实验2 JSP基本语法

实验目的

1. 掌握 jsp表达式、程序段和声明，URL传值

2. 熟悉 jsp指令和动作的使用

基础相应类

```java
package com.xlf.school.experiment2.model;

/**
 * 基础响应类
 * <p>
 * 用于封装响应数据
 * 该类为所有响应类的基类
 *
 * @since v1.0-SNAPSHOT
 * @since v1.1-SNAPSHOT
 * @author xiao_lfeng
 */
public class BaseResponse {
    private String output;
    private Integer code;
    private String message;
    private String data;

    public String getOutput() {
        return output;
    }

    public BaseResponse setOutput(String output) {
        this.output = output;
        return this;
    }

```

```java
28      public Integer getCode() {
29          return code;
30      }
31
32      public BaseResponse setCode(Integer code) {
33          this.code = code;
34          return this;
35      }
36
37      public String getMessage() {
38          return message;
39      }
40
41      public BaseResponse setMessage(String message) {
42          this.message = message;
43          return this;
44      }
45
46      public String getData() {
47          return data;
48      }
49
50      public BaseResponse setData(String data) {
51          this.data = data;
52          return this;
53      }
54  }
```

实验内容

1. 制作一个登录表单，输入账号和密码，如果账号和密码相符，则显示"登录成功"，否则显示"登录失败"。

● 源代码

```java
                                                                    java
1   package com.xlf.school.experiment2.controller;

2

3   import com.google.gson.Gson;
```

```java
import com.google.gson.reflect.TypeToken;
import com.xlf.school.experiment2.model.BaseResponse;
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import org.jetbrains.annotations.NotNull;

import java.io.IOException;
import java.util.HashMap;
import java.util.logging.Logger;

/**
 * 用户登录控制器
 * <p>
 * 用于处理用户登录请求，并返回登录结果
 *
 * @author xiao_lfeng
 * @since v1.0-SNAPSHOT
 * @since v1.1-SNAPSHOT
 */
@WebServlet("/api/v1/login")
public class UserLoginController extends HttpServlet {
    private final Logger log = Logger.getLogger(UserLoginController.class.getName());
    private final Gson gson = new Gson();

    @Override
    protected void doPost(@NotNull HttpServletRequest req, @NotNull HttpServletResponse resp)
throws IOException {
        resp.setContentType("application/json;charset=utf-8");
        String getBody = req.getReader().readLine();
        HashMap<String, String> getData = gson.fromJson(getBody, new TypeToken<>() {
        });
        log.info("username: " + getData.get("username") + ", password: " + getData.get("password"));
        // 模拟数据库部分数据，支持用户 xiao_lfeng 以及 debug
        if ("xiao_lfeng".equals(getData.get("username"))) {
            if ("20040227".equals(getData.get("password"))) {
                resp.getWriter().print(
                        new Gson().toJson(
                                new BaseResponse()
                                        .setOutput("Success")
                                        .setCode(200)
                                        .setMessage("登录成功")
```

```jsp
                    ));
            } else {
                resp.getWriter().print(
                        new Gson().toJson(
                                new BaseResponse()
