南开大学

JAVA 语言与应用

控制台版 CD 出租销售店实验报告

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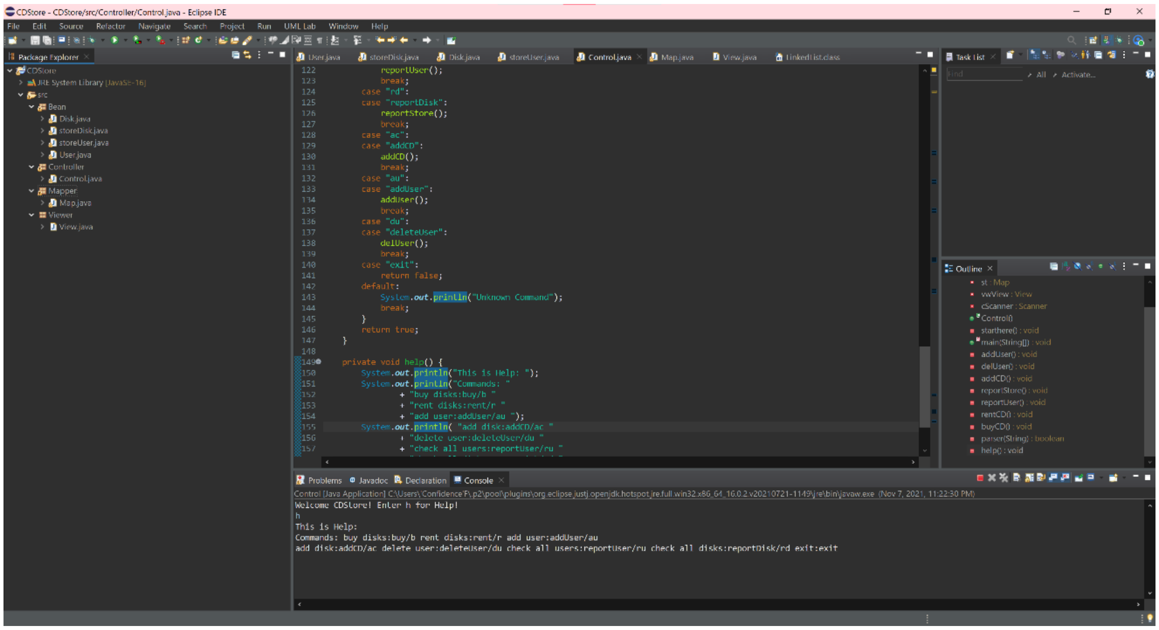
一、概述：

本作业为控制台版 Java 语言 CD 出租销售店。本作业实现的功能有：输入用户、删除用户、进货、汇报存货、出租、销售、帮助等功能。本代码使用了 MVC 架构进行开发。本程序充分利用 Java 的面向对象编程思想，一定程度上具有可扩展性高，代码逻辑框架清晰。代码复用性强、事件处理流程明确等特点。

二、运行展示：

运行效果截图:

