

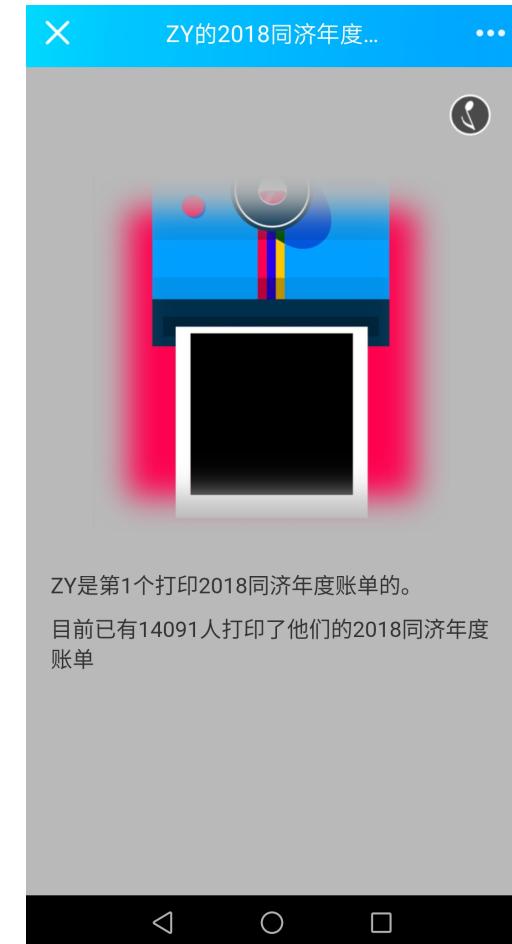
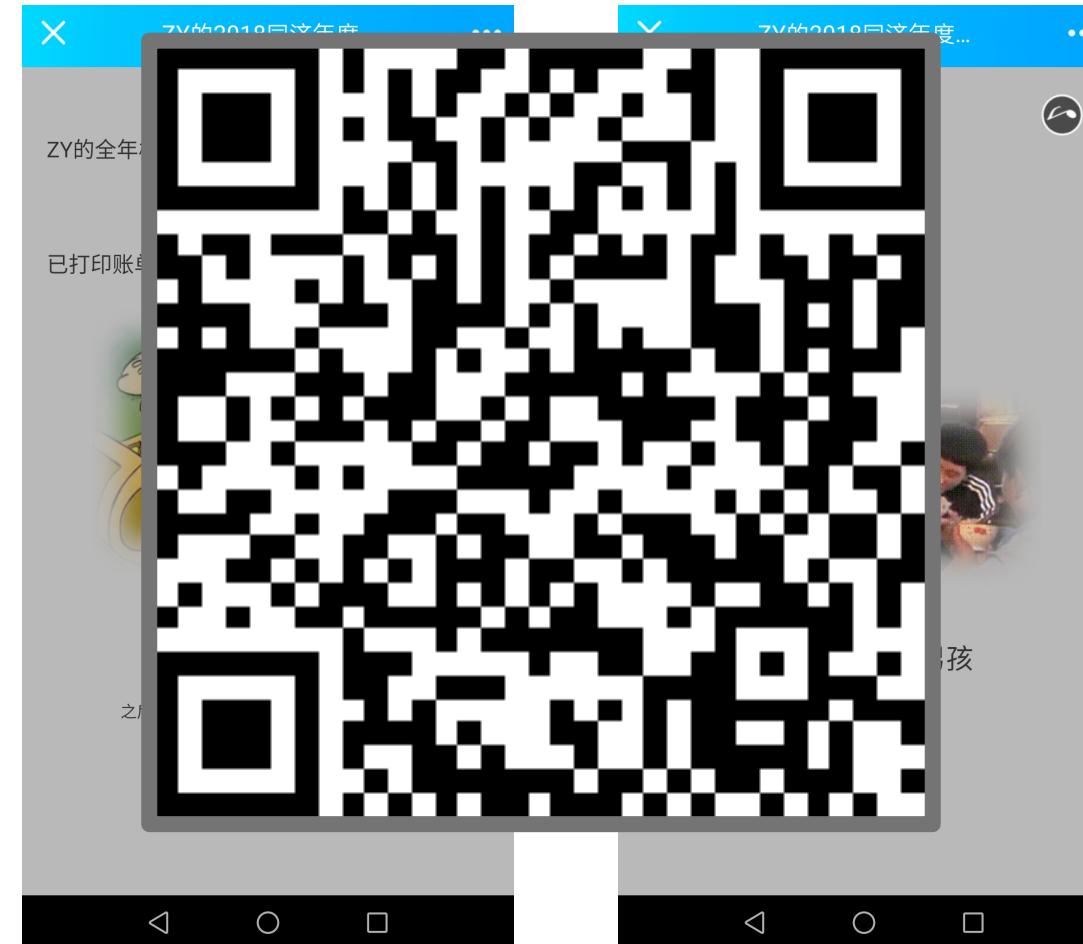
感受技术之美

