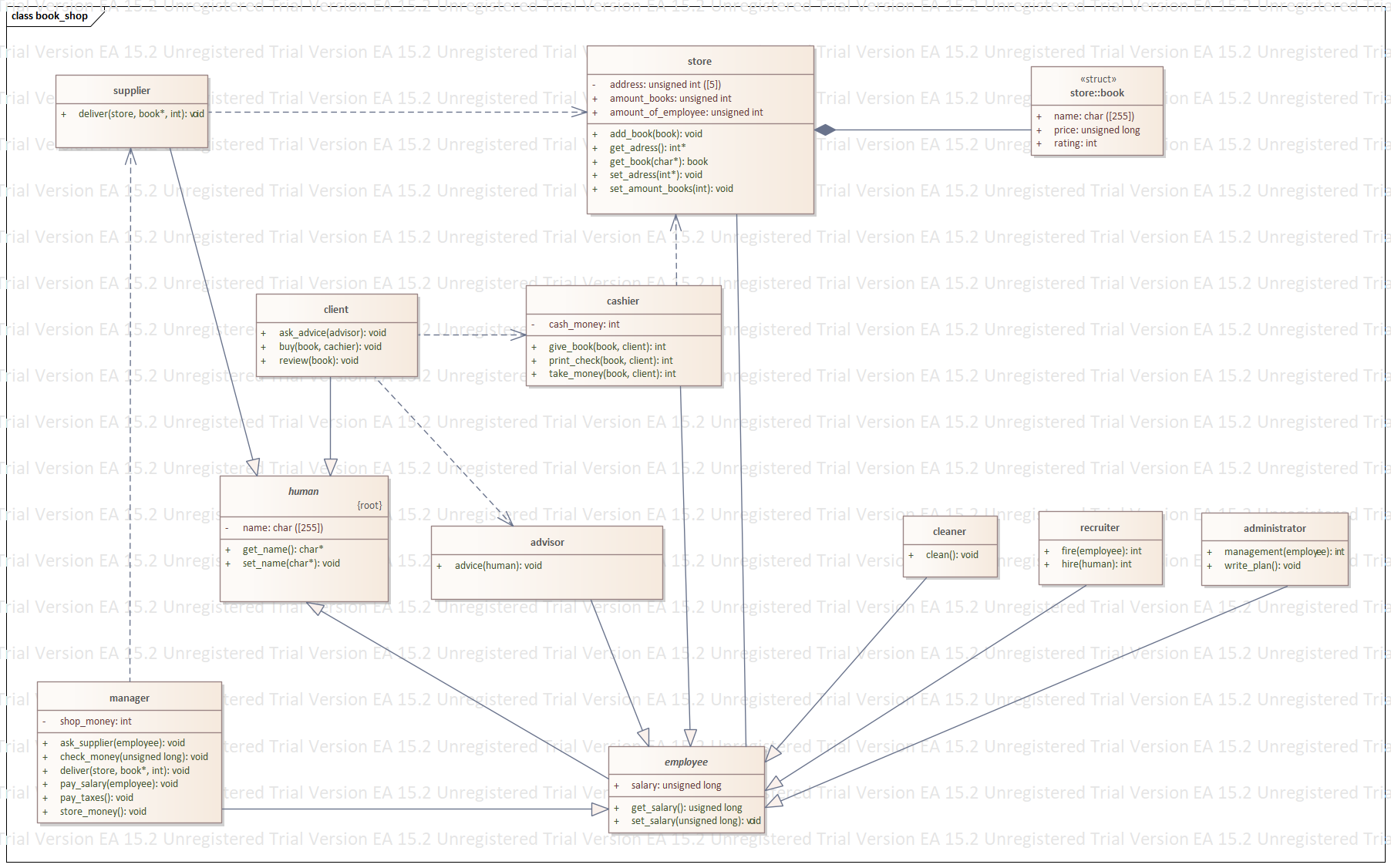
3.3.3) advisor - консультант имеет операцию проконсультировать (advice).

3.3.4) cashier - имеет операции выдать книгу (give\_book), напечатать чек (print\_check), взять деньги (take\_money), имеет атрибут количество денег в кассе (cash\_money).

