第一次Maven使用

使用准备

下载并配置好maven

首先进行一个文件的下载

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/sisu/sisu-inject-bean/1.4.2/sisu-inject-bean-1.4.2.pom (5.5 kB at 6.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/sisu/sisu-guice/2.1.7/sisu-guice-2.1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/sisu/sisu-guice/2.1.7/sisu-guice-2.1.7.pom (11 kB at 10 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-model-builder/3.0/maven-model-builder-3.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-model-builder/3.0/maven-model-builder-3.0.pom (2.2 kB at 4.2 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-aether-provider/3.0/maven-aether-provider-3.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-aether-provider/3.0/maven-aether-provider-3.0.pom (2.5 kB at 5.1 kB/
s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-api/1.7/aether-api-1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-api/1.7/aether-api-1.7.pom (1.7 kB at 3.8 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-parent/1.7/aether-parent-1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-parent/1.7/aether-parent-1.7.pom (7.7 kB at 16 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-util/1.7/aether-util-1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-util/1.7/aether-util-1.7.pom (2.1 kB at 3.9 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-impl/1.7/aether-impl-1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-impl/1.7/aether-impl-1.7.pom (3.7 kB at 3.1 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-spi/1.7/aether-spi-1.7.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/sonatype/aether/aether-spi/1.7/aether-spi-1.7.pom (1.7 kB at 2.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-invoker/3.0.1/maven-invoker-3.0.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-invoker/3.0.1/maven-invoker-3.0.1.pom (4.9 kB at 8.3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/31/maven-shared-components-31.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/31/maven-shared-components-31.pom (5.1 kB a
t 6.9 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/31/maven-parent-31.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/31/maven-parent-31.pom (43 kB at 60 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/19/apache-19.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/19/apache-19.pom (15 kB at 21 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-utils/3.2.1/maven-shared-utils-3.2.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-utils/3.2.1/maven-shared-utils-3.2.1.pom (5.6 kB at 7.
3 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/30/maven-shared-components-30.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/30/maven-shared-components-30.pom (4.6 kB a
t 9.5 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/30/maven-parent-30.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/30/maven-parent-30.pom (41 kB at 82 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/18/apache-18.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/18/apache-18.pom (16 kB at 33 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/commons-io/commons-io/2.2/commons-io-2.2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/commons-io/commons-io/2.2/commons-io-2.2.pom (11 kB at 23 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-parent/24/commons-parent-24.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/commons/commons-parent/24/commons-parent-24.pom (47 kB at 98 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/9/apache-9.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/9/apache-9.pom (15 kB at 33 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-artifact-transfer/0.11.0/maven-artifact-transfer-0.11.0.pom
```

进行一个对pom.xml的观察

pom.xml

```xml
<?xml version="1.0" encoding="UTF-8"?>

<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <modelVersion>4.0.0</modelVersion>

  <groupId>com.example</groupId>
  <artifactId>demo</artifactId>
  <version>1.0-SNAPSHOT</version>

  <name>demo</name>
  <!-- FIXME change it to the project's website -->
  <url>http://www.example.com</url>

  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <maven.compiler.source>1.7</maven.compiler.source>
    <maven.compiler.target>1.7</maven.compiler.target>
  </properties>

  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>4.11</version>
      <scope>test</scope>
    </dependency>
  </dependencies>

  <build>
    <pluginManagement><!-- lock down plugins versions to avoid using Maven defaults (may be moved to parent pom) -->
      <plugins>
```

然后修改本地仓库位置，将镜像更换为阿里云(其实没感觉到快多少)。

----------学了一周maven后放弃治疗了----------

然后尝试将下载的jar包导入本地仓库