同济微软俱乐部技术分享

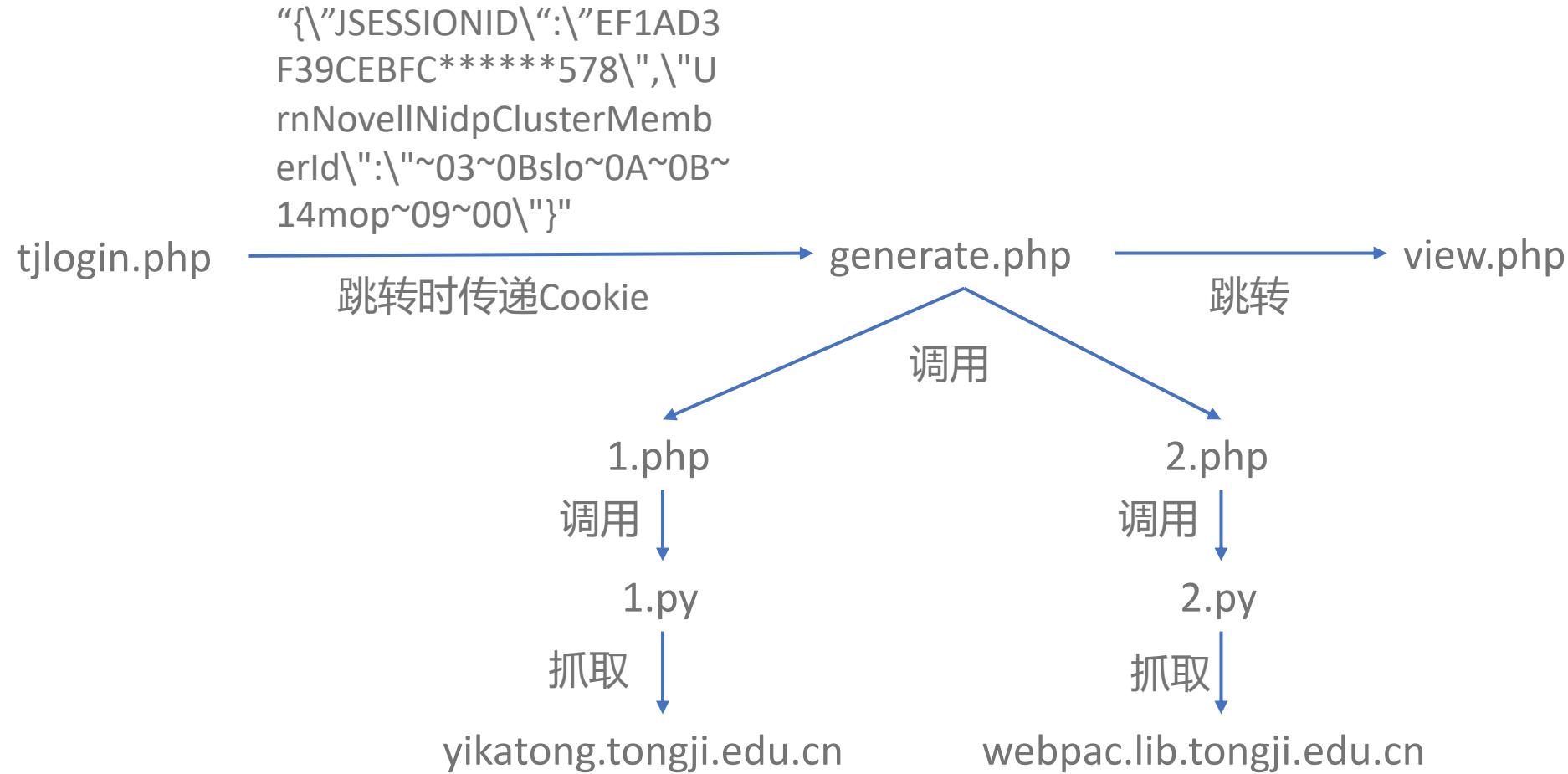
同济年度账单解析

分享人：周易

2018同济年度账单



基本流程



SSO

单点登录

API

寻找爬虫接口

后端分析

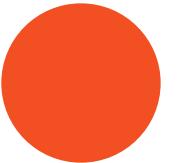
Back-end
Analysis

前端

Front-end

SSO

单点登录



API

寻找爬虫接口

后端分析

Back-end
Analysis

前端

Front-end

同济大学统一身份认证



通过SAML 2.0 (Security Assertion Markup Language)
实现SSO (Single Sign On)

xuanke.tongji.edu.cn

The screenshot shows the login page for the Tongji University Management Information System. At the top, it says "同济大学教务管理信息系统" (Tongji University Management Information System). Below that, it says "你是第27637719位登录本系统的用户". The main title is "统一身份认证登录". There is a note: "注意: 教务系统采用学校“统一身份认证系统”的账号/密码进行登录; 原登录方式不再使用。教务处不再维护登录密码, 建议先修改缺省密码再登录系统。密码问题请仔细查阅: *统一身份认证系统*登录帮助". It also says "登陆教务系统建议IE10及以上的IE浏览器! 相关链接: 已迁入一体化系统的教师功能: 课表查询 学生名单 教学进度 成绩录入 报读资格申请 同济大学本研一体化教务管理系统". At the bottom, it says "性设置方法" (Method for setting up compatibility).