                                        .setOutput("Fail")
                                        .setCode(400)
                                        .setMessage("登录失败")
                        ));
            }
        } else if ("debug".equals(getData.get("username"))) {
            if ("123456".equals(getData.get("password"))) {
                resp.getWriter().print(
                        new Gson().toJson(
                                new BaseResponse()
                                        .setOutput("Success")
                                        .setCode(200)
                                        .setMessage("登录成功")
                        ));
            } else {
                resp.getWriter().print(
                        new Gson().toJson(
                                new BaseResponse()
                                        .setOutput("Fail")
                                        .setCode(400)
                                        .setMessage("登录失败")
                        ));
            }
        } else {
            resp.getWriter().print(
                    new Gson().toJson(
                            new BaseResponse()
                                    .setOutput("Fail")
                                    .setCode(404)
                                    .setMessage("用户不存在")
                    ));
        }
    }
}
```

```jsp
<%-- login.jsp --%>
```

```jsp
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<!doctype html>
<html lang="zh">
<head>
    <meta charset="UTF-8">
    <meta name="viewport"
          content="width=device-width, user-scalable=no, initial-scale=1.0, maximum-scale=1.0,
minimum-scale=1.0">
    <meta http-equiv="X-UA-Compatible" content="ie=edge">
    <title>登录</title>
    <script src="https://cdn.tailwindcss.com"></script>
</head>
<body>
<div class="mx-auto max-w-screen-xl px-4 py-16 sm:px-6 lg:px-8">
    <div class="mx-auto max-w-lg text-center">
        <h1 class="text-2xl font-bold sm:text-3xl">筱锋的登录</h1>

        <p class="mt-4 text-gray-500">
            Java 实验作业登录界面
        </p>
    </div>

    <form action="#" class="mx-auto mb-0 mt-8 max-w-md space-y-4">
        <div>
            <label for="username" class="sr-only relative">
                <input
                        id="username"
                        type="text"
                        class="w-full rounded-lg border border-gray-200 p-4 pe-12 text-sm shadow-sm"
                        placeholder="输入用户名"
                />
            </label>
        </div>
        <div>
            <label for="password" class="sr-only relative">
                <input
                        id="password"
                        type="password"
                        class="w-full rounded-lg border border-gray-200 p-4 pe-12 text-sm shadow-sm"
                        placeholder="输入密码"
                />
            </label>
        </div>
```

```
44
45          <div class="flex items-center justify-between">
46              <button type="submit"
47                  class="inline-block rounded-lg bg-blue-500 px-5 py-3 text-sm font-medium text-white"