```
DemoTest.java:1: 错误: 程序包com.alibaba.fastjson不存在
import com.alibaba.fastjson.*;
^
DemoTest.java:5: 错误: 找不到符号
    System.out.println(JSON.toJSONString(cat));
                       ^
  符号:   变量 JSON
  位置: 类 DemoTest
2 个错误
```

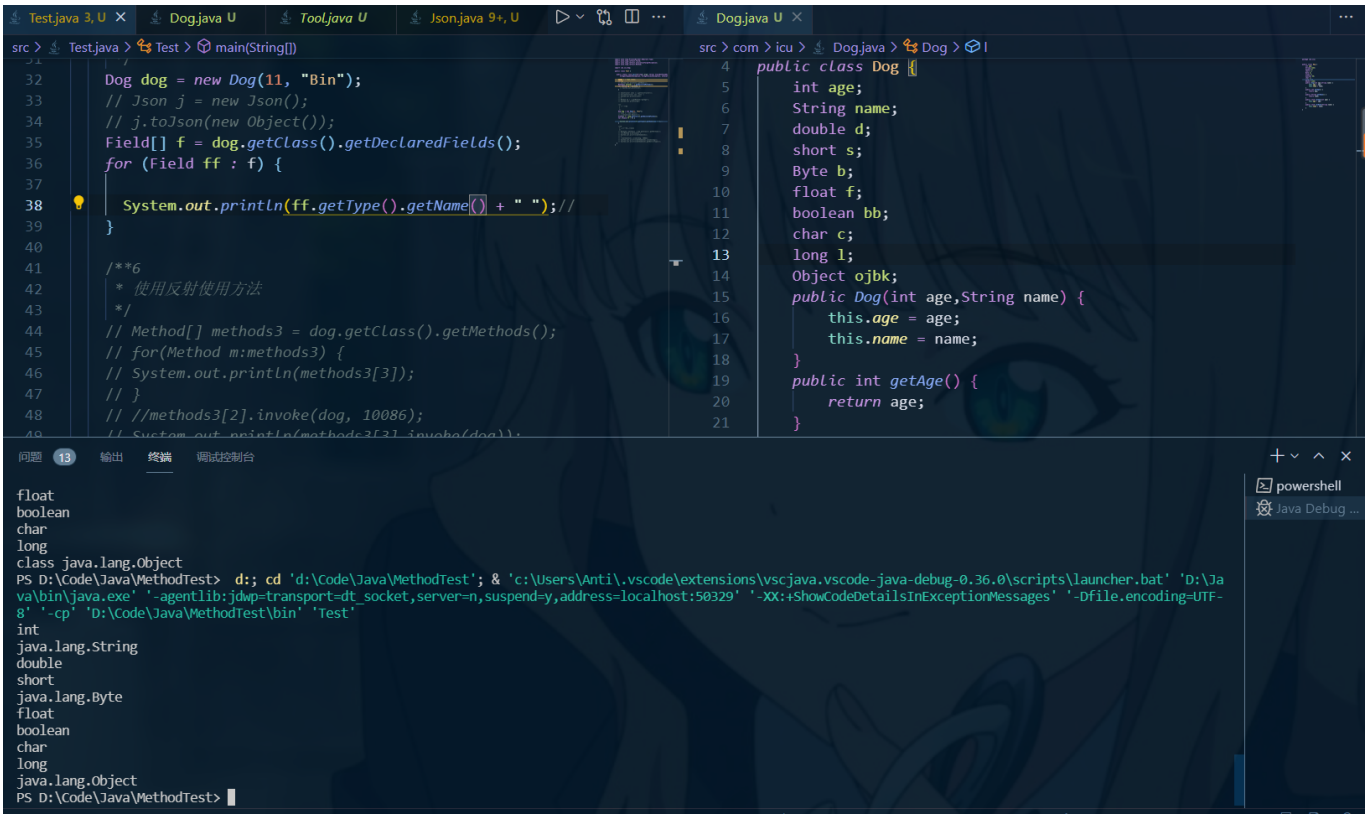
结果不知道为什么路径设置好了还一直出错，选择开做t2

Task2

这道题前置知识有点多啊 = = ，而且网上还有点难找想要的资料。
又花了几天学了一点反射