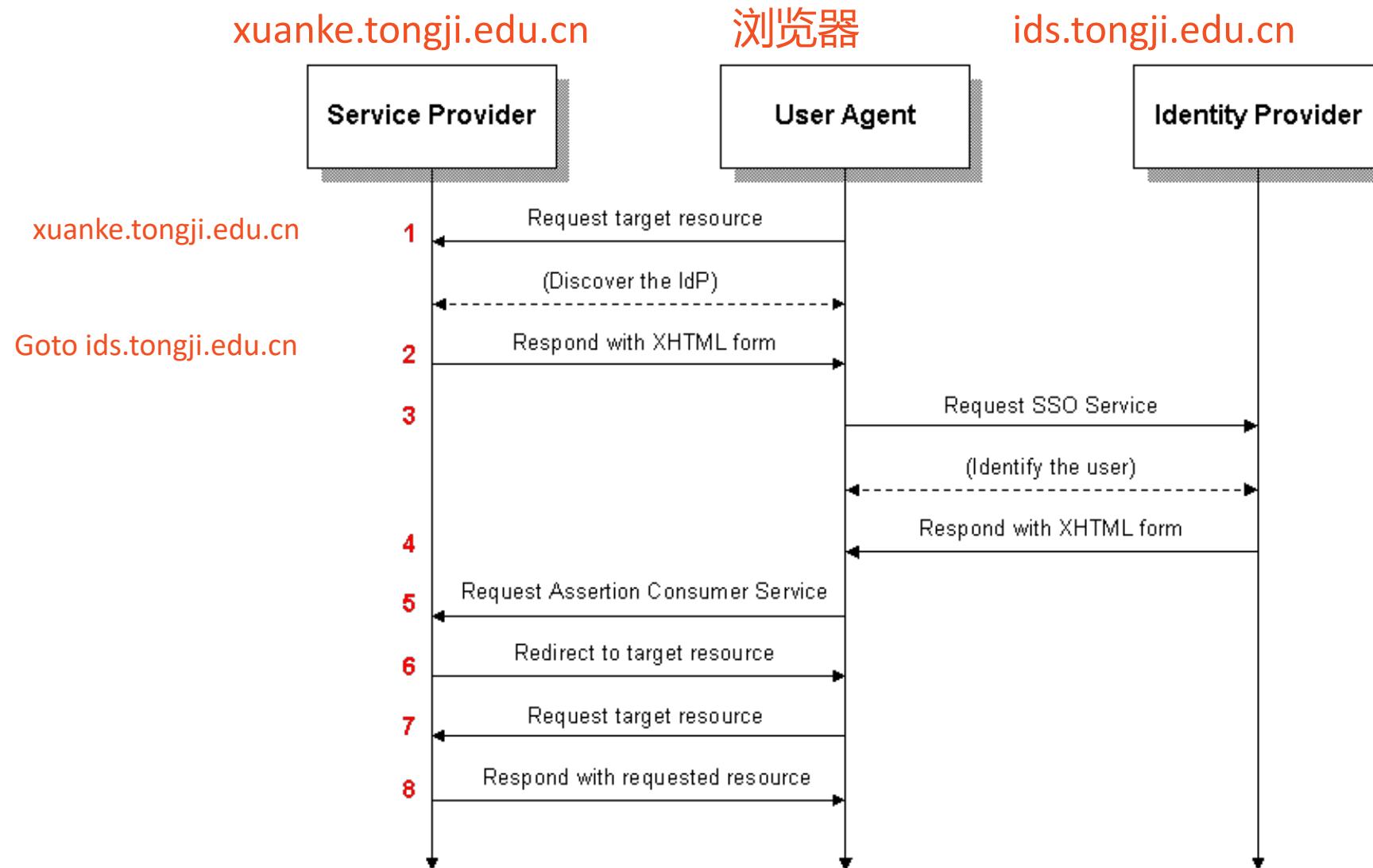
ids.tongji.edu.cn



xuanke.tongji.edu.cn

The screenshot shows the homepage of the Tongji University Management Information System. At the top, it says "同济大学教务管理信息系统" (Tongji University Management Information System). It displays statistics: "学生当前在线人数: 0人。 教师当前在线人数: 1人。 管理员当前在线人数: 0人。". Below that is a "通知" (Notice) section with several items: 1. 毕业班退培养计划外学分的通知, 2. 关于2018-2019学年第二学期实践教学阶段工作安排的通知(2), 3. 同济大学本科生境外交流学习指南发布, 4. 关于本科生父母信息填报情况的汇报, 5. 2019届毕业生上学信核对学籍信息和毕业照片的通知 (附未拍照名单), 6. 关于2019届毕业设计(论文)近期工作时间节点的通知, 7. 2020届毕业生(包括留学生)采集毕业照片的通知. The main menu on the left includes "同济大学教务管理系统", "学生", "成绩查询", "毕业生退成绩", "毕业生问卷调查", "各种考试报名", "加强班", "辅修", "校外考试", and "找回密码".

SAML 2.0



SAML Request



```
<?xml version="1.0" encoding="UTF-8"?>
<saml2p:AuthnRequest xmlns:saml2p="urn:oasis:names:tc:SAML:2.0:protocol"
    AssertionConsumerServiceURL="http://xuanke.tongji.edu.cn:443/oiosaml/saml/SAMLAssertionConsumer"
    Destination="https://ids.tongji.edu.cn:8443/nidp/saml2/sso"
    ForceAuthn="false"
    ID="_5c9f72e5-aaad-413d-a60b-ba6796489f9d"
    IsPassive="false"
    IssueInstant="2019-05-13T16:42:43.205Z"
    ProtocolBinding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
    Version="2.0">
<saml2:Issuer xmlns:saml2="urn:oasis:names:tc:SAML:2.0:assertion">http://saml.xuanke.tongji.edu.cn</saml2:Issuer>
<saml2p:NameIDPolicy AllowCreate="true"
    Format="urn:oasis:names:tc:SAML:2.0:nameid-format:transient"
    SPNameQualifier="http://saml.xuanke.tongji.edu.cn" /></saml2p:AuthnRequest>
```

SAML Response

▼ General

Request URL: http://xuanke.tongji.edu.cn:443/oiosaml/saml/SAMLAssertionConsumer

Request Method: POST

Status Code: 302

Remote Address: 202.120.189.123:443

Referrer Policy: no-referrer-when-downgrade

► Response Headers (3)

► Request Headers (12)

► Form Data view source view URL encoded

SAMLResponse: PHNhbwXw01J1c3BvbNlIHhtbG5zOnNhbWxwPSJ1cm46b2FzaXM6bmFtZERlc3Rpbf0al9uPSJodHRw0i8veHvhbmt1LnRvbmdqaS51ZHUUy246NDQzL29pb3NhbWxwRvPSJfMGY3YTk0YTktNDVhNi00ZTBmLT1mYWQtNDExNjEwNTNkZjY3IiBjC3N1ZU1uc3RhbtLmNuOjg0NDMvbmlkcC9zYW1sMi9tZXRhZGF0YTtWvc2FtbDpJc3N1ZXI+PHNhbwXw01N0YXR19zYW1scDpTdGF0dXM+PHNhbw6QXNzZXJ0al9uIE1EPSJpZGFkWGI2bEZsRG1sNmN6aUFhTaHR0cHM6Ly9pZHMudG9uZ2ppLmVkdS5jbjo4NDQzL25pZHAvc2FtbDIvW0YWRhdGE8L3NptAwduZWRJbmZvPjxDYW5vbmljYWxpeM0al9uTWV0aG9kIHhtbG5zPSJodHRw0i8vd3d3L1IyIvPjxkczpTaWduYXR1cmVNZXRob2QgQWxnb3JpdGhtPSJodHRw0i8vd3d3LnczLm9yZy81jIj48ZHM6VHJhbnNmb3Jtcz48ZHM6VHJhbnNmb3JtIEFsZ29yaXRobT0iaHR0cDovL3d3dcDovL3d3dy53My5vcmcvMjAwMS8xMC94bWwtZXhjLWMxNG4jIi8+PC9kczpUcmFuc2Zvcm1d1c3RWYWx1ZSB4bWxucz0iaHR0cDovL3d3dy53My5vcmcvMjAwMC8wOS94bWxkc21nIyI+SaWduYXR1cmVWYWx1ZSB4bWxucz0iaHR0cDovL3d3dy53My5vcmcvMjAwMC8wOS94bWxkc21