48              >
49                  登录
50              </button>
51          </div>
52      </form>
53  </div>
54  </body>
55  <script type="application/javascript">
56      document.querySelector('form').addEventListener('submit', function (event) {
57          event.preventDefault();
58          const username = document.getElementById('username').value;
59          const password = document.getElementById('password').value;
60          if (username == null || username === '') {
61              alert('用户名不能为空');
62              return;
63          }
64          if (password == null || password === '') {
65              alert('密码不能为空');
66              return;
67          }
68          // 发送数据
69          fetch('api/v1/login', {
70              method: 'POST',
71              headers: {
72                  'Content-Type': 'application/json'
73              },
74              body: JSON.stringify({
75                  username: username,
76                  password: password
77              })
78          }).then(response => {
79              if (response.ok) {
80                  return response.json();
81              } else {
82                  throw new Error('登录失败');
83              }
84          }).then(data => {
85              console.log('data:', data);
86              if (data.output === "Success") {
```

```
87              localStorage.setItem('X-USER-TOKEN', username);
88              alert('登录成功');
89              window.location.href = 'hello.jsp';
90          } else {
91              alert(data.message);
92          }
93        }).catch(error => {
94          console.error('error:', error);
95          alert('登录失败');
96        });
97      });
98  </script>
99  </html>
```

```jsp
1   <%-- hello.jsp --%>
2   <%@ page contentType="text/html;charset=UTF-8" language="java" %>
3   <!doctype html>
4   <html lang="zh">
5   <head>
6     <meta charset="UTF-8">
7     <meta name="viewport"
8         content="width=device-width, user-scalable=no, initial-scale=1.0, maximum-scale=1.0,
    minimum-scale=1.0">
9     <meta http-equiv="X-UA-Compatible" content="ie=edge">
10    <title>欢迎您</title>
11    <script src="https://cdn.tailwindcss.com"></script>
12  </head>
13  <body>
14  <div class="grid gap-3 min-h-dvh bg-gray-100">
15    <div class="m-8">
16      <div class="grid gap-3 bg-white rounded-lg shadow-lg p-4">
17        <div>欢迎您：</div>
18        <div class="font-bold text-2xl" id="dom-user">[USER]</div>
19      </div>
20    </div>
21  </div>
22  </body>
23  <script type="application/javascript">
24    // 页面加载完毕后执行
25    window.onload = function () {
26      const user = localStorage.getItem('X-USER-TOKEN');
```
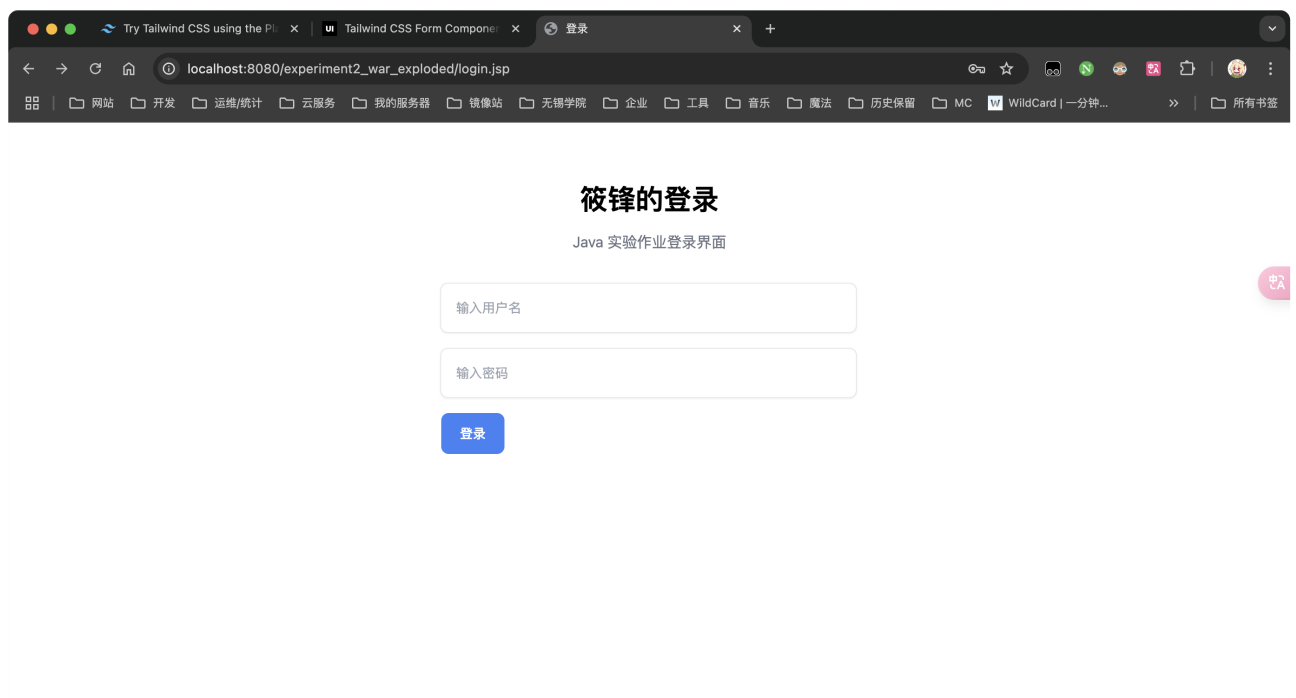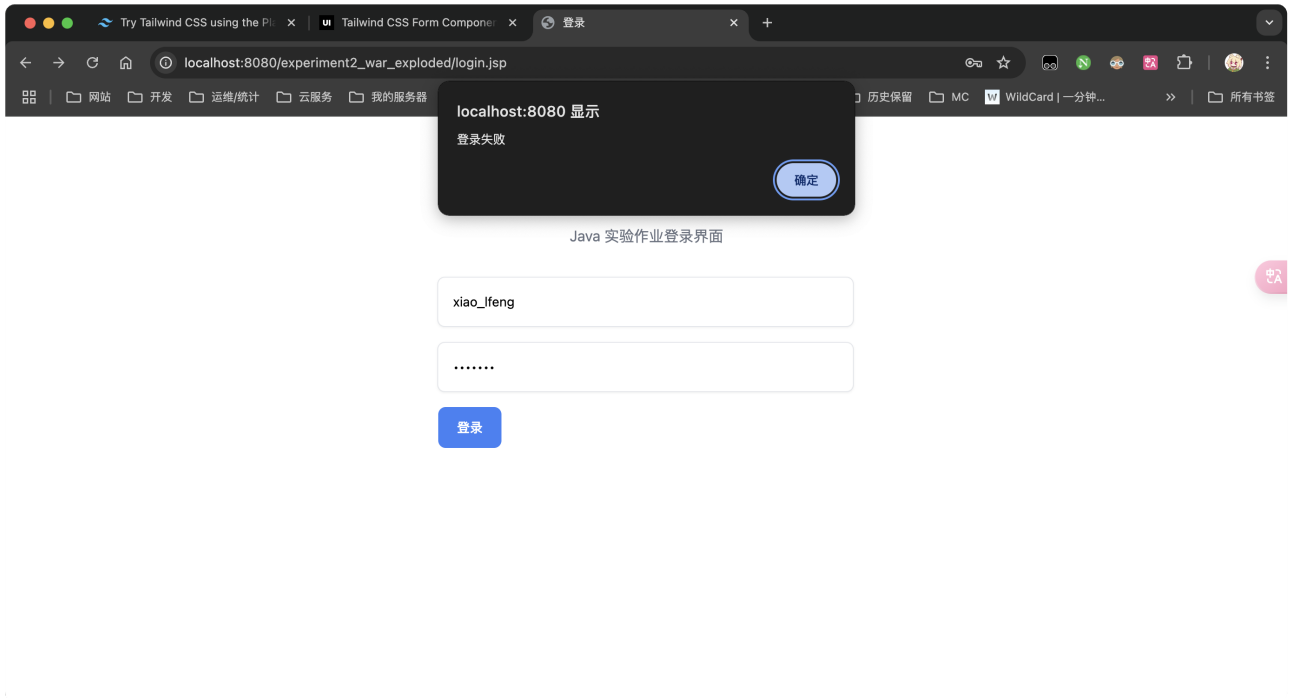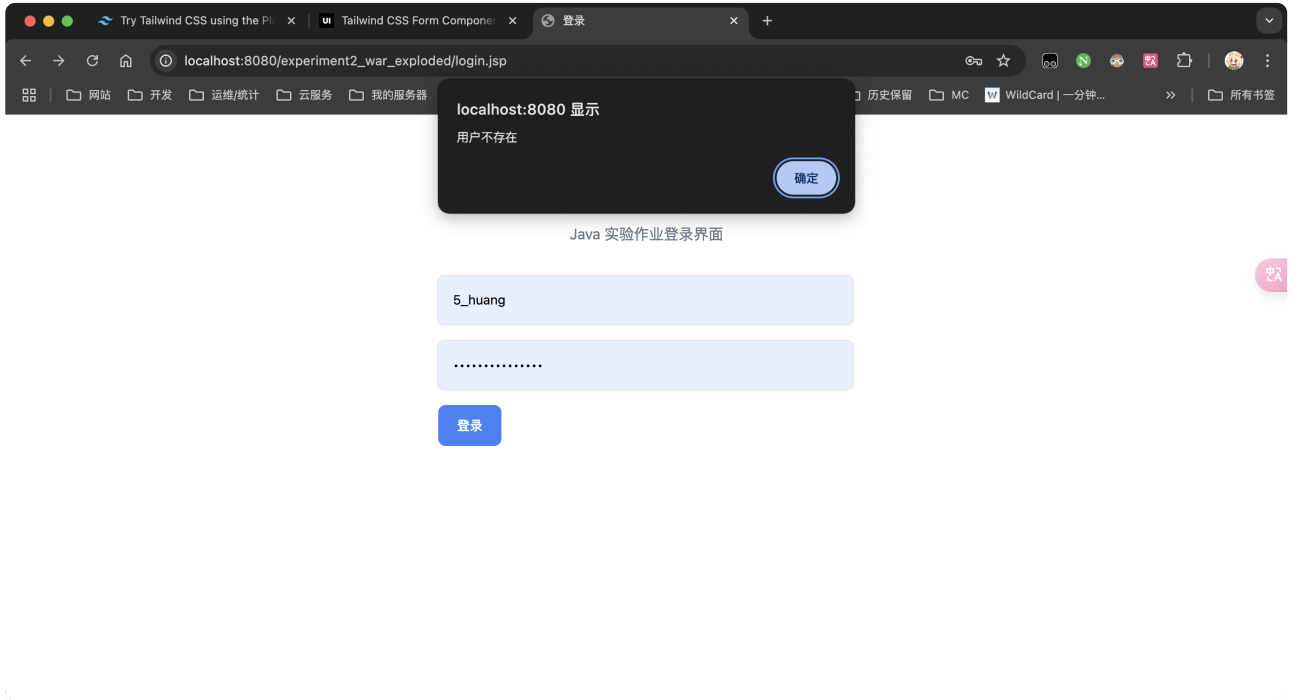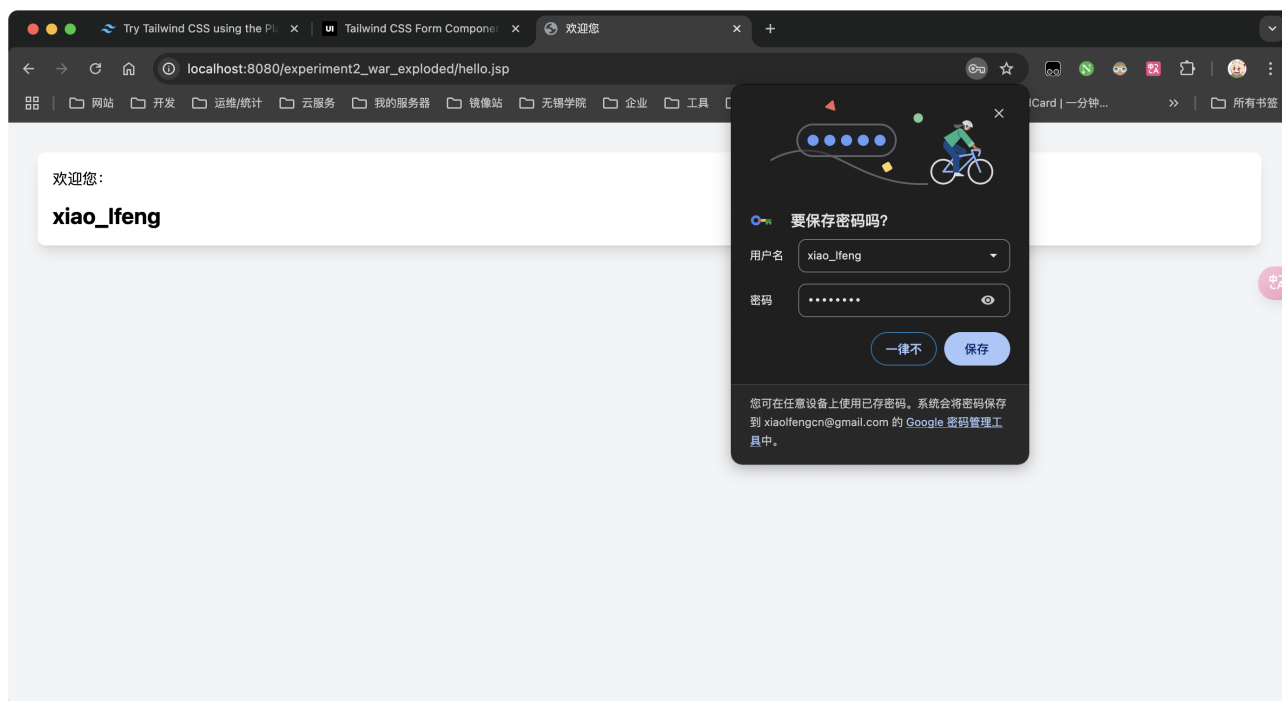
```
27        console.log('user:', user);
28        if (user == null || user === '') {
29            alert('请先登录');
30            window.location.href = 'login.jsp';
31        } else {
32            document.getElementById('dom-user').innerText = user;
33        }
34    };
35 </script>
36 </html>
```