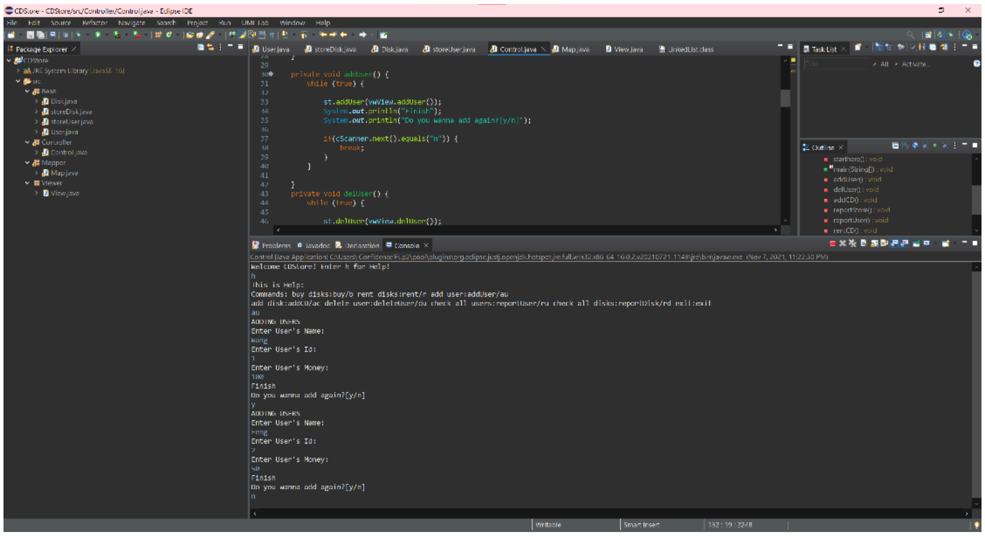
帮助:



```java
            reportUser();
            break;
        case "rd":
        case "reportDisk":
            reportStore();
            break;
        case "ac":
        case "addCD":
            addCD();
            break;
        case "au":
        case "addUser":
            addUser();
            break;
        case "du":
        case "deleteUser":
            delUser();
            break;
        case "exit":
            return false;
        default:
            System.out.println("Unknown Command");
            break;
        }
        return true;
    }

    private void help() {
        System.out.println("This is Help: ");
        System.out.println("Commands: "
                + "buy disks:buy/b "
                + "rent disks:rent/r "
                + "add user:addUser/au ");
        System.out.println( "add disk:addCD/ac "
                + "delete user:deleteUser/du "
                + "check all users:reportUser/ru "
```

```
Control [Java Application] C:\Users\Confidence'F\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.2.v20210721-1149\jre\bin\javaw.exe (Nov 7, 2021, 11:22:30 PM)
Welcome CDStore! Enter h for Help!
h
This is Help:
Commands: buy disks:buy/b rent disks:rent/r add user:addUser/au
add disk:addCD/ac delete user:deleteUser/du check all users:reportUser/ru check all disks:reportDisk/rd exit:exit
```

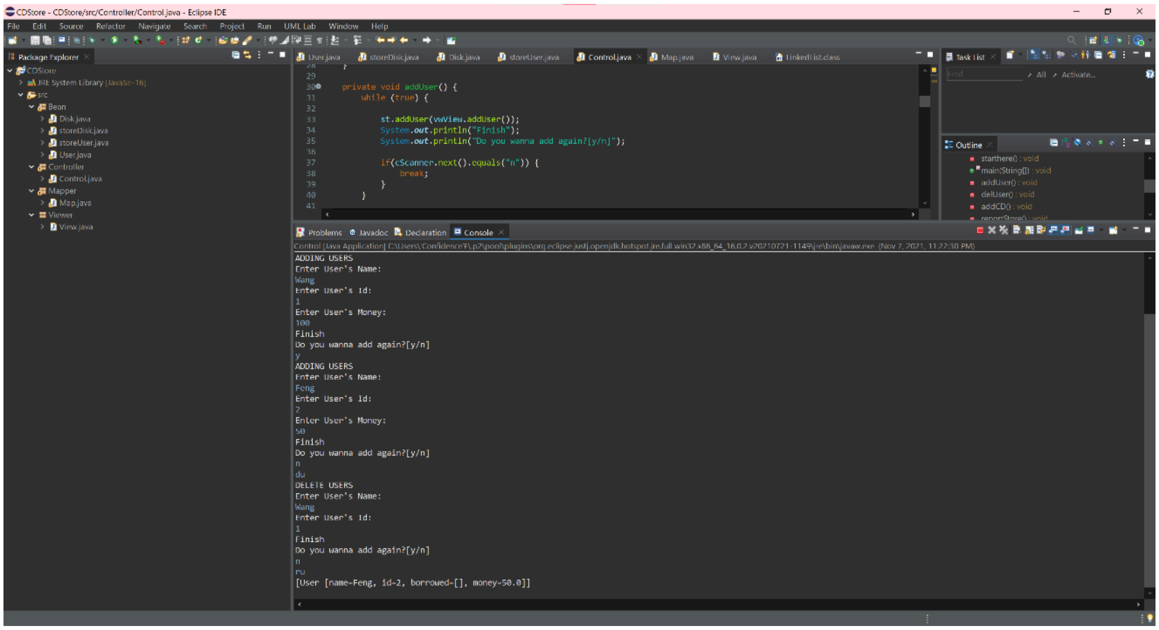
添加用户:



```java
    private void addUser() {
        while (true) {

            st.addUser(vwView.addUser());
            System.out.println("Finish");
            System.out.println("Do you wanna add again?[y/n]");

            if(cScanner.next().equals("n")) {
                break;
            }
        }

    }
    private void delUser() {
        while (true) {

            st.delUser(vwView.delUser());
```

```
Control [Java Application] C:\Users\Confidence'F\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.2.v20210721-1149\jre\bin\javaw.exe (Nov 7, 2021, 11:22:30 PM)
Welcome CDStore! Enter h for Help!
h
This is Help:
Commands: buy disks:buy/b rent disks:rent/r add user:addUser/au
add disk:addCD/ac delete user:deleteUser/du check all users:reportUser/ru check all disks:reportDisk/rd exit:exit
au
ADDING USERS
Enter User's Name:
Wang
Enter User's Id:
1
Enter User's Money:
100
Finish
Do you wanna add again?[y/n]
y
ADDING USERS
Enter User's Name:
Feng
Enter User's Id:
2
Enter User's Money:
50
Finish
Do you wanna add again?[y/n]
n
```

