



國立高雄科技大學

National Kaohsiung University of Science and Technology

報告主題：高科大搶課系統

課程名稱：Python 程式設計

授課教授：XXX 老師

科系：電子工程系資訊組

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壹、前言

本文將指導你如何寫爬蟲，並以此寫出一個搶課系統，本文的目標是以國立高雄科技大學的選課系統為目標，若您擁有此文章請勿輕易將此文散播出去，過多人使用此系統導致學校伺服器崩潰，此行為有可能導致學校追究責任，本人一概不負責。



國立高雄科技大學
National Kaohsiung University of Science and Technology

學生選課系統

Online Course Registration System



C108152305



密碼: 同校務系統(Password)

➡ Log In

Forgot Password?

貳、爬蟲操作

要想透過爬蟲選課，先弄清楚你操作選課系統時候的步驟，登入→查詢課程→加入課程，第一步正是登入系統。

一、登入系統

登入系統就是要輸入帳號與密碼並點選 Login 來登入，因此我們要觀察在按下登入按鈕後送出的 Post 資料。

步驟：瀏覽選課系統頁面，並按 F12 點選『Network』。

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學生選課系統
Online Course Registration System

Log In Forgot Password?

- 本系統**不支援**Microsoft IE全系列瀏覽器，請使用新版本瀏覽器(如：Microsoft Edge、Google Chrome、Mozilla Firefox...等等)。
Recommended browser: Microsoft Edge or Google Chrome.
- 忘記密碼?電算中心分機：13134
Forgot Password? Please contact the Computer Center: ext.13134
- 密碼異動後須隔**5**分鐘才能正常登入。
If you change your password, please login again in 5 minutes.
- 課務問題教務單位分機：教務處(日間學制)31125、進修推廣處(夜間學制)22839、進修學院12921

Recording network activity...
Perform a request or hit **Ctrl + R** to record the reload.
[Learn more](#)

步驟：按下『Login』，並觀察 Network 中的變化，可以看到有一個叫做『Login』的封包，點選他來查看內容。

Filter: ☒ Hide data URLs **All** XHR JS CSS Img Media Font Doc WS Manifest Other

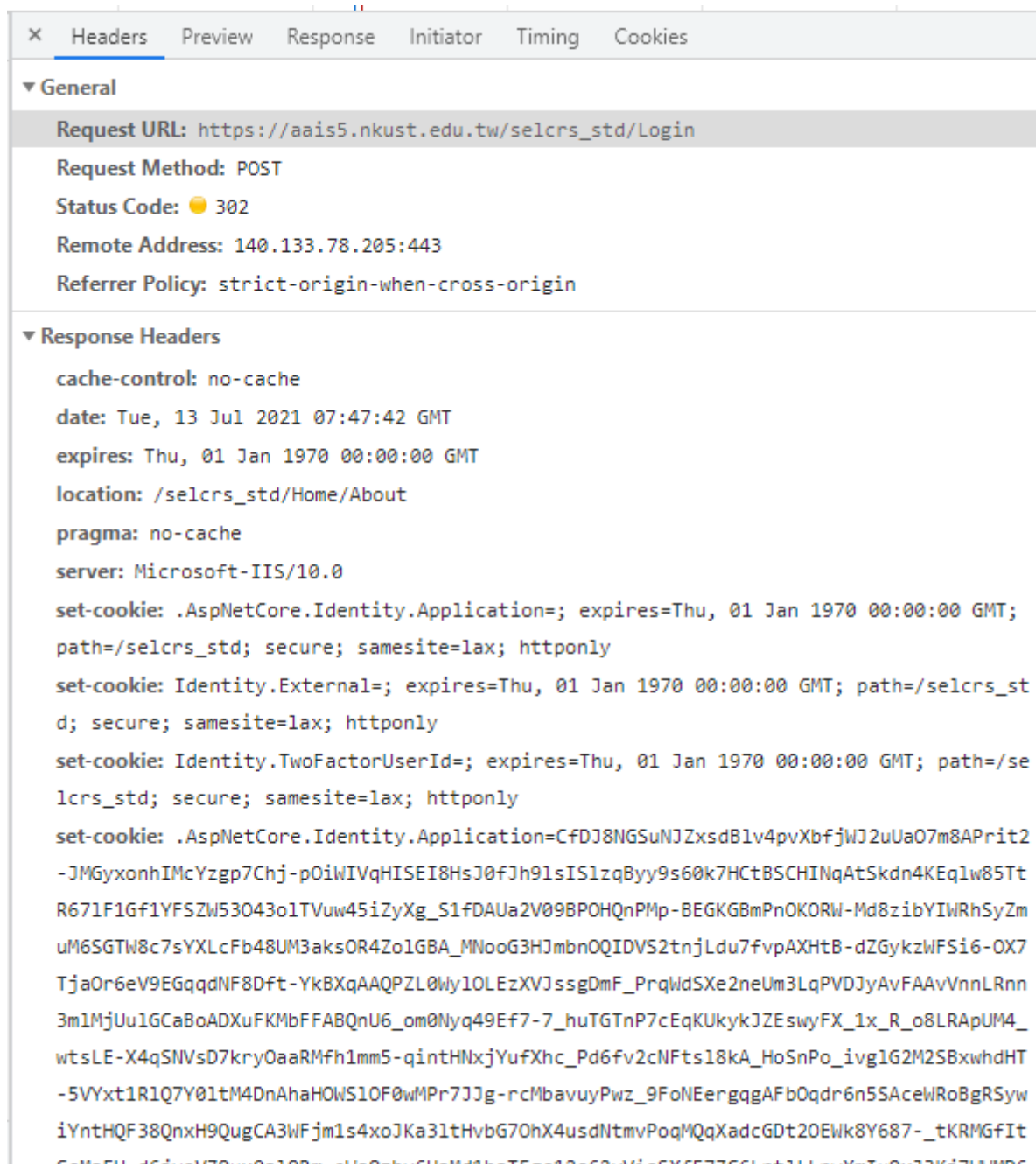
☐ Has blocked cookies ☐ Blocked Requests