证书

常规 详细信息 证书路径

证书信息

这个证书的目的如下:

- 保证远程计算机的身份
- 向远程计算机证明你的身份
- 2.16.840.1.114412.1.1
- 2.23.140.1.2.2

* 有关详细信息, 请参考证书颁发机构的说明。

颁发给: *.tongji.edu.cn

颁发者: GeoTrust RSA CA 2018

有效期从 2018/6/26 到 2020/9/24

[安装证书\(I\)...](#) [颁发者说明\(S\)](#)

确定

```

<samlp:Response xmlns:samlp="urn:oasis:names:tc:SAML:2.0:protocol"
      xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion"
      consent="obtained"
      cn="443/oiosaml/saml/SAMLAssertionConsumer"
      id="ba6796489f9d"

      saml2/metadata</saml:Issuer>
      2.0:status:Success" /></samlp:Status>

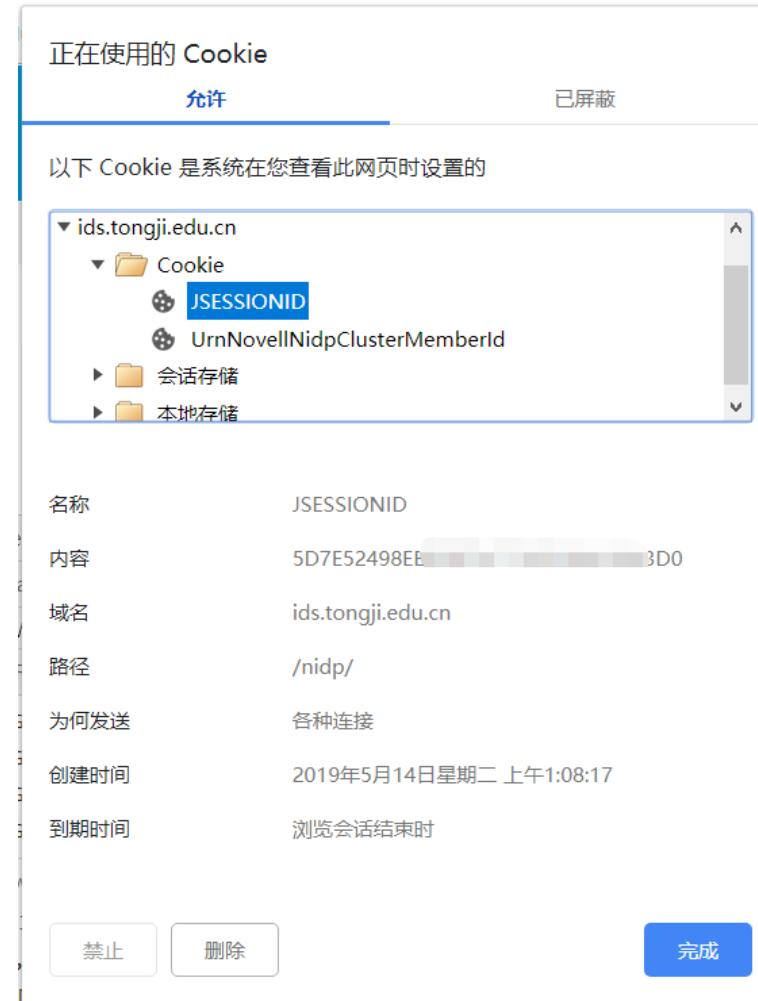
      saml2/metadata</saml:Issuer>
      /xmldsig#">

      org/2000/09/xmldsig#
      .w3.org/2001/10/xml-exc-c14n#"/>
      org/2000/09/xmldsig#rsa-sha1"/>
      yaBQ">

      g/2000/09/xmldsig#enveloped-signature"/>
      g/2001/10/xml-exc-c14n#"/></ds:Transforms>
      rg/2000/09/xmldsig#sha1"/>
      09/xmldsig#">IyBJQ9NU6kpWxjYH4WUAr1SEis=</DigestValue>

      9/xmldsig#">
      1ujmBvx1wZBFnPTIUktfuERwpxz1JIU2XFv
      qU7LFP/yY6v0t82Ac0Adf02UB
      DucOPKLi2qx30wgi9/JFAheC1
      oIDFAGa/pT0z0ie7+6AhbXg2f
  
```

SSO (单点登录)



Cookie

PHP 执行 popen

python3 1.py "{\"JSESSIONID\":\"A6FD898EFF814*****3\",\"UrnNovellNidpClusterMemberId\":\"~****9~0F\"}"

```
s=requests.session()
for k,v in json.loads(sys.argv[1]).items():
    s.cookies.set(**{'name':k,'value':v,'path':'/','domain':'ids.tongji.edu.cn'})
samlrequest=s.get('http://yikatong.tongji.edu.cn:8099/saml/saml/login')
samlresponse=s.get(re.findall('url=(.*?)"',samlrequest.text)[0])

sp1=s.post(re.findall('action=(.*?)"',samlresponse.text)[0],{'SAMLResponse':re.findall('value=(.*?)"',samlresponse.text)[0]})
```