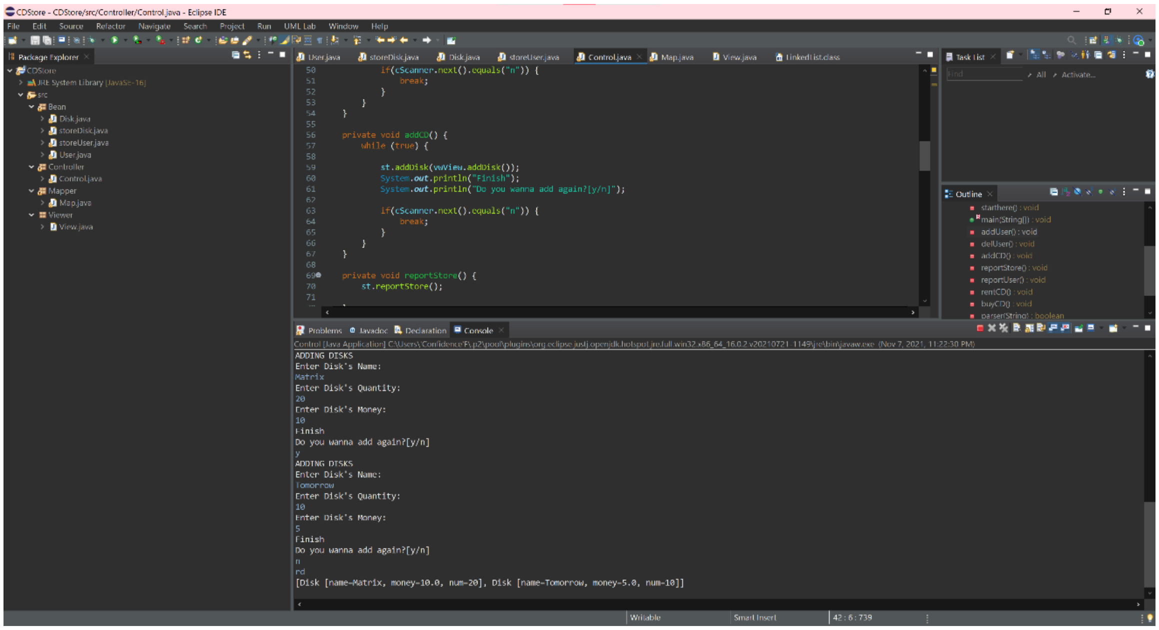
删除用户：


CDStore - CDStore/src/Controller/Control.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run UML Lab Window Help
Package Explorer
CDStore
JRE System Library [JavaSE-16]
src
Bean
Disk.java
storeDisk.java
storeUser.java
User.java
Controller
Control.java
Mapper
Map.java
Viewer
View.java
User.java storeDisk.java Disk.java storeUser.java Control.java Map.java View.java LinkedList.class
Task List
Outline
starthere() : void
main(String[]) : void
addUser() : void
delUser() : void
addCD() : void
Problems Javadoc Declaration Console

```

    private void addUser() {
        while (true) {

            st.addUser(vwView.addUser());
            System.out.println("Finish");
            System.out.println("Do you wanna add again?[y/n]");

            if(cScanner.next().equals("n")) {
                break;
            }
        }

```

```
Control [Java Application] C:\Users\Confidence'F\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.2.v20210721-1149\jre\bin\javaw.exe (Nov 7, 2021, 11:22:30 PM)