1000 ms 2000 ms 3000 ms 4000 ms 5000 ms 6000 ms

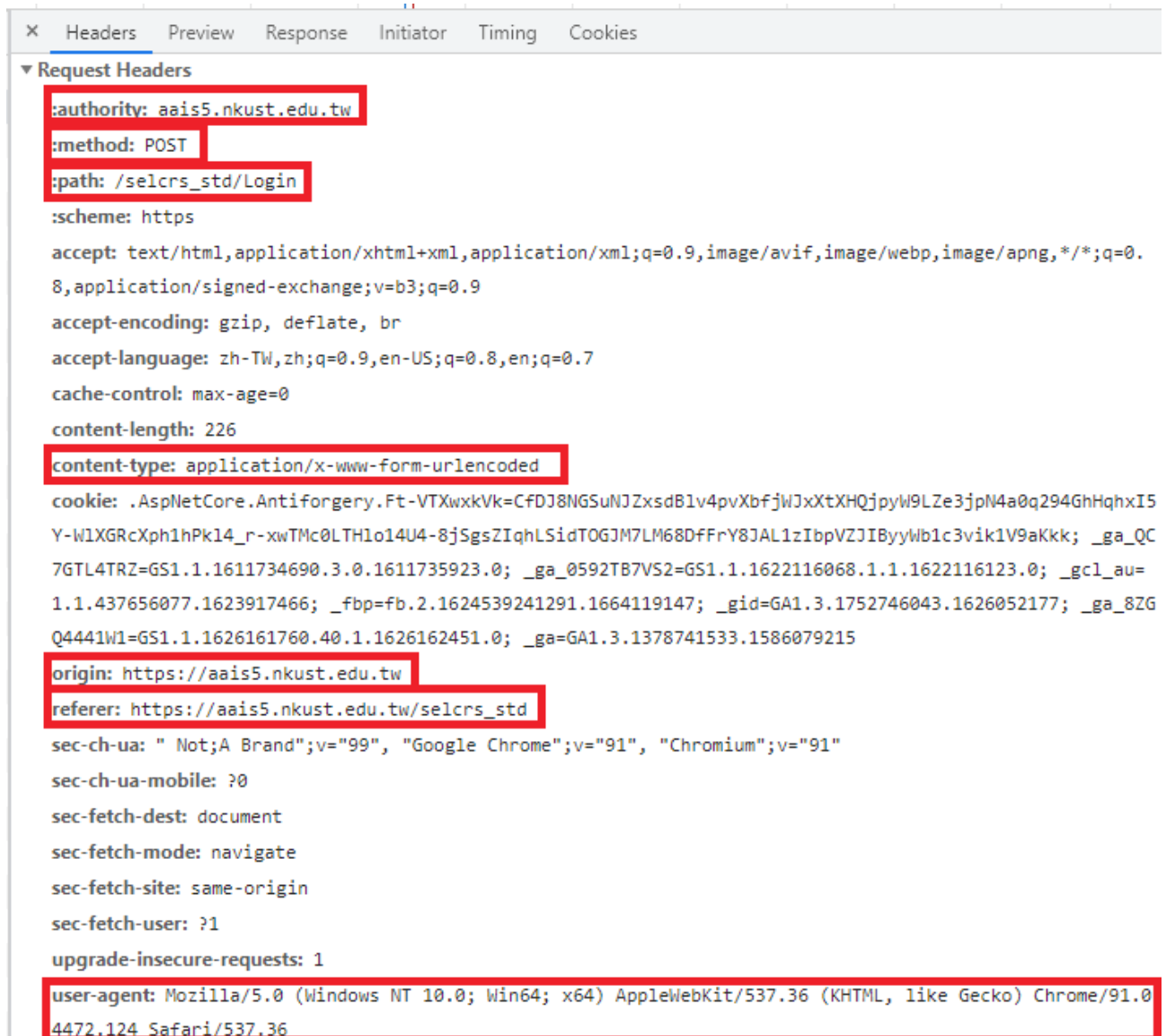
Name	Status	Type	Initiator	Size	T.	Waterfall
Login	302	docume...	Other	1.6 kB	2..	
About	200	document	/selcrs_std/Lo...	11.0 ...	2..	
collect?v=2&tid=G-8ZGQ4441W1...	(pendi...	ping		0 B	P..	
simple-line-icons.css	200	stylesheet	About	(disk...	8..	
jquery-ui.min.css	200	stylesheet	About	(disk...	9..	
theme.min.css	200	stylesheet	About	(disk...	9..	
adminlte.min.css	200	stylesheet	About	(disk...	9..	
perfect-scrollbar.min.css	200	stylesheet	About	(disk...	9..	
hint.min.css	200	stylesheet	About	(disk...	9..	
sweetalert2.min.css	200	stylesheet	About	(disk...	8..	
jquery.min.js	200	script	About	(me...	0..	
site.css	200	stylesheet	About	(disk...	8..	
popper.min.js	200	script	About	(me...	0..	
bootstrap.min.js	200	script	About	(me...	0..	
jquery-ui.min.js	200	script	About	(disk...	1..	
adminlte.min.js	200	script	About	(disk...	1..	
176957439.png	200	png	About	(disk...	1..	
toastr.min.js	200	script	About	(me...	0..	
sweetalert2.js	200	script	About	(disk...	1..	
perfect-scrollbar.min.js	200	script	About	(disk...	1..	
polyfill.min.js	200	script	About	(disk...	9..	
site.js?v=ObqSjEvyySDPnqTRtXFN...	200	script	About	(disk...	9..	
js?id=G-8ZGQ4441W1	200	script	About	48.4 ...	6..	
fa-regular-400.woff2	200	font	all.min.css	(me...	0..	
fa-solid-900.woff2	200	font	all.min.css	(me...	0..	
collect?v=2&tid=G-8ZGQ4441W1...	204	ping	js?id=G-8ZG...	17 B	1..	