● 截图 ::

localhost:8080 显示

用户不存在

确定

Java 实验作业登录界面

5_huang

················

登录

---

localhost:8080 显示

登录失败

确定

Java 实验作业登录界面

xiao_lfeng

·······

登录
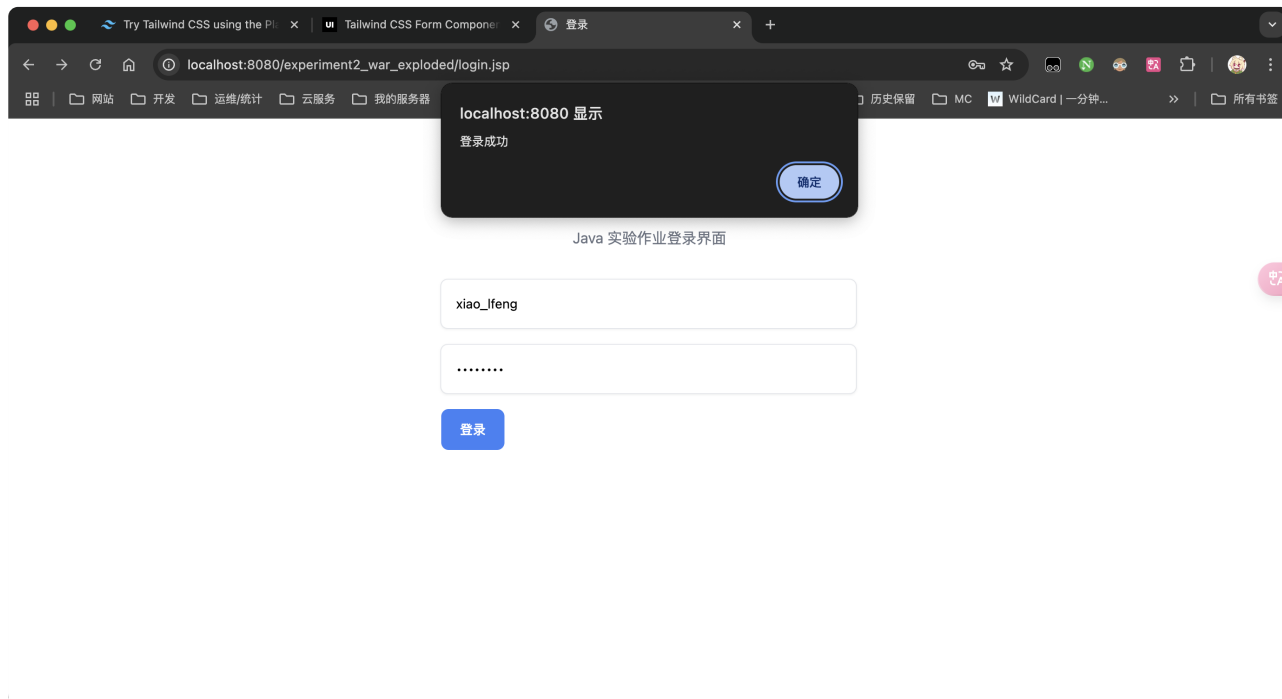
2. 制作一个学生信息管理系统的注册功能，表单的样式自己设计。

● 源代码

```java
1    package com.xlf.school.experiment2.controller;

2

3    import com.google.gson.Gson;

4    import jakarta.servlet.ServletException;
```

```java
import jakarta.servlet.annotation.WebServlet;
import jakarta.servlet.http.HttpServlet;
import jakarta.servlet.http.HttpServletRequest;
import jakarta.servlet.http.HttpServletResponse;
import org.jetbrains.annotations.NotNull;

import java.io.IOException;
import java.util.logging.Logger;

/**
 * 用户注册控制器
 * <p>
 * 用于处理用户注册请求，并返回注册结果
 *
 * @since v1.0-SNAPSHOT
 * @version v1.0-SNAPSHOT
 * @author xiao_lfeng
 */
@WebServlet("/api/v1/register")
public class UserRegisterController extends HttpServlet {
    private final Logger log = Logger.getLogger(UserRegisterController.class.getName());

    @Override
    protected void doPost(@NotNull HttpServletRequest req, @NotNull HttpServletResponse resp)
throws IOException {
        // 接收消息体
        String getBody = req.getReader().readLine();
        log.info("RequestBody: " + getBody);
        // 输出消息体
        resp.setContentType("application/json;charset=utf-8");
        resp.getWriter().print(getBody);
    }
}
```

```java
<%@ page contentType="text/html;charset=UTF-8" language="java" %>
<!doctype html>
<html lang="zh">
<head>
    <meta charset="UTF-8">
    <meta name="viewport"
```

```
 7          content="width=device-width, user-scalable=no, initial-scale=1.0, maximum-scale=1.0,
     minimum-scale=1.0">
 8       <meta http-equiv="X-UA-Compatible" content="ie=edge">
 9       <title>学生信息管理系统注册</title>
10       <script src="https://cdn.tailwindcss.com"></script>
11    </head>
12    <body>
13    <section class="bg-white">
14       <div class="lg:grid lg:min-h-screen lg:grid-cols-12">
15          <aside class="relative block h-16 lg:order-last lg:col-span-5 lg:h-full xl:col-span-6">
16             <img
17                   alt=""
18                   src="https://images.unsplash.com/photo-1605106702734-205df224ecce?ixlib=rb-
     1.2.1&ixid=MnwxMjA3fDB8MHxwaG90by1wYWdlfHx8fGVufDB8fHx8&auto=format&fit=crop&w
     =870&q=80"
19                   class="absolute inset-0 h-full w-full object-cover"
20             />
21          </aside>
22
23          <main
24                class="flex items-center justify-center px-8 py-8 sm:px-12 lg:col-span-7 lg:px-16 lg:py-
     12 xl:col-span-6"
25          >
26             <div class="max-w-xl lg:max-w-3xl">
27                <h1 class="mt-6 text-2xl font-bold text-gray-900 sm:text-3xl md:text-4xl">
28                   学生信息管理系统 🧗
29                </h1>
30
31                <p class="mt-4 leading-relaxed text-gray-500">
32                   筱锋的 Java 课程作业，学生信息管理系统，2024-10-09 实验作业 22344233。
33                </p>
34
35                <form action="#" class="mt-8 grid grid-cols-6 gap-6">
36                   <div class="col-span-6 sm:col-span-3">
37                      <label for="username" class="block text-sm font-medium text-gray-700">
38                         用户名
39                      </label>
40                      <input
41                            type="text"
42                            id="username"
43                            name="username"
44                            class="p-2 border w-full rounded-md border-gray-200 bg-white text-sm text-
     gray-700 shadow-sm"
```

```
45                    />
46                  </div>
47                  <div class="col-span-6 sm:col-span-3">
48                    <label for="realname" class="block text-sm font-medium text-gray-700">
49                      真实姓名
50                    </label>
51
52                    <input
53                        type="text"
54                        id="realname"
55                        name="realname"
56                        class="p-2 border w-full rounded-md border-gray-200 bg-white text-sm text-gray-700 shadow-sm"
57                    />
58                  </div>
59                  <div class="col-span-6">
60                    <label for="email" class="block text-sm font-medium text-gray-700">
61                      邮箱
62                    </label>
63                    <input
64                        type="email"