ADDING USERS
Enter User's Name:
Wang
Enter User's Id:
1
Enter User's Money:
100
Finish
Do you wanna add again?[y/n]
y
ADDING USERS
Enter User's Name:
Feng
Enter User's Id:
2
Enter User's Money:
50
Finish
Do you wanna add again?[y/n]
n
du
DELETE USERS
Enter User's Name:
Wang
Enter User's Id:
1
Finish
Do you wanna add again?[y/n]
n
ru
[User [name=Feng, id=2, borrowed=[], money=50.0]]
```

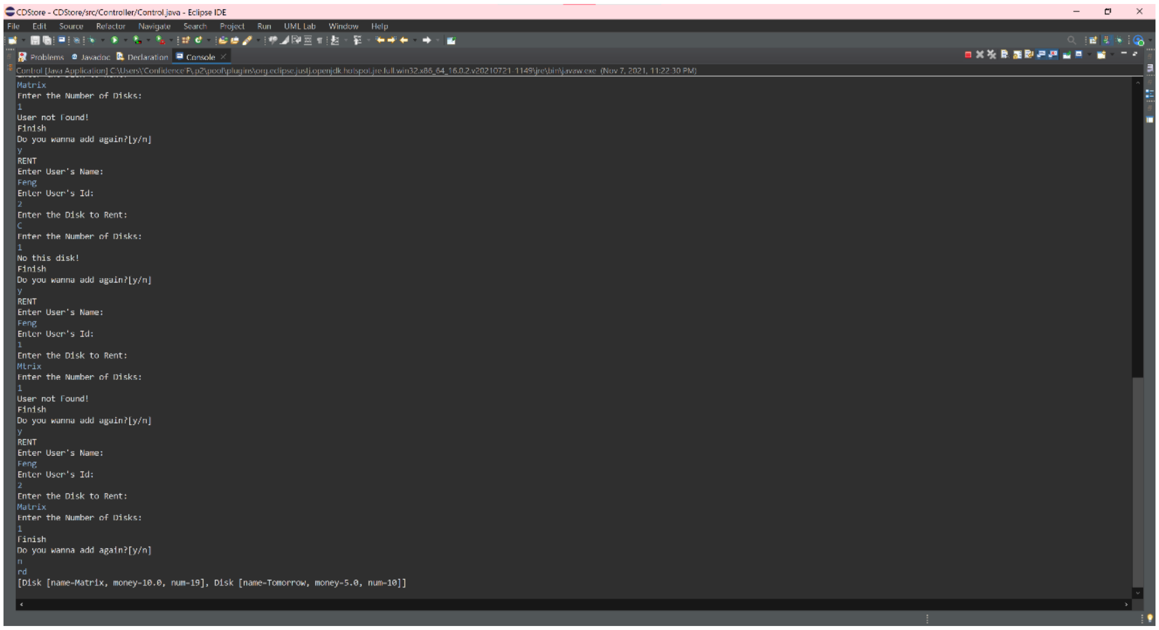
添加 CD 和汇报



```
            if(cScanner.next().equals("n")) {
                break;
            }
        }
    }

    private void addCD() {
        while (true) {

            st.addDisk(vwView.addDisk());
            System.out.println("Finish");
            System.out.println("Do you wanna add again?[y/n]");

            if(cScanner.next().equals("n")) {
                break;
            }
        }
    }

    private void reportStore() {
        st.reportStore();