26 requests | 61.1 kB transferred | 1.6 MB resources | Finish: 5.50 s | DOMContentLoaded: 352 ms | Load: 470 ms

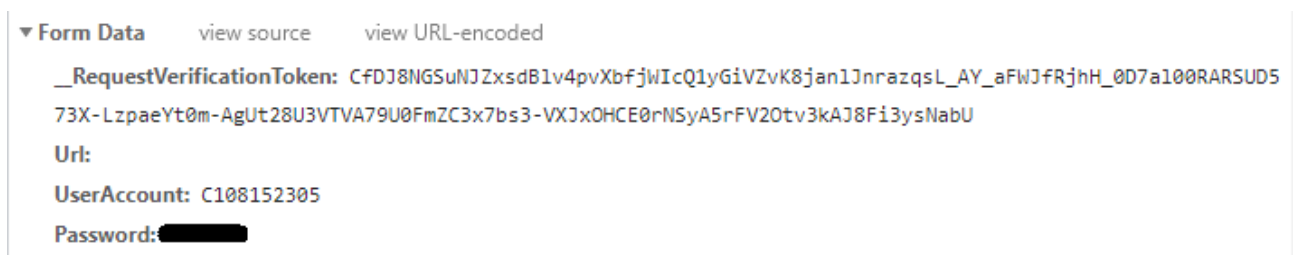
步驟：觀察內容可以看到，封包是 POST 形式，URL 為 https://aais5.nkust.edu.tw/selcrs_std/Login，接著往下拉看 POST 封包的 Request Headers。



步驟：可以看到 header 的資訊其中比較重要的資訊下圖已用紅框框起，接者繼續往下拉看 Form Data。



步驟：在 Form Data 裡面可以看到你剛剛輸入的帳密，那 __RequestVerificationToken 是什麼東西呢？



根據我的觀察發現，那是在登入表單上一個 hidden 形態的 input 值，每次瀏覽頁面都會有不同的值，送出的值如果不同就無法登入，因此要先取得該值。

```
<!DOCTYPE html>
<html>
  <head>...</head>
  <body>
    <div class="text-center mt-3">...</div>
    <!-- /.login-logo -->
    <div class="container">
      <div class="row justify-content-center"> flex
        <div class="col-sm-9 col-md-7 col-lg-5">
          <div class="card border-info text-center"> flex
            <div class="card-body border-info">
              <input id="errorInfo" type="hidden">
              <form action="/selcrs_std/Login" method="post" onsubmit="onSubmit()" id="mainForm" novalidate="novalidate">
                <input name="__RequestVerificationToken" type="hidden" value="CfDJ8NGSuNjZxsdb1v4pvXbfjWK7Av7azvguid3NdCdU5KNtsyB4-g8g8FzfjrjF_vB5r-2t_Vf1Xo2-LioLszz1bIYpdKrtHzb2FmyjhKKQ49BDgb-KfB1nppnJOakfwpwxOFmoZBz9ik5O4JjNwSAWRI0"> == $0
                <input type="hidden" name="Url" value="/selcrs_std/FirstSelect/SelectPage">
                <div class="col-md-10 mx-auto my-2">...</div>
                <div class="col-md-10 mx-auto my-2">...</div>
                <div class="row">...</div> flex
              </form>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
  <div class="container">...</div>
  <div class="text-center">...</div>
  <script type="text/javascript" async src="https://www.google-analytics.com/analytics.js">
  </script>
  <script type="text/javascript" async src="https://www.googletagmanager.com/gtag/js?id=UA-107138823-5&l=dataLayer&cx=c"></script>
  <script src="/selcrs_std/lib/jquery/jquery.min.js"></script>
  <script src="/selcrs_std/lib/jquery-validation/jquery.validate.min.js"></script>
  <script src="/selcrs_std/lib/jquery-validation-unobtrusive/jquery.validate.unobtrusive.min.js"></script>
  <script src="/selcrs_std/js/jquery.validate.inline.js"></script>
  <script src="/selcrs_std/lib/popper/umd/popper.min.js"></script>
  <script src="/selcrs_std/lib/bootstrap/dist/js/bootstrap.min.js"></script>
  <script src="/selcrs_std/lib/toastr/toastr.min.js"></script>
  <!-- Global site tag (gtag.js) - Google Analytics -->
  <script async src="https://www.googletagmanager.com/gtag/js?id=G-8ZGQ4441W1"></script>
  <script type="text/javascript">...</script>
</body>
</html>
```


步驟：撰寫 python 程式登入。

```
from bs4 import BeautifulSoup
import json
import requests
import random
import threading
import os
import time
class NKUST_Grab_A_Course:
    def __init__(self,account,password):
        self.UserAccount = account
        self.UserPassword = password
        self.r = requests.session()#建立一個session，讓每次request都算同一次，才能連續執行動作。
        self.LoginPage_URL = "https://aais6.nkust.edu.tw/selcrs_std"#高科大學生選課系統登入首頁網址。
        self.LoginPage_RVT = ""#LoginPage_RequestVerificationToken
        self.LoginButton_URL = "https://aais6.nkust.edu.tw/selcrs_std/Login"#按下登入時post的網址。
    def Get_LoginPage_RVT(self):
        request_out = 5
        head = {
            "referer" : "https://aais5.nkust.edu.tw/selcrs_std/PreselecrsList",
            "User-Agent" : "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)"
        }
        while(request_out != 0):
            try:
                LoginPage_Html = self.r.get(self.LoginPage_URL, headers = head, timeout = 1)
                #對伺服器發出get，取得登入頁面。
                print(LoginPage_Html)
                #確認是否請求成功 200
                print(LoginPage_Html.text)
                #未解析的資料是一大串字串，難以抓取資料，因此需要解析。
                LoginPage_Soup = BeautifulSoup(LoginPage_Html.text, 'html.parser')
                #解析LoginPage_Html。
                print(LoginPage_Soup)
                #查看解析後內容
                LoginPage_Input = LoginPage_Soup.select("input")
                #抓取頁面中為input的標籤。
                print("RVT :",LoginPage_Input[1]["value"])
                #該頁面第二個input有我們需要的RequestVerificationToken值。
                self.LoginPage_RVT = LoginPage_Input[1]["value"]
                #儲存到LoginPage_RVT。
                return True
            except:
                time.sleep(random.randint(1,3))
                request_out = request_out - 1
                continue
        return False
    def Login(self):
        request_out = 5
        head = {
            "User-Agent" : "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)",
            "content-type" : "application/x-www-form-urlencoded",
            "origin" : "https://aais5.nkust.edu.tw",
            "referer" : "https://aais5.nkust.edu.tw/selcrs_std"
        }
        data = {
            "RequestVerificationToken": self.LoginPage_RVT,
            "Url": "/selcrs_std/PreselecrsList",
            "UserAccount": self.UserAccount,
            "Password": self.UserPassword
        }
        while(request_out != 0):
            try:
                LoginButton_Html = self.r.post(self.LoginButton_URL,data=data, headers = head, timeout = 1)
                #對伺服器發出post，達成登入動作。
                print(LoginButton_Html)
                #確認是否請求成功 200
                return True
            except:
                time.sleep(random.randint(1,3))
                request_out = request_out - 1
                continue
        return False
..
```