```
# Reflect笔记
## 基础
### 结构信息
- `Class c = Class.forname("类的名称");` 从类的名称创建类对象。
- `class.getName();` 获得类的名称  会带上包名，例如`com.java.test.App`
- `class.getSimpleName();` 获得类的简单名称，例如`App`
- `class.getInterfaces();` 获得类的接口，是一个数组，可以通过Arrays.toString()输出;
- `class.getModifers();` 获得修饰符，得到一个代表修饰符的数字;
- 可以通过`Modifier.toString`(数字) 得到字符串，如`public final`
### 成员变量
- `Filed[] f = class.getFileds();` 获取所有`public`属性
- `class.getDeclaredFileds()` 获取所有权限的属性
- `f.getName` 获得属性名字
- `f.getType` 获得属性类型

### 构造方法
- `class.getConstructors()` 所有构造方法
- `class.getDeclaredConstructors()` 所有权限的构造
- `class.getConstructor()`  指定的构造方法
- `class.getDeclaredConstructor()` 所有指定构造方法
- 通过`constructor.newInstance()`构造新对象

### 成员方法
- `getMethods()` 获得所有方法
- `getname();` 获得名字
- `getModifiers();` 获得修饰符
- `getReturnTypes();` 获得返回类型
## 操作
### 使用反射操作属性(不安全)
1. 获取类的完整路径字符串
2. 根据类的完整路径获得类对象
3. 使用`set(obj,值)`进行对相应属性的修改
4. `f.getXxx(obj)` 获得obj该属性的值

### 使用Method执行方法
**`m.invoke(obj)`** 具有返回值
` invoke` 简单点来说，就是将一个方法（`method`）运用到具体的类上

比如我有一个类`Person`，中间有属性`age`
得到`Person`的`getAge`方法后
```

但是不知道怎么判断一个属性的类型，于是决定用了一个~~有点低级~~的方法，获得类型的名称再比较字符串.



1.先把基本的数据类型试出来。 2.再把数组试出来 可以发现数组的名称是由`[`开头的，比如整形数组`[I`。要注意，数组可以存储数组（二维数组）或者对象。 3.再把对象试出来 对象有点复杂，比如我在`icu.lzn.Cat`得到的名称是`icu.lzn.Cat`，不好判断，于是我默认不是基本数据或者数组的都算作类（好像有点问题）

部分代码

- 大力出奇迹进行一个类型的判断

```
    private boolean isBase(Field f) { // 判断可以直接输出的
        boolean ans = false;
        String s = f.getType().toString();
        if (s.equals("int") || s.equals("java.lang.String") || s.equals("double")
|| s.equals("short")
                || s.equals("java.lang.Byte") || s.equals("float") ||
s.equals("boolean") || s.equals("char")
                || s.equals("long"))
            ans = true;
        return ans;
    }
```

- 发现直接`field.get(Object)`好像会出问题，决定使用invoke。先得匹配对应的`getter`

> ps.Boolean的getter格式是isXXX(),所以我进行了两次判断 分别判断和getXXX或isXxx匹配

- 获得对应get方法的代码

```
    private static Method gMethod(Field f, Object obj) {
        Method tmp = null;
        Method[] ms = obj.getClass().getDeclaredMethods(); // 获取方法
```

```
        for (Method m : ms) {
         //   System.out.println(m);
            if (m.getName().toLowerCase().equals(("get" +
f.getName()).toLowerCase()))// 通过字符串匹配，得到对应的get
                tmp = m;
            if (m.getName().toLowerCase().equals(("is" +
f.getName()).toLowerCase()))// 通过字符串匹配，得到对应的get
                tmp = m;
        }
        return tmp;
    }
```

实例代码

> 说在前面的一些话
>
> > 1.这个toJson的方法还有很多都暂时没实现，比如数组是二维数组，对象数组，这份代码应该是不能转换的。数组暂时只写了`int[]` 和`String[]`,但是`int[]`其他基本类型的数组是一个道理，所以就不再增加代码长度了
> > 2. 如果属性指向了`null`是会报错的，所以在测试时要保证不是空指针。
> > 3. 如果一个类里面没有属性，或者数组长度为0，也没有进行特别判断。
> > 4. 数组或对象的get方法不应该直接`return int[]`否则会导致两个引用变量的值相同，导致不安全。应当像我`Cat.getAbilities()`那样，新建一个数组，再返回。其他地方同理，但是我没修改= =

- 首先是toJson