65                        id="email"
66                        name="email"
67                        class="p-2 border w-full rounded-md border-gray-200 bg-white text-sm text-gray-700 shadow-sm"
68                    />
69                  </div>
70
71                  <div class="col-span-6 sm:col-span-3">
72                    <label for="password" class="block text-sm font-medium text-gray-700">
73                      密码
74                    </label>
75                    <input
76                        type="password"
77                        id="password"
78                        name="password"
79                        class="p-2 border w-full rounded-md border-gray-200 bg-white text-sm text-gray-700 shadow-sm"
80                    />
81                  </div>
82
83                  <div class="col-span-6 sm:col-span-3">
84                    <label for="password_confirm" class="block text-sm font-medium text-gray-700">
```

```
 85                            确认密码
 86                        </label>
 87                        <input
 88                            type="password"
 89                            id="password_confirm"
 90                            name="password_confirm"
 91                            class="p-2 border w-full rounded-md border-gray-200 bg-white text-sm text-
     gray-700 shadow-sm"
 92                        />
 93                    </div>
 94                    <div class="col-span-6 sm:flex sm:items-center sm:gap-4">
 95                        <button
 96                            class="inline-block shrink-0 rounded-md border border-blue-600 bg-blue-600
     px-12 py-3 text-sm font-medium text-white transition hover:bg-transparent hover:text-blue-600
     focus:outline-none focus:ring active:text-blue-500"
 97                        >
 98                            创建账户
 99                        </button>

101                        <p class="mt-4 text-sm text-gray-500 sm:mt-0">
102                            已有账户?
103                            <a href="login.jsp" class="text-gray-700 underline">登录</a>.
104                        </p>
105                    </div>
106                </form>
107            </div>
108        </main>
109    </div>
110 </section>
111 </body>
112 <script type="application/javascript">
113    document.querySelector('form').addEventListener('submit', function (event) {
114        event.preventDefault();
115        const username = document.getElementById('username').value;
116        const realname = document.getElementById('realname').value;
117        const email = document.getElementById('email').value;
118        const password = document.getElementById('password').value;
119        const password_confirm = document.getElementById('password_confirm').value;
120        if (username == null || username === '') {
121            alert('用户名不能为空');
122            return;
123        }
124        if (realname == null || realname === '') {
```

```
125            alert('真实姓名不能为空');
126            return;
127        }
128        if (email == null || email === '') {
129            alert('邮箱不能为空');
130            return;
131        }
132        if (password == null || password === '') {
133            alert('密码不能为空');
134            return;
135        }
136        if (password_confirm == null || password_confirm === '') {
137            alert('确认密码不能为空');
138            return;
139        }
140        if (password !== password_confirm) {
141            alert('两次密码输入不一致');
142            return;
143        }
144        // 发送数据
145        fetch('api/v1/register', {
146            method: 'POST',
147            headers: {
148                'Content-Type': 'application/json'
149            },
150            body: JSON.stringify({
151                username: username,
152                realname: realname,
153                email: email,
154                password: password
155            })
156        }).then(response => {
157            return response.json();
158        }).then(data => {
159            alert(data);
160        }).catch(error => {
161            alert('注册失败');
162        });
163    });
164 </script>
165 </html>
```
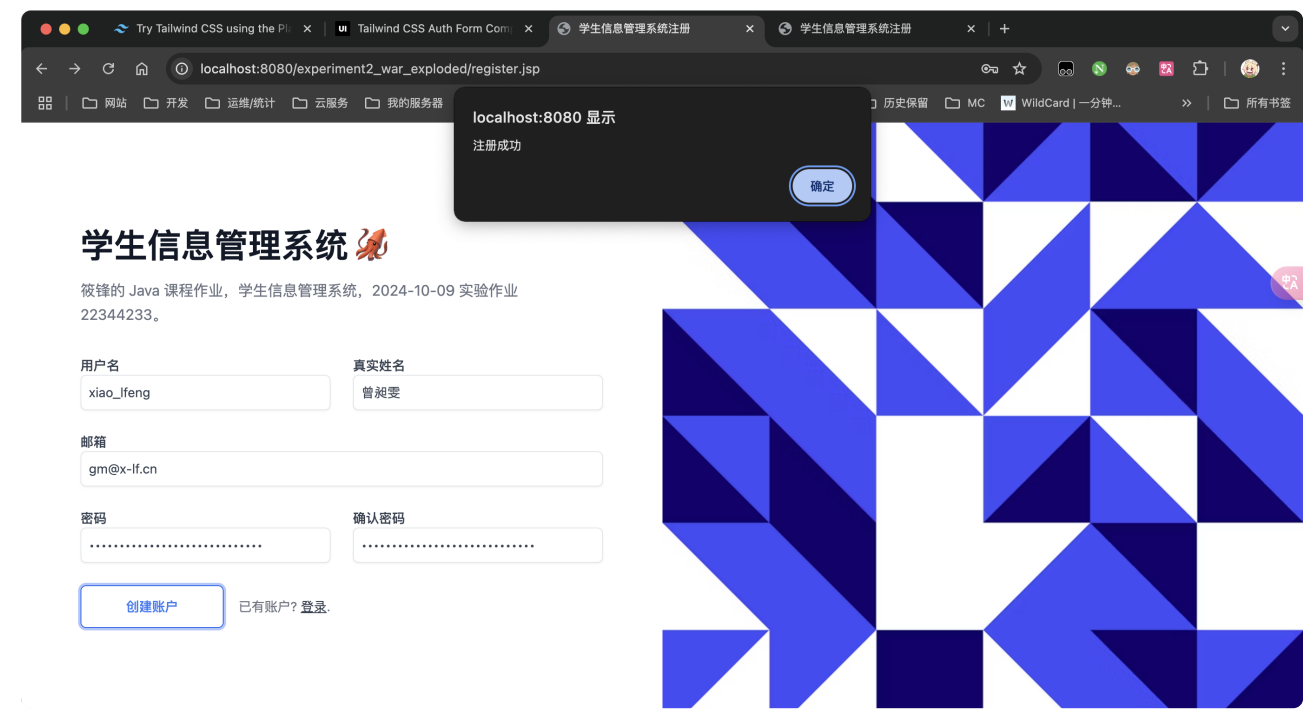
3. 编写一个"计算找零"的页面，在页面上输入应付款、实际付款，提交，在页面底部显示应该找零的数量和各种面值的张数，例如：找零是**56元**，应付款为**50元1张，5元1张，1元1张**。假设有**50、20、10、5、1**这**5种面值**。 ::