步驟：執行程式測試

```
if __name__ == '__main__':  
    Start = NKUST_Grab_A_Course("C108152305", "██████")  
    Start.Get_LoginPage_RVT()  
    Start.Login()
```

執行結果

<Response [200]>

Squeezed text (225 lines).

Squeezed text (212 lines).

RVT : CfDJ8IGMRt5YZMBAv0JK_32tjtYjFilJAZvhhld6T1Nk3LqnJW0yTXWITRVqaiGR5zI
x3aRFgIbp5ccVwapWXeTQOKgC4_XBs95rRRPnIM9Qc3EP-DxwsbIH37UJcS4rjaj-lDVkIWq3
xvkZOoVwpT66T8c
<Response [200]>

可以看到執行的結果相當成功，已經成功登入了選課系統。

一、查詢課程

在登入系統後，並點選『初選志願選課』→『志願加選課程』，可以看到網頁已經預設好查詢您班級的課程，我們要觀察查詢課程的POST。

步驟：可以看到有 CoursUnitCollection 與 CourseSearch。

The screenshot displays a web application for course selection. On the left is a sidebar menu with steps S12 through S9. S12, '志願加選課程' (Additional Course Selection), is highlighted with a red box. The main content area shows a form for selecting courses, including a dropdown for 'year College' and a dropdown for 'Electronic Engine'. On the right is a table listing various JavaScript libraries and their status.

Name	Stat
adminite.min.js	200
sweetalert2.js	200
toastr.min.js	200
perfect-scrollbar.min.js	200
polyfill.min.js	200
site.js?v=ObqSjEvyySDP...	200
jquery.dataTables.min.js	200
dataTables.bootstrap4.mi...	200
dataTables.responsive.mi...	200
responsive.bootstrap4.m...	200
dataTables.select.min.js	200
dataTables.buttons.js	200
buttons.bootstrap4.min.js	200
buttons.html5.js	200
buttons.print.js	200
jszip.min.js	200
pdfmake.min.js	200
vfs_fonts.js	200
dataTables.keyTable.min.js	200
DropDownOptions.min.js	200
select2.min.js	200
Create.js	200
CreateDataTable.js	200
js?id=G-8ZGQ4441W1	200
fa-regular-400.woff2	200
fa-solid-900.woff2	200
CourseUnitCollection	20
Chinese-traditional.json	200
CourseSearch	200

CoursUnitCollection 的 POST 是取得查尋課程時的下拉表單資訊。

依開課系所查詢課程 / Search courses based on department.

Campus 建工(Jiangong) Edu. 日間部四技-Day School(Four-year College)

Dep. 電子系[建工]-Department of Electronics

Grade 3rd ☐ Course No.

日間部二技-Day School(Two-year College)
 日間部四技-Day School(Four-year College)
 日間部碩士秋季班-Masters Degrees (Fall Intake)
 日間部碩士-Day School(Master program)
 日間部博士-Day School(PhD program)