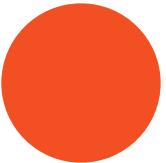


Further Reading

Introduction to SAML : https://en.wikipedia.org/wiki/SAML_2.0

SSO

单点登录



API

寻找爬虫接口

后端分析

Back-end
Analysis

前端

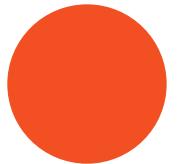
Front-end

SSO

单点登录

API

寻找爬虫接口



后端分析

Back-end
Analysis

前端

Front-end

Steps



- 1、打开抓包工具（ Chrome Developer Tool / Fiddler / Charles / Wireshark ）
- 2、访问目标页面
- 3、分析数据格式（ JSON / XML / JavaScript Array / HTML ）
- 4、编写相应解析数据代码

Capture - eCard



周易 学工号: 1652264 日期: 2019-05-01/2019-05-14

校园卡挂失

校园卡解挂

交易时间	交易地点	POS	交易金额	交易类型	卡余额
2019-05-10 17:24:56	2019-05-10 17:36:44
2019-05-10 09:36:08	2019-05-10 09:47:43
2019-05-09 21:11:16	2019-05-09 21:11:17
2019-05-09 18:46:41	2019-05-09 18:58:19
2019-05-09 17:42:24	2019-05-09 17:53:38
2019-05-09 17:42:23	2019-05-09 17:53:38	MERCNAME: "", TRANAMT: 500	500
2019-05-09 14:12:10	2019-05-09 14:12:10	MERCNAME: "", TRANAMT: 200	200
2019-05-09 14:11:07	2019-05-09 14:11:07	MERCNAME: "", TRANAMT: 100	100
2019-05-09 14:11:07	2019-05-09 14:11:07	MERCNAME: "", TRANAMT: 200	200
2019-05-08 18:46:03	2019-05-08 18:57:21
2019-05-08 11:58:37	2019-05-08 12:09:42
2019-05-08 11:57:43	2019-05-08 12:09:10
2019-05-08 09:44:04	2019-05-08 09:55:45

issucceed: false, name: null, total: 19, tranamt: 0, tranamt1: 0, tranamt2: 0, parm1: null,...}
footer: null
issucceed: false
name: null false
parm1: null
parm2: null

rows: [{RO: 1, OCCTIME: "2019-05-10 17:24:56", EFFECTDATE: "2019-05-10 17:36:44",...},
0: {RO: 1, OCCTIME: "2019-05-10 17:24:56", EFFECTDATE: "2019-05-10 17:36:44",...},
1: {RO: 2, OCCTIME: "2019-05-10 09:36:08", EFFECTDATE: "2019-05-10 09:47:43",...},
2: {RO: 3, OCCTIME: "2019-05-09 21:11:16", EFFECTDATE: "2019-05-09 21:11:17",...},
3: {RO: 4, OCCTIME: "2019-05-09 18:46:41", EFFECTDATE: "2019-05-09 18:58:19",...},
4: {RO: 5, OCCTIME: "2019-05-09 17:42:24", EFFECTDATE: "2019-05-09 17:53:38",...},
5: {RO: 6, OCCTIME: "2019-05-09 17:42:23", EFFECTDATE: "2019-05-09 17:53:38", MERCNAME: "", TRANAMT: 500,...},
6: {RO: 7, OCCTIME: "2019-05-09 14:12:10", EFFECTDATE: "2019-05-09 14:12:10", MERCNAME: "", TRANAMT: 200,...},
7: {RO: 8, OCCTIME: "2019-05-09 14:11:07", EFFECTDATE: "2019-05-09 14:11:07", MERCNAME: "", TRANAMT: 100,...},
8: {RO: 9, OCCTIME: "2019-05-09 14:11:07", EFFECTDATE: "2019-05-09 14:11:07", MERCNAME: "", TRANAMT: 200,...},
9: {RO: 10, OCCTIME: "2019-05-08 18:46:03", EFFECTDATE: "2019-05-08 18:57:21",...},
10: {RO: 11, OCCTIME: "2019-05-08 11:58:37", EFFECTDATE: "2019-05-08 12:09:42",...},
11: {RO: 12, OCCTIME: "2019-05-08 11:57:43", EFFECTDATE: "2019-05-08 12:09:10",...},
12: {RO: 13, OCCTIME: "2019-05-08 09:44:04", EFFECTDATE: "2019-05-08 09:55:45",...}]

edate: 2019-05-14
account: 256769
page: 1
rows: 15

Elements

Filter

Name

- resources
- pages.css
- icon.css
- button.css
- easyui.css
- h1.png
- icon.png
- button.png
- combo_arrow.png
- calendar_arrows.png
- datebox_arrow.png
- pagination_icons.png
- loading.gif
- GetPersonTrjn
- GetPersonTrjn

Capture - Library

同济大学图书馆书目检索系统

```
sp3=s.post('http://webpac.lib.tongji.edu.cn/reader/book_hist.php',{'para_string':'all','topage':'1'})\n\ntrs=re.findall('<tr>([\s\S]*?)</tr>',sp3.text)\ntrs.pop(0)\n\nbooks=[]\nfor tds in trs:\n    td=re.findall('<td.*?>(.*)</td>',tds)\n    names=re.findall('<a.*?href=".+".&nbsp;(.*)>(.*)</a>',td[2])[0]\n    books.append([html.unescape(names[1]),td[4],td[5],td[6],html.unescape(td[3]),names[0]])\n    if '2018' in td[4]:\n        try:\n            books[-1].append(re.findall('coden=(.*?)"',s.get('http://webpac.lib.tongji.edu.cn'+names[0]).text)[0])\n        except Exception as e:\n            continue\n\nprint(json.dumps(books,ensure_ascii=False))\n\n85      <td bgcolor="#FFFFFF" class="whitetext" width="10%">02723955</td>\n86      <td bgcolor="#FFFFFF" class="whitetext" width="25%"><a class="blue" href="../opac/item.php?marc_no=0002618518">嘉定校区图书馆(中文)</a></td>\n87      <td bgcolor="#FFFFFF" class="whitetext" width="15%">&#x5434;&#x7ff0;&#x6e05;&#x8457;</td>\n88      <td bgcolor="#FFFFFF" class="whitetext" width="12%">2019-03-20</td>\n89      <td bgcolor="#FFFFFF" class="whitetext" width="12%">2019-04-23</td>\n90      <td bgcolor="#FFFFFF" class="whitetext" width="15%">嘉定校区图书馆(中文)</td>\n91  </tr>\n92  <tr>
```