```

```
Control [Java Application] C:\Users\Confidence'F\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.2.v20210721-1149\jre\bin\javaw.exe (Nov 7, 2021, 11:22:30 PM)
ADDING DISKS
Enter Disk's Name:
Matrix
Enter Disk's Quantity:
20
Enter Disk's Money:
10
Finish
Do you wanna add again?[y/n]
y
ADDING DISKS
Enter Disk's Name:
Tomorrow
Enter Disk's Quantity:
10
Enter Disk's Money:
5
Finish
Do you wanna add again?[y/n]
n
rd
[Disk [name=Matrix, money=10.0, num=20], Disk [name=Tomorrow, money=5.0, num=10]]
```

出借


CDStore - CDStore/src/Controller/Control.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run UML Lab Window Help
Problems Javadoc Declaration Console

```
Control [Java Application] C:\Users\Confidence\F\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_16.0.2.v20210721-1149\jre\bin\javaw.exe (Nov 7, 2021, 11:22:30 PM)
Matrix
Enter the Number of Disks:
1
User not Found!
Finish
Do you wanna add again?[y/n]
y
RENT
Enter User's Name:
Feng
Enter User's Id:
2
Enter the Disk to Rent:
C
Enter the Number of Disks:
1
No this disk!
Finish
Do you wanna add again?[y/n]
y
RENT
Enter User's Name:
Feng
Enter User's Id:
1
Enter the Disk to Rent:
Mtrix
Enter the Number of Disks:
1
User not Found!
Finish
Do you wanna add again?[y/n]
y
RENT
Enter User's Name:
Feng
Enter User's Id:
2
Enter the Disk to Rent:
Matrix
Enter the Number of Disks:
1
Finish
Do you wanna add again?[y/n]
n
rd
[Disk [name-Matrix, money-10.0, num-19], Disk [name-Tomorrow, money-5.0, num-10]]
```

运行结果（购买）

Welcome CDStore! Enter h for Help!

au

ADDING USERS

Enter User's Name:

Wang

Enter User's Id:

1

Enter User's Money:

15

Finish

Do you wanna add again?[y/n]

y

ADDING USERS

Enter User's Name:

Feng

Enter User's Id:

```
2
Enter User's Money:
100
Finish
Do you wanna add again?[y/n]
n
ac
ADDING DISKS
Enter Disk's Name:
Matrix
Enter Disk's Quantity:
10
Enter Disk's Money:
20
Finish
Do you wanna add again?[y/n]
y
ADDING DISKS
Enter Disk's Name:
Tomorrow
Enter Disk's Quantity:
10
Enter Disk's Money:
5
Finish
Do you wanna add again?[y/n]
n
```

```
buy
BUY
Enter User's Name:
Wang
Enter User's Id:
1
Enter the Disk to Buy:
Matrix
Enter the Number of Disks:
100
No Money or No Enough Quantity!
Finish
Do you wanna add again?[y/n]
y
BUY
Enter User's Name:
Feng
Enter User's Id:
2
Enter the Disk to Buy:
Matrix
Enter the Number of Disks:
5
Finish
Do you wanna add again?[y/n]
n
ru
```

```
[User [name=Wang, id=1, borrowed=[], money=15.0], User [name=Feng, id=2, borrowed=[], money=0.0]]
rd
[Disk [name=Matrix, money=20.0, num=5], Disk [name=Tomorrow, money=5.0, num=10]]
```

附录：完整代码

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『Disk.java』

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```
package Bean;

import java.util.Objects;

public class Disk {
	private String name;
	private double money;
	private int num;

	public String getName() {
		return name;
	}
	public double getMoney() {
		return money;
	}
	public int getNum() {
		return num;
	}

	public void setName(String name) {
		this.name = name;
	}

	public void setMoney(double money) {
		this.money = money;
	}

	public void setNum(int num) {
		this.num = num;
	}

	@Override
	public String toString() {
		return "Disk [name=" + name + ", money=" + money + ", num=" + num + "]";
	}


