Homework 3

单例模式

```java
class Singleton {

    private volitale static Singleton instance;

    private Singleton() {  }

    public Singleton getInstance() {
        if ( instance == NULL ) {
            sychronized( Singleton. class ) {
                if (instance == NULL) {
                    instance = new Singleton();
                }
            }
        }
        return instance;
    }

}
```
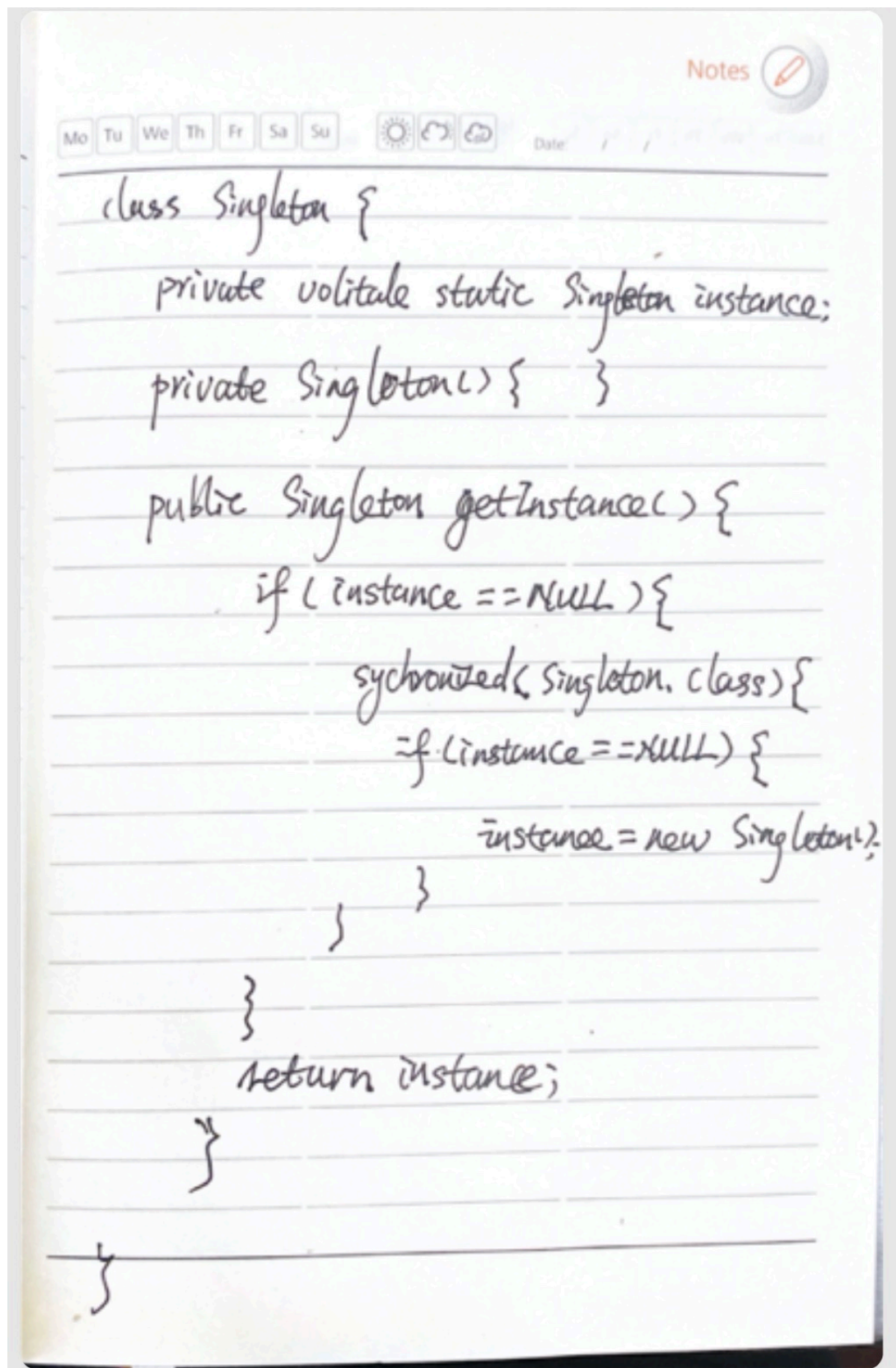
组合模式

```java
package com.ll;

import java.util.ArrayList;
import java.util.List;

interface Component {
    void showComponentName();
}

class WinForm implements Component {
    private List<Component> componentList = new ArrayList<Component>();
    private final String name;

    public WinForm(String name) {
        this.name = name;
    }

    public void add(Component component) {
        this.componentList.add(component);
    }

    @Override
    public void showComponentName() {
        System.out.println("Print WinForm" + "(" + name + ")");
        for (Component component : this.componentList) {
            component.showComponentName();
        }

    }

}

class Picture implements Component {
    private final String name;

    public Picture(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print Picture(" + this.name + ")");
    }
}

class Button implements Component {
```

```java
    private final String name;

    public Button(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print Button(" + this.name + ")");
    }
}

class Frame implements Component {
    private List<Component> componentList = new ArrayList<Component>();
    private final String name;

    public Frame(String name) {
        this.name = name;
    }

    public void add(Component component) {
        this.componentList.add(component);
    }

    @Override
    public void showComponentName() {
        System.out.println("Print Frame" + "(" + name + ")");
        for (Component component : this.componentList) {
            component.showComponentName();
        }

    }
}

class Label implements Component {
    private final String name;

    public Label(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print Label(" + this.name + ")");
    }
}

class TextBox implements Component {
    private final String name;
```

```java
    public TextBox(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print TextBox(" + this.name + ")");
    }
}

class PasswordBox implements Component {
    private final String name;

    public PasswordBox(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print PasswordBox(" + this.name + ")");
    }
}

class CheckBox implements Component {
    private final String name;

    public CheckBox(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print CheckBox(" + this.name + ")");
    }
}

class LinkLable implements Component {
    private final String name;

    public LinkLable(String name) {
        this.name = name;
    }

    @Override
    public void showComponentName() {
        System.out.println("Print LinkLable(" + this.name + ")");
    }
}
```

```java
public class Main {

    public static void main(String[] args) {
        // write your code here
        WinForm winForm = new WinForm("WINDOW窗口");
        Picture pic = new Picture("LOGO图片");
        Button butLogin = new Button("登录");
        Button butRegister = new Button("注册");
        Frame frame1 = new Frame("FRAME1");
        Label usernameLabel = new Label("用户名");
        TextBox text = new TextBox("文本框");
        Label password = new Label("密码");
        PasswordBox pbox = new PasswordBox("密码框");
        CheckBox cbox = new CheckBox("复选框");
        TextBox tbox = new TextBox("记住用户名");
        LinkLable llabel = new LinkLable("忘记密码");

        frame1.add(usernameLabel);
        frame1.add(text);
        frame1.add(password);
        frame1.add(pbox);
        frame1.add(cbox);
        frame1.add(tbox);
        frame1.add(llabel);
        winForm.add(pic);
        winForm.add(butLogin);
        winForm.add(butRegister);
        winForm.add(frame1);
        winForm.showComponentName();
    }
}
```