Further Reading



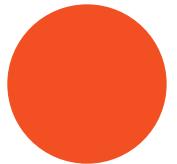
Scrapy爬虫框架：<https://scrapy.org/>

SSO

单点登录

API

寻找爬虫接口



后端分析

Back-end
Analysis

前端

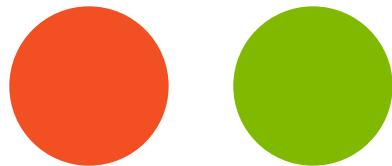
Front-end

SSO

单点登录

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寻找爬虫接口



后端分析

**Back-end
Analysis**



PHP



PHP是世界上
最好的语言



eCard – 1.php

```
{"account": "256769", "name": "周易", "unsettle_amount": "0", "db_balance": "63211", "acc_status": "0", "lostflag": "0", "freezeflag": "0", "barflag": "1", "idflag": "1", "expdate": "20200801", "cardtype": "800", "cardname": "正式卡", "bankacc": "6228*****4071", "sno": "1652264", "phone": "", "certtype": "001", "cert": "31010*****9", "createdate": "20160722", "autotrans_limite": "1000", "autotrans_amt": "5000", "autotrans_flag": "1", "mscard": "0", "scard_num": "0", "transaction": {"issucceed": false, "name": null, "total": 753, "tranamt": 0, "tranamt1": 0, "tranamt2": 0, "parm1": null, "parm2": null, "trannum": 0, "rows": [{"RO": 1, "OCCTIME": "2018-12-29 17:20:55", "EFFECTDATE": "2018-12-29 17:21:08", "MERCNAME": "嘉定校区嘉苑饮食广场风味部", "TRANAMT": -8, "TRANNAME": "持卡人消费", "TRANCODE": "15", "CARDBAL": 728.27, "JDESC": "", "JNUM": 4639671, "MACCOUNT": 1000054, "F1": "1", "F2": "11", "F3": "2", "SYSCODE": 171, "POS CODE": 27}, {"RO": 2, "OCCTIME": "2018-12-29 13:31:05", "EFFECTDATE": "2018-12-29 17:19:11", "MERCNAME": "嘉定校区嘉苑饮食广场风味部", "TRANAMT": -10, "TRANNAME": "持卡人消费", "TRANCODE": "15", "CARDBAL": 736.27, "JDESC": "", "JNUM": 4639588, "MACCOUNT": 1000054, "F1": "1", "F2": "11", "F3": "2", "SYSCODE": 171, "POS CODE": 18}, {"RO": 3, "OCCTIME": "2018-12-29 12:16:50", "EFFECTDATE": "2018-12-29 12:17:32", "MERCNAME": "嘉定校区嘉苑饮食广场快餐一部", "TRANAMT": -2.5, "TRANNAME": "持卡人消费", "TRANCODE": "15", "CARDBAL": 746.27, "JDESC": "", "JNUM": 6551968, "MACCOUNT": 1000090, "F1": "1", "F2": "11", "F3": "2", "SYSCODE": 170, "POS CODE": 17}], .....}
```



Library – 2.php

[["The humanistic tradition = 人文传统 / 6th ed.", "2018-12-12", "2018-12-12", "嘉定校区图书馆(外文)", "Fiero, Gloria K.", "/opac/item.php?marc_no=0002560469", "K103"], ["网络安全协议.第2版", "2018-11-26", "2019-01-09", "嘉定校区图书馆(中文)", "寇晓蕤, 王清贤", "/opac/item.php?marc_no=0002892755", "TP393.08"], ["计算机网络", "2018-11-23", "2019-01-18", "嘉定校区图书馆(中文)", "Andrew S. Tanenbaum, David J. Wetherall著", "/opac/item.php?marc_no=0002158500", "TP393"], ["The humanistic tradition = 人文传统 / 6th ed.", "2018-11-13", "2018-12-13", "嘉定校区图书馆(外文)", "Fiero, Gloria K.", "/opac/item.php?marc_no=0002560469", "K103"], ["The humanistic tradition = 人文传统 / 6th ed.", "2018-11-13", "2018-11-13", "嘉定校区图书馆(外文)", "Fiero, Gloria K.", "/opac/item.php?marc_no=0002560469", "K103"], ["The mythical man-month : essays on software engineering = 人月神话 /", "2018-11-13", "2018-12-13", "嘉定校区图书馆(外文)", "Brooks, Frederick P.", "/opac/item.php?marc_no=0002161903", "TP311.1"], ["数据挖掘", "2018-11-13", "2019-01-09", "嘉定校区图书馆(中文)", "Jiawei Han, Micheline Kamber, Jian Pei著", "/opac/item.php?marc_no=0002682756", "TP274"], ["The humanistic tradition = 人文传统 / 6th ed.", "2018-11-13", "2018-11-13", "嘉定校区图书馆(外文)", "Fiero, Gloria K.", "/opac/item.php?marc_no=0002560469", "K103"], ["白帽子讲Web安全", "2018-11-13", "2018-12-13", "嘉定校区图书馆(中文)", "吴翰清著", "/opac/item.php?marc_no=0002618518", "TP393.408"], ["UNIX操作系统教程", "2018-09-14", "2018-11-13", "嘉定保存本书库", "尤晋元主编", "/opac/item.php?marc_no=0000111814", "TP316"], ["白帽子讲Web安全", "2018-07-26", "2018-09-11", "嘉定校区图书馆(中文)", "吴翰清著", "/opac/item.php?marc_no=0002618518", "TP393.408"],]