```
import java.lang.reflect.Field;
import java.lang.reflect.InvocationTargetException;
import java.lang.reflect.Method;
import lizinuo.annotation.*;

public class Json {
    public static Object obj;

    public static void toJson(Object obj)
            throws IllegalArgumentException, IllegalAccessException,
InvocationTargetException {
        StringBuffer json = new StringBuffer();
        Work(obj, json);
        System.out.println(json);
    }

    // 主要的工作函数，可以进行递归操作
    private static void Work(Object obj, StringBuffer s)
            throws IllegalArgumentException, IllegalAccessException,
InvocationTargetException {

        s.append("{\n");
        // 获取所有属性
```

```
        Field[] fs = obj.getClass().getDeclaredFields();
        for (Field f : fs) {
            /**
             * 判断是否忽略
             */
            if (f.isAnnotationPresent(JsonIgnore.class))
                continue;
            /**
             * 如果是基础类型的情况
             */
            if (isBase(f)) {
                jsonBase(f, s, obj);
                continue;

            }
            /**
             * 如果是数组的情况
             */
            if (isArr(f)) {
                // System.out.println("te");
                Method tmp = gMethod(f, obj);
                if (f.isAnnotationPresent(JsonProperty.class)) {

                    s.append("\"" + f.getAnnotation(JsonProperty.class).name() +
"\": [");
                } else
                    s.append("\"" + f.getName() + "\": [");
                if (tmp.invoke(obj).getClass() == int[].class) {
                    int[] is = (int[]) tmp.invoke(obj);
                    for (int i = 0; i < is.length; i++) {
                        s.append("\"" + is[i] + "\"" + ",");
                    }
                    s.deleteCharAt(s.length() - 1);
                    s.append("],\n");
                    continue;
                }
                Object[] as = (Object[]) tmp.invoke(obj);

                if (as.length == 0) {
                    s.append("],\n");
                    continue;
                }
                for (Object ob : as) {
                    s.append("\"" + ob + "\"" + ",");
                }
                s.deleteCharAt(s.length() - 1);
                s.append("],\n");
                continue;
            }
            /**
             * 若属性为对象，进行递归
             */
            if (f.isAnnotationPresent(JsonProperty.class)) {
                s.append("\"" + f.getAnnotation(JsonProperty.class).name() + "\":
```

```
");
            } else
                s.append("\"" + f.getName() + "\": ");
            Method tmp = gMethod(f, obj);
            Work(tmp.invoke(obj), s);
            s.append(",\n");
        }
        s.deleteCharAt(s.length() - 2);
        s.append("}");
        return;
    }

    /**
     * 判断是否为基础类型
     */
    private static boolean isBase(Field f) {
        boolean ans = false;
        String s = f.getType().getName();
        if (s.equals("int") || s.equals("java.lang.String") || s.equals("double")
|| s.equals("short")
                || s.equals("java.lang.Byte") || s.equals("float") ||
s.equals("boolean") || s.equals("char")
                || s.equals("long"))
            ans = true;
        return ans;
    }

    // 判断是否是数组
    private static boolean isArr(Field f) {
        boolean ans = false;
        String s = f.getType().getName();
        if (s.startsWith("["))
            ans = true;
        return ans;
    }

    /**
     * 生成基本类型的json
     *
     * @throws IllegalAccessException
     * @throws IllegalArgumentException
     * @throws InvocationTargetException
     *
     */
    private static void jsonBase(Field f, StringBuffer s, Object obj)
            throws IllegalArgumentException, IllegalAccessException,
InvocationTargetException {
        if (f.isAnnotationPresent(JsonProperty.class)) {

            s.append("\"" + f.getAnnotation(JsonProperty.class).name() + "\": ");
        } else
            s.append("\"" + f.getName() + "\": "); // 获得变量名