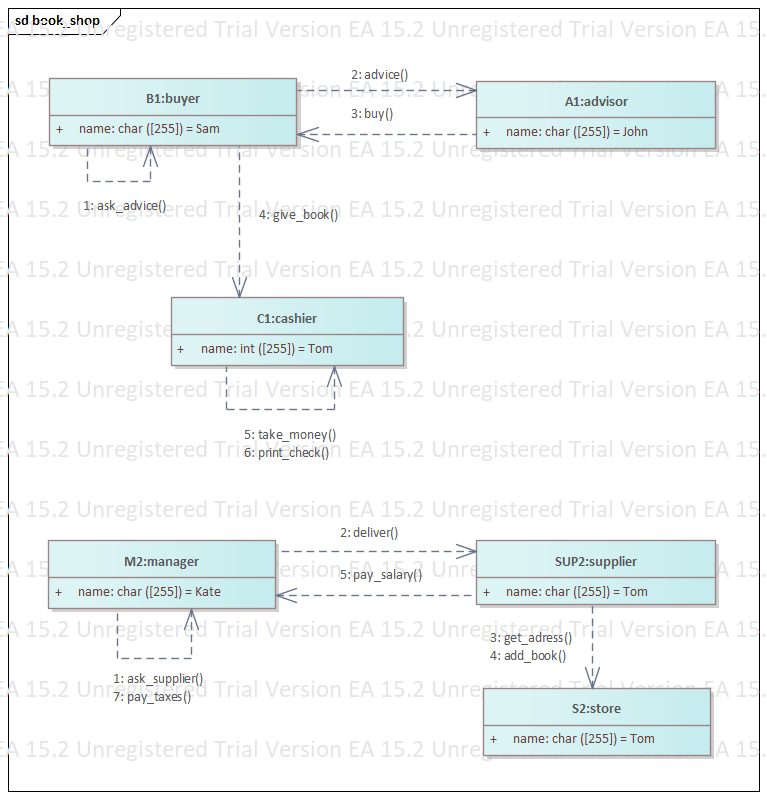
3.3.5) cleaner - имеет операцию убирать (clean).

3.3.6) recruiter - работник из отдела кадров, имеет возможность уволить работника (fire) и нанять человека на работу (hire).

**2. Диаграмма классов**



**3. Диаграмма коммуникаций**



**4. Прототип кода**

*///////////////////////////////////////////////////////////*

*// supplier.h*

*// Implementation of the Class supplier*

*// Created on: 30-Dec-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_164800A8\_E500\_4898\_B194\_99ECCDB4FED2\_\_INCLUDED\_)

#define EA\_164800A8\_E500\_4898\_B194\_99ECCDB4FED2\_\_INCLUDED\_

#include "store.h"

#include "human.h"

class supplier : public human

{

public:

supplier();

virtual ~supplier();

void deliver(store store, book\* product, int amount);

};

#endif *// !defined(EA\_164800A8\_E500\_4898\_B194\_99ECCDB4FED2\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// store.h*

*// Implementation of the Class store*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_71D1D215\_082D\_4e9a\_9CF2\_CE9E8A0B571E\_\_INCLUDED\_)

#define EA\_71D1D215\_082D\_4e9a\_9CF2\_CE9E8A0B571E\_\_INCLUDED\_

class store

{

public:

store();

virtual ~store();

unsigned int amount\_books;

unsigned int amount\_of\_employee;

store::book \*m\_book;

void add\_book(book b);

int\* get\_adress();

book get\_book(char\* name);

void set\_adress(int\* adress);

void set\_amount\_books(int size);

private:

struct book

{

public:

char name[255];

unsigned long price;

int rating;

};

unsigned int address[5];

};

#endif *// !defined(EA\_BB2AE888\_AAFB\_42c8\_B882\_A8907FE8AC0E\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// recruiter.h*

*// Implementation of the Class recruiter*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_D80DECC6\_F2C3\_433a\_9372\_41E3392D4710\_\_INCLUDED\_)

#define EA\_D80DECC6\_F2C3\_433a\_9372\_41E3392D4710\_\_INCLUDED\_

#include "employee.h"

#include "human.h"

class recruiter : public employee

{

public:

recruiter();

virtual ~recruiter();

int fire(employee worker);

int hire(human human);

};

#endif *// !defined(EA\_D80DECC6\_F2C3\_433a\_9372\_41E3392D4710\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// manager.h*

*// Implementation of the Class manager*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_BFC1DCFF\_9001\_469c\_928D\_64AC3E87F390\_\_INCLUDED\_)

#define EA\_BFC1DCFF\_9001\_469c\_928D\_64AC3E87F390\_\_INCLUDED\_

#include "employee.h"

#include "store.h"