CourseSearch 的 POST 是根據篩選條件查詢到的結果資訊。

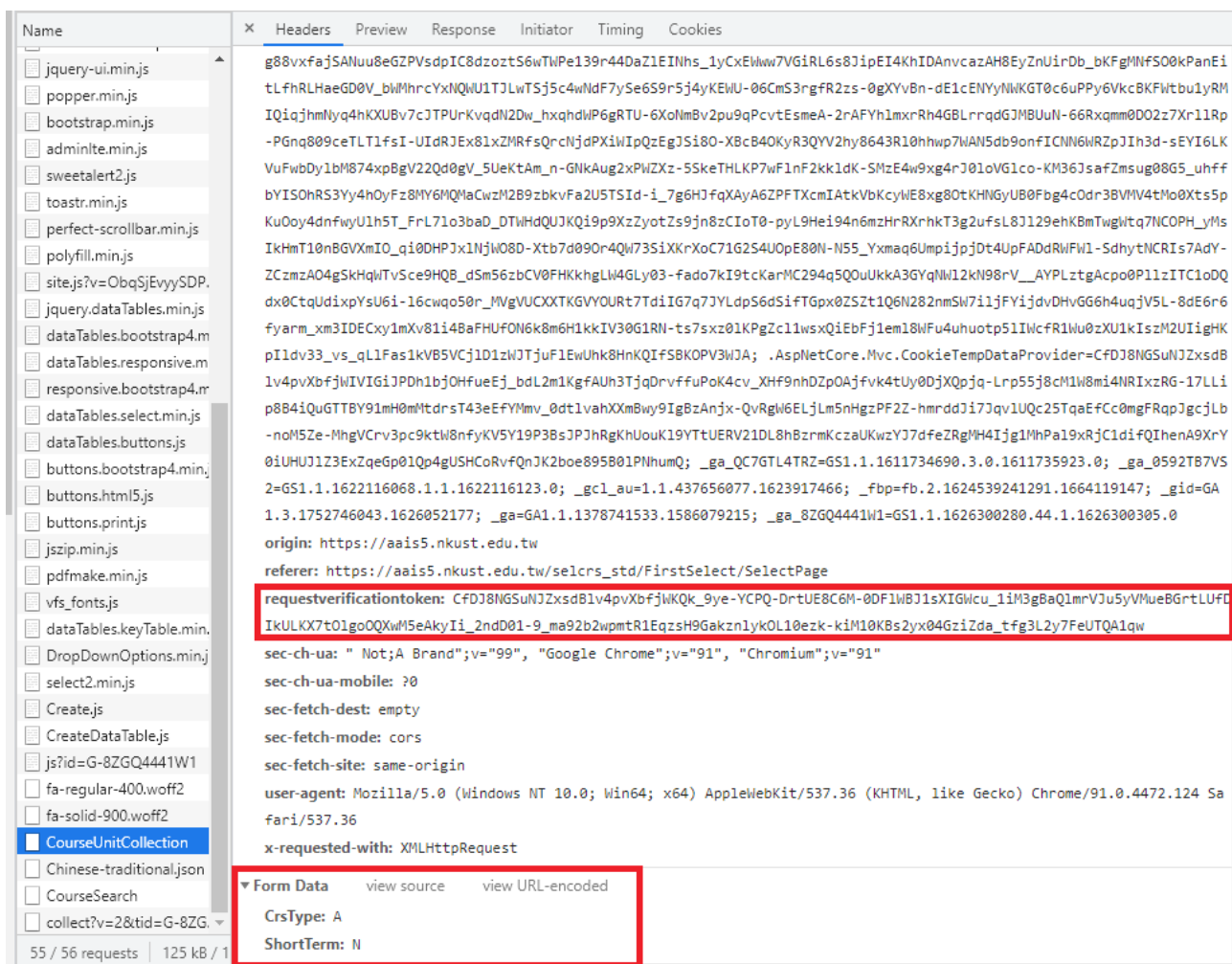
選課修別 Req./Ele.	加選 Add	課號 Course No.	課程名稱 選課人數 Course Title	學分 Credits	開課修別 Req./Ele.	班級名稱 Class Name	上課時間 Time	教師 Instructor(s)	授課語言 Language of instruction
Ele.選	Add	0973	半導體物理 Semiconductor Physics	3	選修 Elective	建工(Jiangong) 四子三甲	Wed.2-4	洪冠明	中文
Ele.選	Add	0974	電磁波 Wave Electromagnetics	3	選修 Elective	建工(Jiangong) 四子三甲	Mon.5-7	陳國峰	中文
Ele.選	Add	0974	電磁波 Wave Electromagnetics	3	選修 Elective	建工(Jiangong) 四子三甲 (四子三乙)	Mon.5-7	陳國峰	中文
Req.必	Add	0975	實務專題(一) Special Topics (1)	2	必修 Required	建工(Jiangong) 四子三甲		周肇基,鄭瑞川,...	中文
Req.必	Add	0975	實務專題(一) Special Topics (1)	2	必修 Required	建工(Jiangong) 四子三甲 (四子三乙)		周肇基,鄭瑞川,...	中文
Req.必	Add	0975	實務專題(一) Special Topics (1)	2	必修 Required	建工(Jiangong) 四子三甲 (四子三丙)		周肇基,鄭瑞川,...	中文
Ele.選	Add	0976	機率與統計 Probability and Statistics	3	選修 Elective	建工(Jiangong) 四子三甲	Thu.5-7	洪冠明	中文
Ele.選	Add	0977	非同步互動式網頁程式設計 Asynchronous Interactive Web Programming	3	選修 Elective	建工(Jiangong) 四子三甲	Thu.2-4	李鴻仁	中文
Ele.選	Add	0978	類比積體電路設計實務 Design of Analog Integrated Circuits Practice	2	選修 Elective	建工(Jiangong) 四子三甲	Tue.5-8	王鴻猷	中文
Ele.選	Add	0979	生物醫學工程導論 Introduction to	3	選修 Elective	建工(Jiangong) 四子三甲	Wed.7-9	江柏猷,蔡正才	中文

步驟：觀察 CoursUnitCollection。

The screenshot displays the 'Headers' tab of a web browser's developer tools. The left sidebar lists various files, with 'CourseUnitCollection' highlighted in blue. The main panel shows the details of a POST request to the URL `https://aais5.nkust.edu.tw/selcrs_std/Unit/CourseUnitCollection`. The request method is POST, and the status code is 200. The response headers indicate the content type is `application/json; charset=utf-8`. The request headers show the content type is `application/x-www-form-urlencoded; charset=UTF-8`.