        Method tmp = gMethod(f, obj);
```

```
            s.append("\"" + tmp.invoke(obj) + "\",\n");
        }

        // 获取一个属性对应的getXxx
        private static Method gMethod(Field f, Object obj) {
            Method tmp = null;
            Method[] ms = obj.getClass().getDeclaredMethods(); // 获取方法
            for (Method m : ms) {
                // System.out.println(m);
                if (m.getName().toLowerCase().equals(("get" +
f.getName()).toLowerCase()))// 通过字符串匹配，得到对应的get
                    tmp = m;
                if (m.getName().toLowerCase().equals(("is" +
f.getName()).toLowerCase()))// 通过字符串匹配，得到对应的get
                    tmp = m;
            }
            return tmp;
        }
}
```

- Cat类(放在了包lizinuo.icu下)

```
package lizinuo.icu;
import lizinuo.annotation.JsonIgnore;
import lizinuo.annotation.JsonProperty;
public class Cat {
    @JsonIgnore
    private String name;
    private int age;
   // @JsonIgnore
    private boolean hasOwner;
    private String breed;
    @JsonProperty(name="nengLi")
    private String[] abilities =null;
    @JsonProperty(name = "zhuRen")
    private Owner owner;
    Cat() {
    };

    public Cat(String name, int age, boolean hasOwner, String breed, String[]
abilities,Owner owner) {
        this.name = name;
        this.age = age;
        this.hasOwner = hasOwner;
        this.breed = breed;
        this.abilities = abilities;
        // for (int i = 0; i < abilities.length; i++) {

        //     this.abilities[i] = abilities[i];
//System.out.println(abilities[i]);
        // }
        this.owner = owner;
```

```
    }
    public Owner getOwner() {
        return owner;
    }
    public String[] getAbilities() {
        String[] tmp = new String[abilities.length];
        for(int i = 0;i< tmp.length;i++) {
            tmp[i] = abilities[i];
        }
        return tmp;
    }
    public int getAge() {
        return age;
    }
    public String getBreed() {
        return breed;
    }
    public String getName() {
        return name;
    }
    public boolean isHasOwner() {
        return hasOwner;
    }
}
```

- 然后是 Owner类

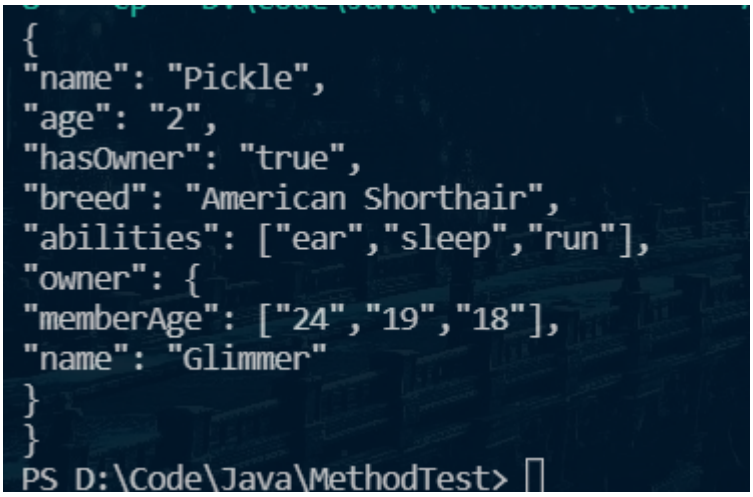
```
package lizinuo.icu;

public class Owner {
    int[] memberAge;
    String name;

    public Owner(String name, int[] i) {
        this.name = name;
        this.memberAge = i;
    }