Further Reading

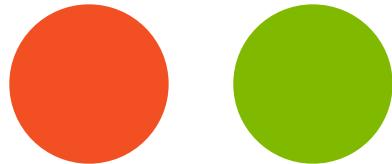
PHP官方文档：<https://www.php.net/manual/zh/>

SSO

单点登录

API

寻找爬虫接口



后端分析

**Back-end
Analysis**

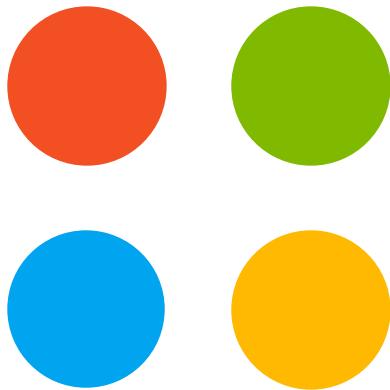


SSO

单点登录

API

寻找爬虫接口



后端分析

Back-end

Analysis

前端

Front-end

What is Front-End?



统一身份认证

用户名

口令

验证码

4 0 y 2

登录

Elements Console Network Performance Sources Application Memory Security Audits Adblock Plus

```
<div>
  <input type="text" id="Txtidcode" name="Txtidcode" placeholder="验证码" tabindex="3" class="txtVerification">
  <span id="idcode">
    <div id="ehong-code" class="ehong-idcode-val ehong-idcode-val5" href="#" onblur="return false" onfocus="return false" oncontextmenu="return false" onclick=".idcode.setCode()"> == $0
      <font color="#780720">4</font>
      <font color="#24335F">0</font>
      <font color="#D6A63C">y</font>
      <font color="#73C8A1">2</font>
    </div>
    <span id="ehong-code-tip-ck" class="ehong-code-val-tip" onclick=".idcode.setCode()"></span>
  </span>
</div>
```



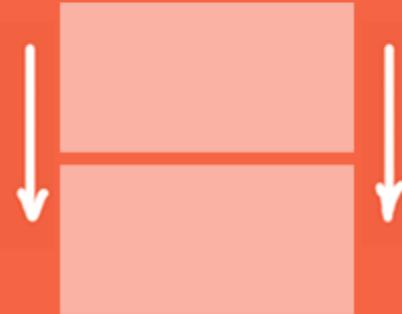
Task

```
<script>var report={"name":"ZY","sex":"1","report":{"global":{"view":"2019-01-31 16:54:07","start":"2019-01-31 16:54:38","fromname":"周"},"card":{"time":700,"merc":{"嘉定校区嘉苑饮食广场风味部":2233.7,"嘉定校区嘉苑饮食广场中点部":911.1,"嘉定校区嘉苑饮食广场快餐二部":737.02,"嘉定校区嘉苑饮食广场快餐一部":729.8,"嘉定校区游泳馆":660,"嘉定校区嘉苑饮食广场清真部":112.44,"四平路游泳馆":90,"嘉定班车POS收费":80,"四平校区西苑饮食广场中点部":75.5,"四平校区学苑饮食广场风味部":15,"四平校区学苑饮食广场小炒部":10.7,"四平校区西苑饮食广场西点4":8,"四平校区西苑饮食广场西点1":3.5,"嘉定校区嘉苑饮食广场西点部":3,"热水供应(诚善)":0.2}, "mostmerc":["嘉定校区嘉苑饮食广场风味部",242],"earliest":["07:23:35","2018年01月03日"],"latest":["21:30:03","2018年03月20日"],"热水供应(诚善)", "rice":["三", "真是一个大胃男孩",101]}, "book":{"name":[{"label":"The humanistic tradition = 人文传统 \ 6th ed."}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"网络安全协议.第2版"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"计算机网络"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"The mythical man-month : essays on software engineering = 人月神话 \"), "url":"javascript:myalert(\"猜对啦，就是它！<br>奖励你一朵小花\");"}, {"label":"数据挖掘"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"白帽子讲Web安全"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"UNIX操作系统教程"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"SQL注入攻击与防御.第2版"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"信息论:基础理论与应用.第3版"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}, {"label":"Java编程思想"}, {"url":"javascript:myalert(\"猜错了。再试试吧\");"}], "cat": [{"工业技术":11}, {"历史、地理":4}], "place": [{"嘉定校区图书馆(中文)":7}], "length": [{"The mythical man-month : essays on software engineering = 人月神话 \":122}, {"工业技术":1}], "comment": [{"这很同济！"}]}, "card_total": "5669.96", "book_total": "15", "finish": "2019-01-31 16:54:45", "from": "周先生的账单", "report_total": "14091", "report_no": 1, "card_over": "86", "card_below": 14, "book_over": "86", "card_total_comment": "壕壕我们做朋友吧"}</script>
```

fullPage.js

fullPage.js

Create Beautiful Fullscreen scrolling websites



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fullPage.js

```
<div id="fullpage">
    <div class="section">Some section A</div>
    <div class="section">Some section B</div>
    <div class="section">Some section C</div>
    <div class="section">Some section D</div>
</div>

<script src="https://cdnjs.cloudflare.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
<script src="https://tiny.zhouii.com/public/fullpage/jquery.fullpage.min.js"></script>

<script>
    $('#fullpage').fullpage({controlArrows: false});
</script>
```

Vue.js



渐进式
JavaScript 框架

Vue.js - Conditional Rendering

```
<div id="v">
    <h1 v-if="awesome">Vue is awesome!</h1>
    <h1 v-else> Vue is not awesome 😢</h1>
</div>

<h1 v-if ="awesome"> Vue作用范围外1</h1>
<h1 v-else>Vue作用范围外2</h1>

<script src="https://cdn.jsdelivr.net/npm/vue@2.6.9/dist/vue.js"></script>
<script>
    new Vue({
        el: '#v',
        data: {awesome:true}
    });
</script>
```



Vue.js - List Rendering

```
<ul id="example-2">
  <li v-for="item in items">
    {{ item.message }}
  </li>
</ul>
<script src="https://cdn.jsdelivr.net/npm/vue@2.6.9/dist/vue.js"></script>
<script>
  new Vue({
    el: '#example-2',
    data: {
      items: [
        { message: 'Message item A' },
        { message: 'Message item B' }
      ]
    }
  });
</script>
```