	@Override
	public int hashCode() {
		final int prime = 31;
		int result = 1;
		long temp;
		temp = Double.doubleToLongBits(money);
		result = prime * result + (int) (temp ^ (temp >>> 32));
		result = prime * result + ((name == null) ? 0 : name.hashCode());
		result = prime * result + num;
		return result;
	}
	@Override
	public boolean equals(Object obj) {
		if (this == obj)
			return true;
		if (obj == null)
			return false;
		if (getClass() != obj.getClass())
			return false;
		Disk other = (Disk) obj;
		if (name == null) {
			if (other.name != null)
				return false;
		} else if (!name.equals(other.name))
			return false;

		return true;
	}



}
```

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『storeDisk.java』

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

```
package Bean;


import java.util.LinkedList;


public class storeDisk extends LinkedList<Disk>{
}
```

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『storeUser.java』

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

```
package Bean;

import java.util.LinkedList;

public class storeUser extends LinkedList<User>{

}
```

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『User.java』

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

```
package Bean;

import java.util.LinkedList;
import java.util.Objects;

public class User {
	private String name;
	private int id;
	private storeDisk borrowed;
	private double money;

	public User() {
		borrowed=new storeDisk();
	}

	public String getName() {
		return name;
	}
	public int getId() {
		return id;
	}
	public double getMoney() {
		return money;
	}

	public storeDisk getBorrowed() {
		return borrowed;
	}

	public void setName(String name) {
		this.name = name;
	}
```

```
    public void setId(int id) {
        this.id = id;
    }


    public void setMoney(double
money) {
        this.money = money;
    }


    public void setBorrowed(Disk
borrowed) {

    this.borrowed.push(borrowed);
    }



    @Override
    public int hashCode() {
        final int prime = 31;
        int result = 1;
        result = prime * result +
((borrowed == null) ? 0 :
borrowed.hashCode());
        result = prime * result +
id;
        result = prime * result +
((name == null) ? 0 : name.hashCode());
        return result;
    }
    @Override
```

```
    public boolean equals(Object
obj) {
        if (this == obj)
            return true;
        if (obj == null)
            return false;
        if (getClass() !=
obj.getClass())
            return false;
        User other = (User) obj;

        if (id != other.id)
            return false;
        if (name == null) {
            if (other.name !=
null)
                return
false;
        } else if
(!name.equals(other.name))
            return false;
        return true;
    }
    @Override
    public String toString() {
        return "User [name=" +
name + ", id=" + id + ", borrowed=" +
borrowed + ", money=" + money + "]";
    }
```

```
}
```

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『Control.java』

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

```
package Controller;

import Viewer.View;

import java.util.Scanner;



import Mapper.*;

public class Control {
	private Mapper.Map st;
	private View vwView;
	private Scanner cScanner=new Scanner(System.in);

	public Control() {
		st=new Mapper.Map();
		vwView=new View();
	}

	private void starthere() {
		vwView.welcome();

	while(parser(vwView.getMessage()));
	}

	public static void main(String[] args) {
		Control boss=new Control();
		boss.starthere();
	}

	private void addUser() {
		while (true) {



	st.addUser(vwView.addUser());

	System.out.println("Finish");

	System.out.println("Do you wanna add again?[y/n]");



	if(cScanner.next().equals("n")) {
					break;
			}
		}

	}
```

```
    private void delUser() {
        while (true) {


    st.delUser(vwView.delUser());

    System.out.println("Finish");

    System.out.println("Do you
wanna add again?[y/n]");



    if(cScanner.next().equals("n")) {
                break;
            }
        }
    }


    private void addCD() {
        while (true) {


    st.addDisk(vwView.addDisk());

    System.out.println("Finish");