    public int[] getMemberAge() {
        return memberAge;
    }

    public String getName() {
        return name;
    }
}
```

- 最后是测试代码

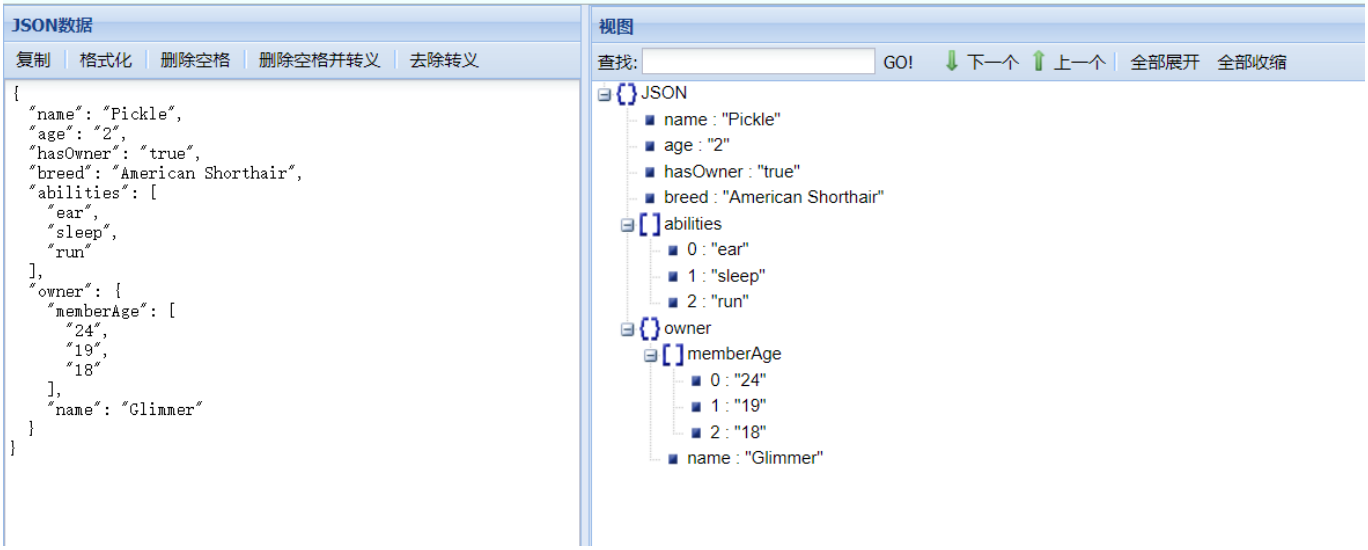
```
import lizinuo.icu.Cat;
import lizinuo.icu.Owner;