Name	Value
Request URL	<code>https://aais5.nkust.edu.tw/selcrs_std/Unit/CourseUnitCollection</code>
Request Method	POST
Status Code	200
Remote Address	140.133.78.205:443
Referrer Policy	strict-origin-when-cross-origin
Response Headers	<code>content-type: application/json; charset=utf-8</code> <code>date: Wed, 14 Jul 2021 22:37:32 GMT</code> <code>server: Microsoft-IIS/10.0</code> <code>set-cookie: .AspNetCore.Mvc.CookieTempDataProvider=CfDJ8NGSuNJZxsdB1v4pvXbfjWLGs7iE7WMX105bJ3yIwb9riRhnyVJ7-UBKMffa1ZH-3md_-WGsCdmwiitF-2Tkrki-29xgdBwjFMpAIhXw8PQqc6crq7Go_k1ZuHFSQCh9uaJkimTUtI1U6kHizyeg6JIQjTwBgVn_omGuJW3LxxjtZ2rVNY6dbYbR1bjsm42ukiVJGv3IUG4ER2dn92ofDg3vwb2x08kB0D-AqR366X1ekmDy0q7tC41z2-QBkpsO1kk7DmeLxX1KrcC99-EHJdfNFnYO6BpfBkZTzW8Zv6qTsAcvEE0LQo37LrKjidEuYkbh3Gh07f8SHJBYEnbIKyOQNc6a5zej4cNXg95_fvnLVEhPMcF1eblou6AoS35YK16zUnrintmsD_emptyX5ic; path=/selcrs_std; samesite=lax; httponly</code> <code>strict-transport-security: max-age=2592000</code> <code>x-powered-by: ASP.NET</code>
Request Headers	<code>:authority: aais5.nkust.edu.tw</code> <code>:method: POST</code> <code>:path: /selcrs_std/Unit/CourseUnitCollection</code> <code>:scheme: https</code> <code>accept: application/json, text/javascript, */*; q=0.01</code> <code>accept-encoding: gzip, deflate, br</code> <code>accept-language: zh-TW,zh;q=0.9,en-US;q=0.8,en;q=0.7</code> <code>content-length: 21</code> <code>content-type: application/x-www-form-urlencoded; charset=UTF-8</code> <code>cookie: .AspNetCore.Antiforgery.Ft-VTXwxkVk=CfDJ8NGSuNJZxsdB1v4pvXbfjWJxXtXHQ</code>

可以發現他的 header 中有 requestverificationtoken。



The screenshot shows the Headers tab of a web browser's developer tools. The 'requestverificationtoken' header is highlighted in red. Below it, the 'Form Data' section is also highlighted in red, showing 'CrimeType: A' and 'ShortTerm: N'.

Headers:

- g88vxfaj5ANuu8eGZPVsdPIC8dzoztS6wTWpE139r44DaZ1EINhs_1yCxElww7VGiRL6s8JipEI4KhIDAnvczAH8EyZnUirDb_bKfGmWfSO0kPanEi
- tLfhRLHaeGD0V_bWmHrcYxNQWU1TJLwTSj5c4wNdF7ySe6S9r5j4yKEWU-06CmS3rgfR2zs-0gXYvBn-dE1cENYyNNKGT0c6uPPy6Vkc8KfWtbulyRM
- IQiaqjhmNyq4hXXUBv7cJTPUrKvqdn2Dw_hxqhdWP6gRTU-6XoNmBv2pu9qPcvTEsmeA-2rAFYhImxrRh4GBLrrqdGJMBUuN-66Rxqmm0D02z7Xr11Rp
- PGnq809ceTLT1fsI-UIDRJE81xZMRfsQrcNjdPXiWiPqzEgJSi80-XBcB4OKyR3QYV2hy8643R10hhwp7WAN5db9onfICNN6WRZpJIn3d-sEYI6LK
- PGnq809ceTLT1fsI-UIDRJE81xZMRfsQrcNjdPXiWiPqzEgJSi80-XBcB4OKyR3QYV2hy8643R10hhwp7WAN5db9onfICNN6WRZpJIn3d-sEYI6LK
- VuFwbDy1bM874xpBgV22Qd0gV_5UeKtAm_n-GNKAUG2xPWZxz-5SkeTHLKP7wF1nF2kk1dK-SMzE4w9xg4rJ01oVG1co-KM36JsaFZmsug08G5_uhff
- bYISohRS3Yy4hOyFz8MY6MQMaCwzMB9zbkvFa2U5T5Id-i_7g6HJfQXAY6ZPFTXcmIAtkVbKcyW8xg80tKHNGyUB0Bg4c0dr38VMV4tMo0Xts5p
- KuOoy4dnfUyU1h5T_FrL71o3baD_DTWHDUJQKQ9p9XZyotZs9jn8zCioT0-pyL9Hei94n6mzHrRXrhkT3g2uFsL8J129ehK8mTwgWitq7NCOPH_yMs
- IkhM10n8GVxmIO_qi0DHPJx1NjW08D-Xtb7d090r4QW73SiXKrXoC71G2S4UOpE80N-N55_Yxmaq6UmpijpJdt4UpFADRWfW1-5dhytNCRI57AdY-
- ZCzmA04gSkHqWTVSce9HQ8_dSm56zbCV0FHKKhglW4GLy03-fado7ki9tcKarMC294q5QOuUkA3GYqNW12knN98rV__AYLztgAcpoP11zITC1oDQ
- dx0CtQldixpYsU6i-16cwqo50r_MVgVUCXXTKGVYOURT7TdiG7q7JYldpS6d5ifTGpx0ZS2t1Q6N282nmSW7iljFYijdvDhV6G6h4uqjV5L-8dE6r6
- fyarm_xm3IDECxylmXv81i4BaFHUF0N6k8m6H1kIV30G1RN-ts7sxx01KPGZc11wsxQiEbFj1em18WfU4uhoUp51IwcfR1Wu0xU1kIszMU2UIGHK
- pIldv33_vs_qL1Fas1kVB5VCj1D1zWJTJuf1EwUkh8HnkQIFSBKOPV3WJA;.AspNetCore.Mvc.CookieTempDataProvider=CfD38NGSuNJZxsdB
- 1v4pvXbfjWIVIGiJPDh1bJOhfueEj_bdl2m1KgfAUh3TjQDrvfFuPoK4cv_XHf9nhDZpOajfvk4tUy0DjXQpjQ-Lrp55j8cM1W8m14NRIxzRG-17LLi
- p8B4iQuGTTBY91mH0mMtdrsT43eEFYmvm_0dtlvahXXm8wy9IgBzAnjx-QvRgW6ELjLm5nHgZPF2Z-hmrdJi7Jqv1UQc25TqaEfcC0mgFRqpJgcjLb
- noM5Ze-MhgVCrv3pc9ktW8nfyKV5Y19P3BsJJPJhRgKhUouK19YTtUEVR21DL8hBzrmKcZaUkwyYJ7dfeZRGMH4Ijg1MhPa19xRjC1diFQIhenA9XrY
- 0iUHUJ1Z3ExZqeGp01Qp4gUSHCoRvfQnJK2boe895801PNhumQ;_ga_QC7GTL4TRZ=GS1.1.1611734690.3.0.1611735923.0;_ga_0592T87VS
- 2=GS1.1.1622116068.1.1.1622116123.0;_gcl_a=1.1.437656077.1623917466;_fbp=fb.2.1624539241291.1664119147;_gid=GA
- 1.3.1752746043.1626052177;_ga=GA1.1.1378741533.1586079215;_ga_8ZGQ4441W1=GS1.1.1626300280.44.1.1626300305.0
- origin: https://aais5.nkust.edu.tw
- referer: https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage
- requestverificationtoken: CfD38NGSuNJZxsdB1v4pvXbfjWIKQK_9ye-YCPQ-DrtUE8C6M-0DF1WBJ1sXIGWcu_1iM3gBaQ1mrVJu5yVMueBGrtLUFD
- IkULKX7t0LgoOQXwM5eAkyIi_2ndD01-9_ma92b2wpmtr1EqzsH9GakznlykOL10ezk-kiM10K8s2yx04GziZda_tfg3L2y7FeUTQA1qw
- sec-ch-ua: " Not;A Brand";v="99", "Google Chrome";v="91", "Chromium";v="91"
- sec-ch-ua-mobile: ?0
- sec-fetch-dest: empty
- sec-fetch-mode: cors
- sec-fetch-site: same-origin
- user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4472.124 Sa
- fari/537.36
- x-requested-with: XMLHttpRequest