#include "supplier.h"

class manager : public employee

{

public:

manager();

virtual ~manager();

void ask\_supplier(employee worker);

void check\_money(unsigned long money);

void deliver(store store, book\* product, int amount);

void pay\_salary(employee pay);

void pay\_taxes();

void store\_money();

private:

int shop\_money;

};

#endif *// !defined(EA\_BFC1DCFF\_9001\_469c\_928D\_64AC3E87F390\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// human.h*

*// Implementation of the Class human*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_E515F8D0\_9F4C\_45d2\_B846\_CECA1E3B0586\_\_INCLUDED\_)

#define EA\_E515F8D0\_9F4C\_45d2\_B846\_CECA1E3B0586\_\_INCLUDED\_

class human

{

public:

human();

virtual ~human();

char\* get\_name();

void set\_name(char\* name);

private:

char name[255];

};

#endif *// !defined(EA\_E515F8D0\_9F4C\_45d2\_B846\_CECA1E3B0586\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// employee.h*

*// Implementation of the Class employee*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_5CD145F0\_D498\_4da5\_AB45\_B0069DC099B9\_\_INCLUDED\_)

#define EA\_5CD145F0\_D498\_4da5\_AB45\_B0069DC099B9\_\_INCLUDED\_

#include "human.h"

#include "store.h"

class employee : public human

{

public:

employee();

virtual ~employee();

unsigned long salary;

store \*m\_store;

usigned long get\_salary();

void set\_salary(unsigned long sal);

};

#endif *// !defined(EA\_5CD145F0\_D498\_4da5\_AB45\_B0069DC099B9\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// client.h*

*// Implementation of the Class client*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_BB2E4376\_ED55\_4ec9\_9A38\_B56C2E4DC13C\_\_INCLUDED\_)

#define EA\_BB2E4376\_ED55\_4ec9\_9A38\_B56C2E4DC13C\_\_INCLUDED\_

#include "advisor.h"

#include "store.h"

#include "cashier.h"

#include "human.h"

class client : public human

{

public:

client();

virtual ~client();

void ask\_advice(advisor advisor);

void buy(book product, cachier c);

void review(store::book product);

};

#endif *// !defined(EA\_BB2E4376\_ED55\_4ec9\_9A38\_B56C2E4DC13C\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// cleaner.h*

*// Implementation of the Class cleaner*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_F3944AAC\_36A7\_4246\_90D4\_BD92A00A977D\_\_INCLUDED\_)

#define EA\_F3944AAC\_36A7\_4246\_90D4\_BD92A00A977D\_\_INCLUDED\_

#include "employee.h"

class cleaner : public employee

{

public:

cleaner();

virtual ~cleaner();

void clean();

};

#endif *// !defined(EA\_F3944AAC\_36A7\_4246\_90D4\_BD92A00A977D\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// cashier.h*

*// Implementation of the Class cashier*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_78D72BE3\_CFD6\_43e4\_BB10\_13BA0997A731\_\_INCLUDED\_)

#define EA\_78D72BE3\_CFD6\_43e4\_BB10\_13BA0997A731\_\_INCLUDED\_

#include "client.h"

#include "store.h"

#include "employee.h"

class cashier : public employee

{

public:

cashier();

virtual ~cashier();

int give\_book(store::book product, client buyer);

int print\_check(store::book product, client buyer);

int take\_money(store::book product, client buyer);

private:

int cash\_money;

};

#endif *// !defined(EA\_78D72BE3\_CFD6\_43e4\_BB10\_13BA0997A731\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// book.h*

*// Implementation of the Class book*

*// Created on: 30-äåê-2020 8:06:42*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_4F21377E\_CBE7\_43af\_BDAE\_0DC748FC1A61\_\_INCLUDED\_)

#define EA\_4F21377E\_CBE7\_43af\_BDAE\_0DC748FC1A61\_\_INCLUDED\_

struct book

{

public:

char name[255];

unsigned long price;

int rating;

};

#endif *// !defined(EA\_4F21377E\_CBE7\_43af\_BDAE\_0DC748FC1A61\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// advisor.h*

*// Implementation of the Class advisor*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_CD3F5DFC\_C2A2\_4f01\_BAA9\_CE5C2A75D4E9\_\_INCLUDED\_)

#define EA\_CD3F5DFC\_C2A2\_4f01\_BAA9\_CE5C2A75D4E9\_\_INCLUDED\_

#include "human.h"

#include "employee.h"

class advisor : public employee

{

public:

advisor();

virtual ~advisor();

void advice(human human);

};