public class App {
    public static void main(String[] args) throws Exception {
        Cat myCat = new Cat("Pickle", 2, true, "American Shorthair", new String[]
{ "ear", "sleep", "run" },
                new Owner("Glimmer", new int[] { 24, 19, 18 }));
        Json.toJson(myCat);
    }
}
```

- 进行检查

输出了

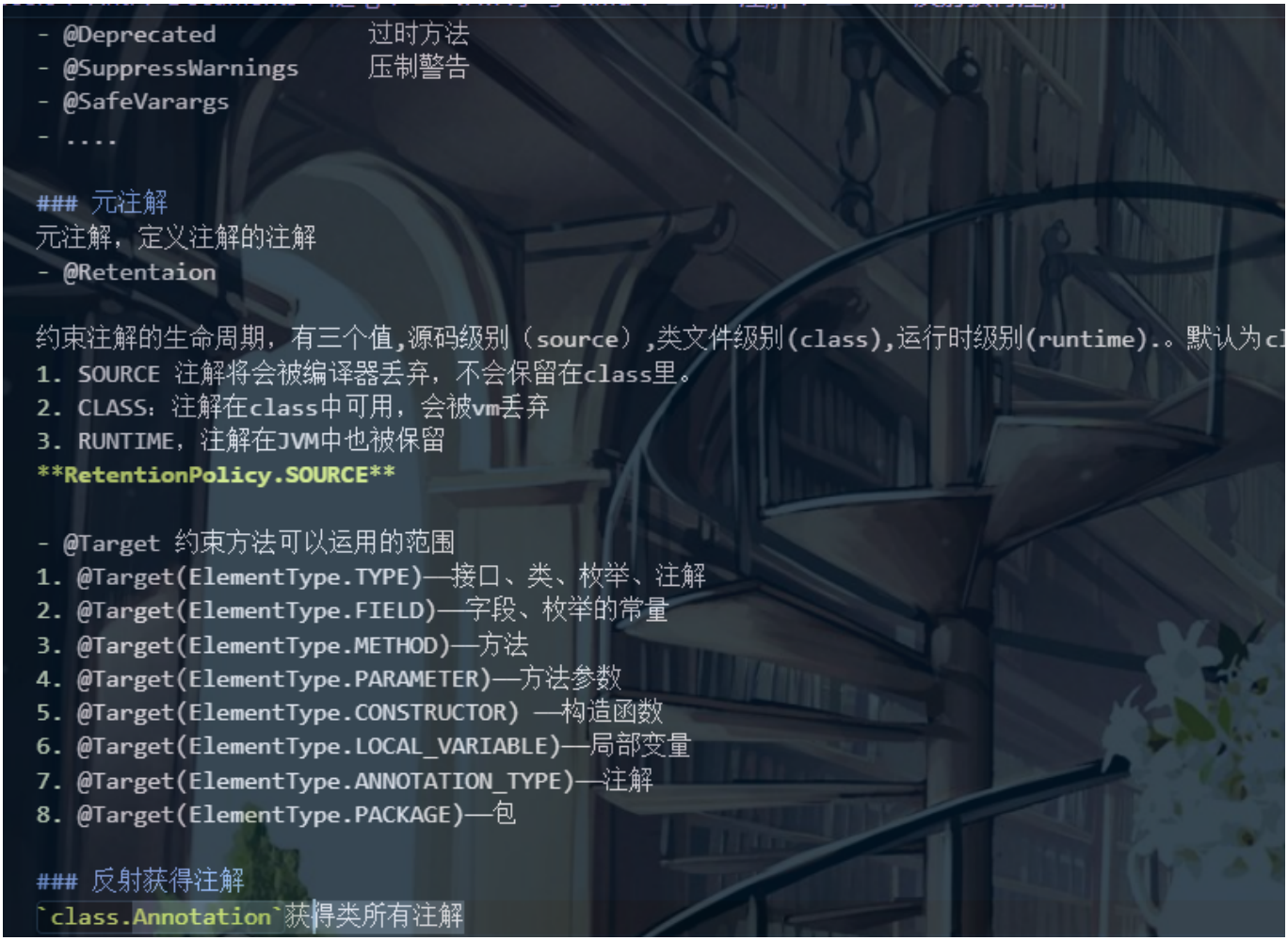


再随便在网上找个json格式转化网站试一下,发现能够成功转化，说明格式对了



Task3

去学了一点注解知识



- @JsonIgnore的约束方法为field，生命周期为runtime。toJson中判断是否有这个注解即可
- @JsonProperty传递一个String的值即可

注解代码

```
/*
JsonProperty
*/
package lizinuo.annotation;

import java.lang.annotation.ElementType;
import java.lang.annotation.Retention;
import java.lang.annotation.RetentionPolicy;
import java.lang.annotation.Target;

@Target(ElementType.FIELD)
@Retention(RetentionPolicy.RUNTIME)
public @interface JsonProperty {

    String name() default "notNamed";
}
/*
JsonIgnore
*/
```

```
package lizinuo.annotation;

import java.lang.annotation.ElementType;
import java.lang.annotation.Retention;
import java.lang.annotation.RetentionPolicy;
import java.lang.annotation.Target;

@Target(ElementType.FIELD)
@Retention(RetentionPolicy.RUNTIME)

public @interface JsonIgnore {
}
```

Json中的修改部分

```
if (f.isAnnotationPresent(JsonProperty.class)) {

            s.append("\"" + f.getAnnotation(JsonProperty.class).name() + "\": [");
        } else
            s.append("\"" + f.getName() + "\": ["); // 获得变量名
```

使用

`@JsonIgnore` 使json输出忽略一个属性
`@JsonProperty(name="XXX")`将属性名字改成XXX

完整的Json改在上面