● 源代码 ::

```jsp
1   <%@ page contentType="text/html;charset=UTF-8" language="java" %>
2   <%@ page import="java.util.LinkedHashMap" %>
3   <%
4       // 获取表单输入数据
5       String amountDue = request.getParameter("amountDue");
6       String amountPaid = request.getParameter("amountPaid");
7       String changeResult = "";
8
9       // 判断是否已输入应付款和实际付款
10      if (amountDue != null && amountPaid != null && !amountDue.isEmpty() &&
        !amountPaid.isEmpty()) {
11          try {
12              int due = Integer.parseInt(amountDue);
13              int paid = Integer.parseInt(amountPaid);
```

```java
            int change = paid - due;

            // 计算找零
            if (change < 0) {
                changeResult = "付款不足！请支付足够金额。";
            } else if (change == 0) {
                changeResult = "没有找零，您支付的金额正好。";
            } else {
                // 面值数组
                int[] denominations = {50, 20, 10, 5, 1};
                LinkedHashMap<Integer, Integer> changeDetails = new LinkedHashMap<>();

                // 计算每种面值的张数
                for (int denom : denominations) {
                    int count = change / denom;
                    if (count > 0) {
                        changeDetails.put(denom, count);
                        change -= denom * count;
                    }
                }

                // 拼接找零信息
                StringBuilder sb = new StringBuilder();
                sb.append("找零总金额：").append(paid - due).append(" 元<br>");
                sb.append("找零详情：<br>");
                for (Integer denom : changeDetails.keySet()) {
                    sb.append(denom).append(" 元: ").append(changeDetails.get(denom)).append(" 张
<br>");
                }
                changeResult = sb.toString();
            }
        } catch (NumberFormatException e) {
            changeResult = "输入格式错误，请输入整数金额。";
        }
    }
%>
<!DOCTYPE html>
<html lang="zh">
<head>
    <meta charset="UTF-8">
    <title>找零计算器</title>