#endif *// !defined(EA\_CD3F5DFC\_C2A2\_4f01\_BAA9\_CE5C2A75D4E9\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// administrator.h*

*// Implementation of the Class administrator*

*// Created on: 30-äåê-2020 8:39:51*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#if !defined(EA\_83DF3F64\_0620\_406b\_BD49\_7FC167BD3C50\_\_INCLUDED\_)

#define EA\_83DF3F64\_0620\_406b\_BD49\_7FC167BD3C50\_\_INCLUDED\_

#include "employee.h"

class administrator : public employee

{

public:

administrator();

virtual ~administrator();

int management(employee employee);

void write\_plan();

};

#endif *// !defined(EA\_83DF3F64\_0620\_406b\_BD49\_7FC167BD3C50\_\_INCLUDED\_)*

*///////////////////////////////////////////////////////////*

*// supplier.cpp*

*// Implementation of the Class supplier*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "supplier.h"

supplier::supplier(){

}

supplier::~supplier(){

}

void supplier::deliver(store store, book\* product, int amount){

}

*///////////////////////////////////////////////////////////*

*// store.cpp*

*// Implementation of the Class store*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "store.h"

store::store(){

}

store::~store(){

}

void store::add\_book(book b){

}

int\* store::get\_adress(){

return NULL;

}

book store::get\_book(char\* name){

return NULL;

}

void store::set\_adress(int\* adress){

}

void store::set\_amount\_books(int size){

}

*///////////////////////////////////////////////////////////*

*// recruiter.cpp*

*// Implementation of the Class recruiter*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "recruiter.h"

recruiter::recruiter(){

}

recruiter::~recruiter(){

}

int recruiter::fire(employee worker){

return 0;

}

int recruiter::hire(human human){

return 0;

}

*///////////////////////////////////////////////////////////*

*// manager.cpp*

*// Implementation of the Class manager*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "manager.h"

manager::manager(){

}

manager::~manager(){

}

void manager::ask\_supplier(employee worker){

}

void manager::check\_money(unsigned long money){

}

void manager::deliver(store store, book\* product, int amount){

}

void manager::pay\_salary(employee pay){

}

void manager::pay\_taxes(){

}

void manager::store\_money(){

}

*///////////////////////////////////////////////////////////*

*// human.cpp*

*// Implementation of the Class human*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "human.h"

human::human(){

}

human::~human(){

}

char\* human::get\_name(){

return NULL;

}

void human::set\_name(char\* name){

}

*///////////////////////////////////////////////////////////*

*// employee.cpp*

*// Implementation of the Class employee*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "employee.h"

employee::employee(){

}

employee::~employee(){

}

usigned long employee::get\_salary(){

return NULL;

}

void employee::set\_salary(unsigned long sal){

}

*///////////////////////////////////////////////////////////*

*// client.cpp*

*// Implementation of the Class client*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "client.h"

client::client(){

}

client::~client(){

}

void client::ask\_advice(advisor advisor){

}

void client::buy(book product, cachier c){

}

void client::review(store::book product){

}

*///////////////////////////////////////////////////////////*

*// cleaner.cpp*

*// Implementation of the Class cleaner*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "cleaner.h"

cleaner::cleaner(){

}

cleaner::~cleaner(){

}

void cleaner::clean(){

}

*///////////////////////////////////////////////////////////*

*// cashier.cpp*

*// Implementation of the Class cashier*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "cashier.h"

cashier::cashier(){

}

cashier::~cashier(){

}

int cashier::give\_book(store::book product, client buyer){

return 0;

}

int cashier::print\_check(store::book product, client buyer){

return 0;

}

int cashier::take\_money(store::book product, client buyer){

return 0;

}

*///////////////////////////////////////////////////////////*

*// book.cpp*

*// Implementation of the Class book*

*// Created on: 30-äåê-2020 8:06:42*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "book.h"

*///////////////////////////////////////////////////////////*

*// advisor.cpp*

*// Implementation of the Class advisor*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "advisor.h"

advisor::advisor(){

}

advisor::~advisor(){

}

void advisor::advice(human human){

}

*///////////////////////////////////////////////////////////*

*// administrator.cpp*

*// Implementation of the Class administrator*

*// Created on: 30-äåê-2020 8:39:52*

*// Original author: pm92*

*///////////////////////////////////////////////////////////*

#include "administrator.h"

administrator::administrator(){

}

administrator::~administrator(){

}

int administrator::management(employee employee){

return 0;

}

void administrator::write\_plan(){

}