Form Data:

- CrimeType: A
- ShortTerm: N

步驟：觀察 CourseSearch。

The screenshot displays the Chrome DevTools Network tab. The left sidebar lists various resources, with 'CourseSearch' highlighted. The main panel shows the details of the selected request. The 'General' tab is active, displaying the following information:

- Request URL:** `https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/CourseSearch`
- Request Method:** POST
- Status Code:** 200
- Remote Address:** 140.133.78.205:443
- Referrer Policy:** strict-origin-when-cross-origin

The 'Response Headers' tab is also visible, showing the following information:

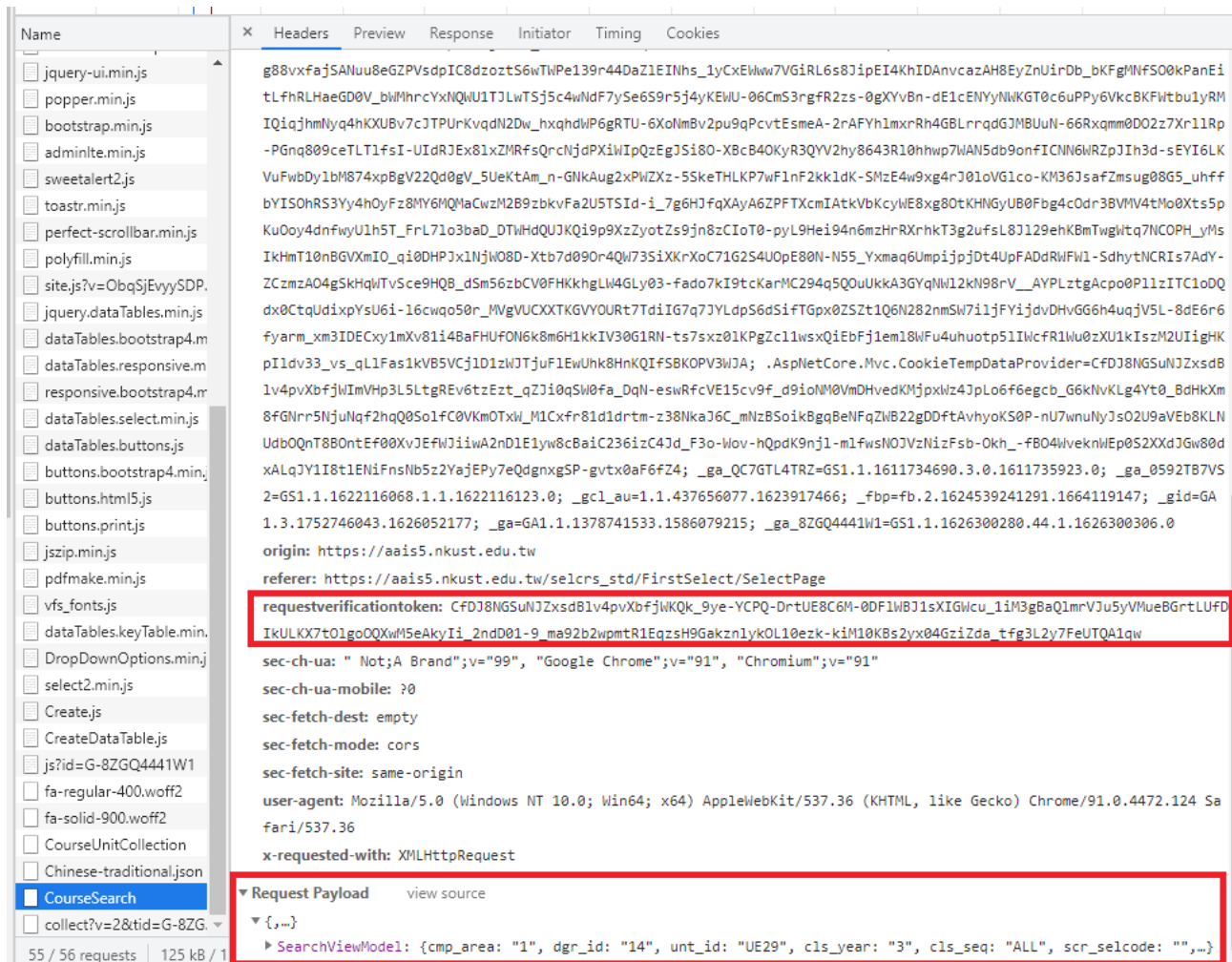
- content-type:** application/json; charset=utf-8
- date:** Wed, 14 Jul 2021 22:05:07 GMT
- server:** Microsoft-IIS/10.0
- set-cookie:** .AspNetCore.Mvc.CookieTempDataProvider=CfDJ8NGSuNJZxsdB1v4pvXbfjWI:qUh4MsW8zt2bUmXKfp418TCd0EmEvX1iL2Ze_QyfovTrvEBz8Xxvx4L_K8XUCKkuxM3M8RQiMDwT_9D-kStpbTuvvaAPqM5TmkF3GEA1V5zbVItVSgJe2Pn_AFBq4ijYk9104z6bbFDfLdhzg4wvzgUvOOH2gpM1a9fg3JWm7yVIMhDxsd4yaj1d-0Dbki23Pc6j63D3vDe4IZKH9MIW7_oYrgZNCe5Mfsq1S_QCBaK_pT2w; path=/selcrs_std; samesite=lax; httponly
- strict-transport-security:** max-age=2592000
- x-powered-by:** ASP.NET