    System.out.println("Do you
wanna add again?[y/n]");



    if(cScanner.next().equals("n")) {
                break;
```

```
            }
        }
    }


    private void reportStore() {
        st.reportStore();


    }
    private void reportUser() {
        st.reportUser();


    }


    private void rentCD() {
        while (true) {



    st.rent(vwView.rent());

    System.out.println("Finish");

    System.out.println("Do you
wanna add again?[y/n]");



    if(cScanner.next().equals("n")) {
                break;
            }
        }
    }

    private void buyCD() {
        while (true) {


    st.buy(vwView.buy());

    System.out.println("Finish");

    System.out.println("Do you
wanna add again?[y/n]");


    if(cScanner.next().equals("n")) {
                break;
            }
        }
    }


    private boolean parser(String s) {
        switch (s) {
        case "h":
        case "help":
            help();
            break;
        case "b":
        case "buy":
            buyCD();
            break;
        case "r":
        case "rent":
            rentCD();
            break;
        case "ru":
        case "reportUser":
            reportUser();
            break;
        case "rd":
        case "reportDisk":
            reportStore();
            break;
        case "ac":
        case "addCD":
            addCD();
            break;
        case "au":
        case "addUser":
            addUser();
            break;
        case "du":
        case "deleteUser":
            delUser();
            break;
        case "exit":
            return false;
        default:
```

```
        System.out.println("Unknown
Command");
                break;
            }
            return true;
        }

        private void help() {
            System.out.println("This
is Help: ");

        System.out.println("Commands:
"
                        + "buy
disks:buy/b "
                        + "rent
disks:rent/r "
                        + "add
user:addUser/au ");
            System.out.println( "add
disk:addCD/ac "
                        + "delete
user:deleteUser/du "
                        + "check
all users:reportUser/ru "
                        + "check
all disks:reportDisk/rd "
                        +
"exit:exit");

        }
}
```

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

『Map.java』

＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝＝

```
package Mapper;


import java.util.Iterator;


import Bean.Disk;
import Bean.User;
import Bean.storeDisk;
import Bean.storeUser;

public class Map {
    private storeDisk sDisk;
    private storeUser sUser;

    public Map() {
        sDisk=new storeDisk();
        sUser=new storeUser();
    }
    public storeDisk getsDisk() {
        return sDisk;
    }
    public storeUser getsUser() {
        return sUser;
    }

    public void addDisk(Disk d) {

        for (Iterator iterator =sDisk.iterator(); iterator.hasNext();) {
            Disk disk = (Disk) iterator.next();
            if(d.equals(disk)) {
                disk.setMoney(d.getMoney());
                disk.setNum(d.getNum());
                return;
            }
        }
        sDisk.add(d);
    }

    public void addUser(User u) {
        for (Iterator iterator =sUser.iterator(); iterator.hasNext();) {
            User user = (User) iterator.next();
            if(u.equals(user)) {System.out.println("User Deplicated");
                return;
            }
        }
        sUser.add(u);
    }

    public void delUser(User u) {

        if(sUser.remove(u)==false) {
            System.out.println("Delete Failed");
        }

    }

    private void delDisk() {

    }

    public void reportStore() {
        System.out.println(sDisk.toString());

    }

    public void reportUser() {
```

```
	System.out.println(sUser.toString());

	}

	public boolean rent(User rent) {

		for (Iterator iteratorUser =sUser.iterator(); iteratorUser.hasNext();) {
			User user = (User) iteratorUser.next();

	if(user.equals(rent)) {
				for (Iterator iteratorDisk =sDisk.iterator(); iteratorDisk.hasNext();) {

	Disk disk = (Disk) iteratorDisk.next();

	if(rent.getBorrowed().getLast().equals(disk)) {

	Disk torentDisk=rent.getBorrowed().getLast();

	torentDisk.setMoney(disk.getMoney());

	if(user.getMoney()>=torentDisk.getMoney()*torentDisk.getNum()&&torentDisk.getNum()<=disk.getNum()) {

	user.setBorrowed(torentDisk);

	user.setMoney(user.getMoney()-torentDisk.getMoney()*torentDisk.getNum());

	disk.setNum(disk.getNum()-torentDisk.getNum());

		return true;