    <script src="https://cdn.tailwindcss.com"></script>
</head>
```

```html
<body class="bg-gray-100 text-gray-800">
<div class="container mx-auto mt-10">
    <h1 class="text-3xl font-bold text-center mb-5">找零计算器</h1>
    <div class="bg-white p-8 rounded shadow-md max-w-lg mx-auto">
        <form method="GET" action="money.jsp">
            <div class="mb-4">
                <label class="block text-gray-700 text-sm font-bold mb-2" for="amountDue">
                    应付款 (元)
                </label>
                <input type="text" id="amountDue" name="amountDue"
                    class="shadow appearance-none border rounded w-full py-2 px-3 text-gray-700
leading-tight focus:outline-none focus:shadow-outline"
                    placeholder="请输入应付款金额">
            </div>
            <div class="mb-6">
                <label class="block text-gray-700 text-sm font-bold mb-2" for="amountPaid">
                    实际付款 (元)
                </label>
                <input type="text" id="amountPaid" name="amountPaid"
                    class="shadow appearance-none border rounded w-full py-2 px-3 text-gray-700
leading-tight focus:outline-none focus:shadow-outline"
                    placeholder="请输入实际付款金额">
            </div>
            <div class="flex items-center justify-between">
                <button type="submit"
                    class="bg-blue-500 hover:bg-blue-700 text-white font-bold py-2 px-4 rounded
focus:outline-none focus:shadow-outline">
                    计算找零
                </button>
            </div>
        </form>
    </div>
    <div class="mt-10 text-center text-lg bg-green-100 p-4 rounded max-w-lg mx-auto">
        <% if (!changeResult.isEmpty()) { %>
        <div class="text-gray-900">
            <%= changeResult %>
        </div>
        <% } %>
    </div>
</div>
</body>
</html>
```
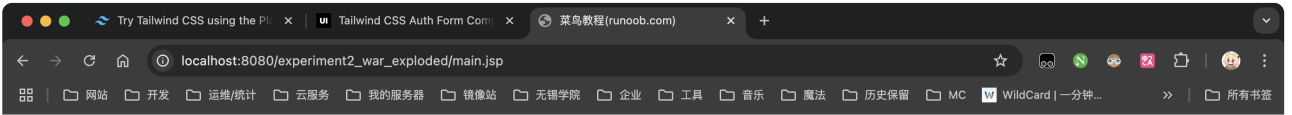
● 截图
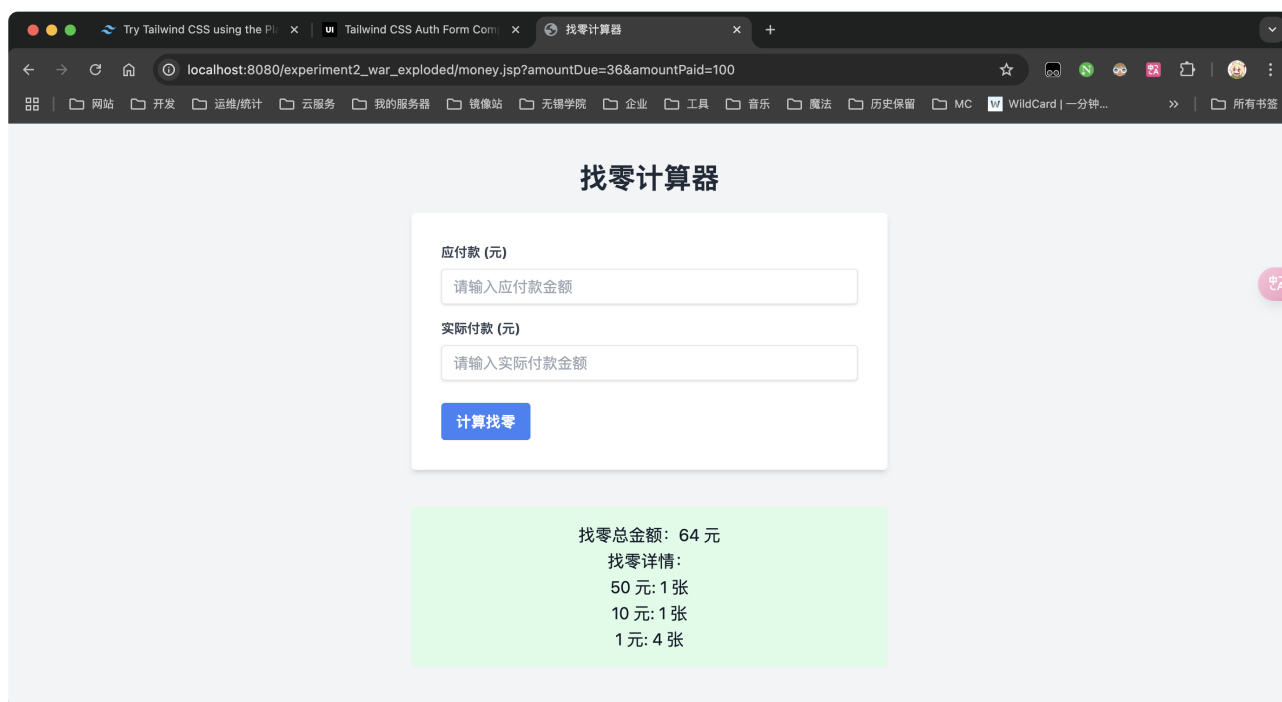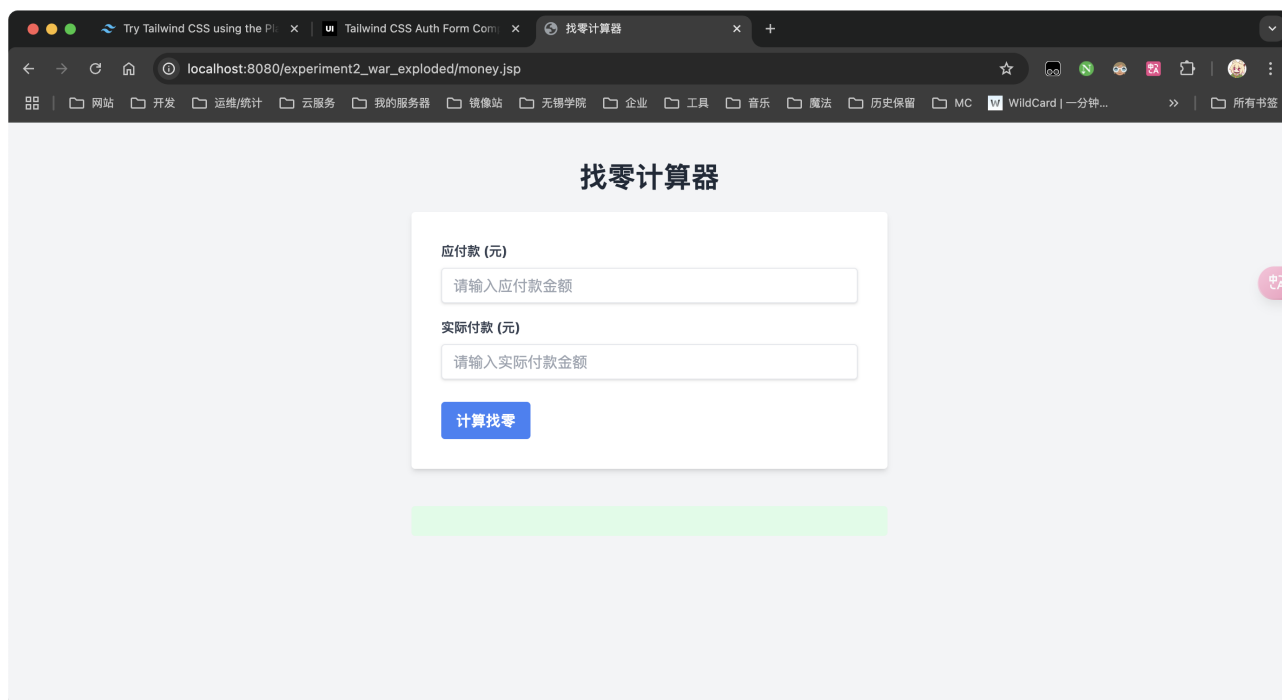
4. 看程序写结果（一）：**jsp:include**动作元素的使用