Google Chart

```
<div id="piechart" style="width: 900px; height: 500px;"></div>
<script src="https://www.gstatic.com/charts/loader.js"></script>
<script>
    google.charts.load('current', {'packages':['corechart']});
    google.charts.setOnLoadCallback(function(){
        var data = google.visualization.arrayToDataTable([['Name',
'Number']].concat([['第一类别',10],['第二类别',5],['第三类别',3]]));
        var options =
{backgroundColor:'transparent',pieSliceBorderColor:'transparent',pieSliceText:'value',chartArea:{width:'100%'},legend:{position:'top','maxLines':3}};
        var chart = new
google.visualization.PieChart(document.getElementById('piechart'));
        chart.draw(data, options);
    });
</script>
```



Word Cloud

```
<div id="tag-cloud"></div>
<script src="https://cdnjs.cloudflare.com/ajax/libs/jquery/3.4.1/jquery.min.js"></script>
<script src="https://tiny.zhouii.com/public/jquery.svg3dtagcloud.min.js"></script>
<script>
    $('#tag-cloud').svg3DTagCloud( {
        entries: [{label:'第一个词'}, {label:'第二个词'}, {label:'第三个词'}],
        width: 640,
        height: 400,
        bgDraw: false,
        speed: 0.5,
        fontSize: '16',
        fontColor: '#363b3f',
        fontWeight: 'bold'
    });
</script>
```

Further Reading

fullPage : <https://alvarotrigo.com/fullPage>

Vue : <https://vuejs.org/>

Google Chart : <https://developers.google.com/chart/>

Word Cloud : <https://www.jqueryscript.net/text/3D->

[Interactive-SVG-Tag-Cloud-Plugin-With-jQuery-SVG-3D-Tag-
Cloud.html](#)

先假设你有一只兔子。



假设有人又给了你另一只兔子。



现在，数一下你所拥有的兔子数量，你会得到结果是两只。也就是说一只兔子加一只兔子等于两只兔子，也就是一加一等于二。

$$1 + 1 = 2$$

这就是算术的运算方法了。

那么，现在你已经对算术的基本原理有了一定了解，就让我们来看一看下面这个简单的例子，来把我们刚刚学到的知识运用到实践中吧。

试试看！
例题 1.7

$$\log \Pi(N) = \left(N + \frac{1}{2} \right) \log N - N + A - \int_N^{\infty} \frac{\bar{B}_1(x)dx}{x}, \quad A = 1 + \int_1^{\infty} \frac{\bar{B}_1(x)dx}{x}$$

$$\log \Pi(s) = \left(s + \frac{1}{2} \right) \log s - s + A - \int_0^{\infty} \frac{\bar{B}_1(t)dt}{t+s}$$

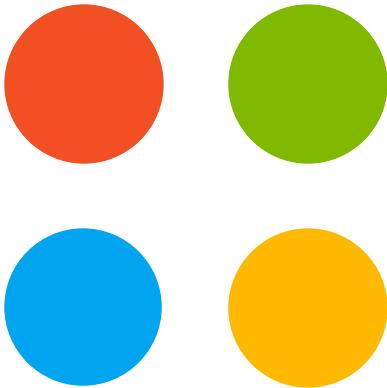
$$\begin{aligned} \log \Pi(s) &= \lim_{n \rightarrow \infty} \left[s \log(N+1) + \sum_{n=1}^N \log n - \sum_{n=1}^N \log(s+n) \right] \\ &= \lim_{n \rightarrow \infty} \left[s \log(N+1) + \int_1^N \log x dx - \frac{1}{2} \log N + \int_1^N \frac{\bar{B}_1(x)dx}{x} \right. \\ &\quad \left. - \int_1^N \log(s+x) dx - \frac{1}{2} [\log(s+1) + \log(s+N)] \right. \\ &\quad \left. - \int_1^N \frac{\bar{B}_1(x)dx}{s+x} \right] \\ &= \lim_{n \rightarrow \infty} \left[s \log(N+1) + N \log N - N + 1 + \frac{1}{2} \log N + \int_1^N \frac{\bar{B}_1(x)dx}{x} \right. \\ &\quad \left. - (s+N) \log(s+N) + (s+N) + (s+1) \log(s+1) \right. \\ &\quad \left. - (s+1) - \frac{1}{2} \log(s+1) - \frac{1}{2} \log(s+N) - \int_1^N \frac{\bar{B}_1(x)dx}{s+x} \right] \\ &= \left(s + \frac{1}{2} \right) \log(s+1) + \int_1^{\infty} \frac{\bar{B}_1(x)dx}{x} - \int_1^{\infty} \frac{\bar{B}_1(x)dx}{s+x} \\ &\quad + \lim_{n \rightarrow \infty} \left[s \log(N+1) + \left(N + \frac{1}{2} \right) \log N \right. \\ &\quad \left. - \left(s + N + \frac{1}{2} \right) \log(s+N) \right] \\ &= \left(s + \frac{1}{2} \right) \log(s+1) + (A-1) - \int_1^{\infty} \frac{\bar{B}_1(x)dx}{s+x} \\ &\quad + \lim_{n \rightarrow \infty} \left[s \log(N+1) - \left(N + \frac{1}{2} \right) \log(s+N) \right] \end{aligned}$$

SSO

单点登录

API

寻找爬虫接口

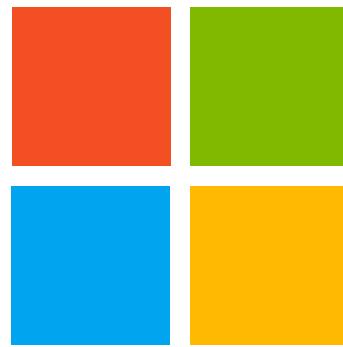


后端分析

**Back-end
Analysis**

前端

Front-end



Microsoft

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