	}else {

		System.out.println("No Money or No Enough Quantity!");

		return false;

	}

					}
				}

	System.out.println("No this disk!");
				return false;

			}

		}
		System.out.println("User not Found!");
```

```
        return false;

    }

    public boolean buy(User buy) {
        for (Iterator iteratorUser =sUser.iterator(); iteratorUser.hasNext();) {
            User user = (User) iteratorUser.next();

    if(user.equals(buy)) {
                for (Iterator iteratorDisk =sDisk.iterator(); iteratorDisk.hasNext();) {

    Disk disk = (Disk) iteratorDisk.next();

    if(buy.getBorrowed().getLast().equals(disk)) {

    Disk tobuyDisk=buy.getBorrowed().getLast();

    tobuyDisk.setMoney(disk.getMoney());

    if(user.getMoney()>=tobuyDisk.getMoney()*tobuyDisk.getNum()&&tobuyDisk.getNum()<=disk.getNum()) {


    user.setMoney(user.getMoney()-tobuyDisk.getMoney()*tobuyDisk.getNum());

    disk.setNum(disk.getNum()-tobuyDisk.getNum());

        return true;

    }else {

        System.out.println("No Money or No Enough Quantity!");

        return false;

    }
                    }


                }

    System.out.println("No this disk!");
                return false;
            }

        }
        System.out.println("User not Found!");
        return false;
    }



}
```

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『View.java』

＝ ＝

```
package Viewer;

import java.util.Scanner;

import Bean.Disk;
import Bean.User;

public class View {

	private Scanner inScanner=new Scanner(System.in);

	public void welcome() {

	System.out.println("Welcome CDStore! Enter h for Help!");

	}

	public String getMessage() {
		String tmpString=inScanner.next();

		return tmpString;
	}

	public User addUser() {

		User user=new User();

	System.out.println("ADDING USERS");
		System.out.println("Enter User's Name:");

	user.setName(getMessage());
		System.out.println("Enter User's Id:");

	user.setId(inScanner.nextInt());
		System.out.println("Enter User's Money:");

	user.setMoney(inScanner.nextDouble());

		return user;
	}

	public User delUser() {

		User user=new User();

	System.out.println("DELETE USERS");
		System.out.println("Enter User's Name:");
```

```
    user.setName(getMessage());
        System.out.println("Enter User's Id:");

    user.setId(inScanner.nextInt());


        return user;
    }


    public Disk addDisk() {
        Disk newDisk= new Disk();

    System.out.println("ADDING DISKS");
        System.out.println("Enter Disk's Name:");

    newDisk.setName(getMessage());
        System.out.println("Enter Disk's Quantity:");

    newDisk.setNum(inScanner.nextInt());
        System.out.println("Enter Disk's Money:");

    newDisk.setMoney(inScanner.nextDouble());


        return newDisk;
    }
```

```
    public User rent() {
        User user=new User();

    System.out.println("RENT");
        System.out.println("Enter User's Name:");

    user.setName(getMessage());
        System.out.println("Enter User's Id:");

    user.setId(inScanner.nextInt());
        Disk disk=new Disk();
        System.out.println("Enter the Disk to Rent:");

    disk.setName(getMessage());
        System.out.println("Enter the Number of Disks:");

    disk.setNum(inScanner.nextInt());

    user.getBorrowed().add(disk);


        return user;
    }


    public User buy() {
        User user=new User();

    System.out.println("BUY");
```

```
                System.out.println("Enter
User's Name:");

        user.setName(getMessage());
                System.out.println("Enter
User's Id:");

        user.setId(inScanner.nextInt());
                Disk disk=new Disk();
                System.out.println("Enter
the Disk to Buy:");

        disk.setName(getMessage());
                System.out.println("Enter
the Number of Disks:");

        disk.setNum(inScanner.nextInt())
;

        user.getBorrowed().add(disk);


                return user;
        }


}
```