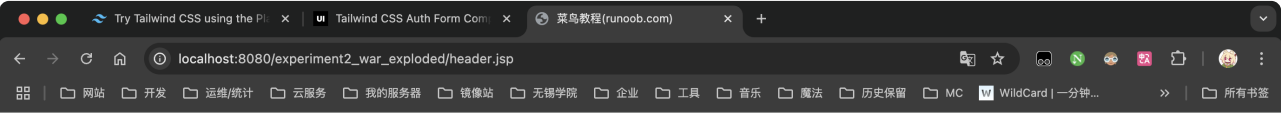include 动作实例

今天的日期是: 2024年10月9日 上午11:28:25

5. 看程序写结果（二）：使用setIntHeader()方法和setRefreshHeader()方法来模拟一个数字时钟

自动刷新实例

当前时间: 11:30:26 AM

6. 看程序写结果（三）：HTTP信息头示例

HTTP 头部请求实例

Header Name	Header Value(s)
host	localhost:8080
connection	keep-alive
sec-ch-ua	"Google Chrome";v="129", "Not=A?Brand";v="8", "Chromium";v="129"
sec-ch-ua-mobile	?0
sec-ch-ua-platform	"macOS"
upgrade-insecure-requests	1
user-agent	Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/129.0.0.0 Safari/537.36
accept	text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,image/apng,*/*;q=0.8,application/signed-exchange;v=b3;q=0.7
sec-fetch-site	none
sec-fetch-mode	navigate
sec-fetch-user	?1
sec-fetch-dest	document
accept-encoding	gzip, deflate, br, zstd
accept-language	zh-US,zh;q=0.9,en-US;q=0.8,en;q=0.7,zh-CN;q=0.6
cookie	JSESSIONID=1F944AED7E0030148D2253F89DC975EE; Idea-1565728f=23a56564-5430-4fa7-92f2-7755c98b5f19

HTTP 头部请求实例