The 'Request Headers' tab is also visible, showing the following information:

- authority:** aais5.nkust.edu.tw
- method:** POST
- path:** /selcrs_std/FirstSelect/CourseSearch
- scheme:** https
- accept:** application/json, text/javascript, */*; q=0.01
- accept-encoding:** gzip, deflate, br
- accept-language:** zh-TW,zh;q=0.9,en-US;q=0.8,en;q=0.7
- content-length:** 160
- content-type:** application/json; charset=UTF-8

The bottom status bar indicates 55 / 56 requests and 125 kB / 1 MB of data transferred.

可以發現他的 header 中同樣有 requestverificationtoken，且由於資料過多變成了以 json 形式傳送。



The screenshot displays the 'Headers' tab of a web browser's developer tools. The left sidebar lists various files, with 'CourseSearch' selected. The main pane shows the request headers for a GET request to 'https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage'. The 'requestverificationtoken' header is highlighted with a red box, containing a long JSON string. The 'Request Payload' section is also highlighted with a red box, showing a JSON object with search criteria.

```
g88vxfajSAnuu8eGZPVsdpIC8dzotS6wTWPe139r44DaZ1EINhs_1yCxEWw7VGiRL6s8JipE14KhIDAnvczAH8EyZnUirDb_bKFgMNF500kPanEi
tLfRhRLHaeGD0V_bWmhrCvXNQMUI1TJLwTSj5c4wNdF7ySe6S9r5j4yKEWU-06CmS3rgfR2zs-0gXYvBn-dE1cENyNWKGT0c6uPPy6VkcBKFwtbu1yRM
IQiqjhmNyq4hKXUBv7cJTPUrKvqdN2Dw_hxqhdwP6gRTU-6XoNmBv2pu9qPcvtEsmeA-2rAFYh1mxrRh4GBLrrqdGJM8UuN-66Rxxmm0D02z7Xr11Rp
-PGnq809ceTLT1fsI-UIDRjEX81xZMRfsQrcNjdPXiWIpQzEgJ5i80-XBcB40KyR3QYV2hy8643R10hhwp7WAN5db9onfICNN6WRZpJiH3d-sEYI6LK
VuFwbDy1bM874xpBgV22Qd0gV_5UeKtAm_n-GNkAug2xPwZXz-5SkeTHLKp7wFlnF2kkldK-SMzE4w9xg4rJ01oVG1co-KM36JsaFZmsug08G5_uhff
bYISOhRS3Yy4hOyFz8MY6MQMaCwzM2B9zbkvFa2U5TSId-i_7g6HJfQXAY6ZPFTXcmIAtkVbKcyWE8xg80tKHNGyUB0Fbg4cOdr3BVMV4Mo0Xts5p
Ku0oy4dnfwyU1h5T_FrL71o3baD_DTWHDQUJKQip9XzZyotZs9jn8zCIoT0-pyL9Hei94n6mzHrRXrhkt3g2ufSL8J129ehK8mTgwltq7NCOPH_yMs
IkHmT10nBGVxmIO_qi0DHPJx1NjW08D-Xtb7d090r4Qw73SiXKXoC71G2S4UOpE80N-N55_Yxmaq6UmpijpJdt4UpFAdDRIWfW1-SdhytNCRI57AdY-
ZCzmA04g5kHqWtVSc9HQ8_dSm56zbCV0FHKkgLW4GLy03-fado7KI9tKkarMC294q5QOUkka3GYqNM12kN98rV__AYPLztgAcpo0P11zITC1oDQ
dx0CtQldixpYsU6i-16cwqo50r_MVgVUCXTKGVYOUT7TdiG7q7JYldpS6dSiFTGpx0ZSzt1Q6N282nm5w7i1jFYijdvDhVGG6h4uqjV5L-8dE6r6
fyarm_xm3IDEcxy1mXv81i4BaFHUFON6k8m6H1kkIV30G1RN-ts7sxx01KPGZc11wsxQiebfj1em18Wfu4uho0p51IwcfR1Wu0zXU1kIszM2UIiGHK
pIldv33_vs_qL1Fas1kVB5VCj1D1zWJTjuF1EwUkh8HnKQIFSBKOPV3WJA;.AspNetCore.Mvc.CookieTempDataProvider=CfD38NGSuNJZxsdB
1v4pvXbfjWImVhp3L5LtgREv6tzEzt_qZj10qSW0fa_DqN-eswRfcVE15cv9f_d9ioNM0VMDHvedKMjpxWz4JpLo6f6egcb_G6kNvKLg4Yt0_BdHkXm
8fGNr5NjUnqf2hqQ0SofC0VKmOTxW_M1CxfR81d1drtm-z38NkaJ6C_mNzBSokBqBqBeNFqZWB22gDDftAvhyoKS0P-nU7wnuNyJso2U9aVeb8KLN
UdbOQnt880ntEf00XvJEfWJiiwA2nD1E1yw8cBaIC236izC4jd_F3o-Wov-hQpdK9nj1-m1fwsNOJvZnizFsb-Okh_-fB04WveknWEP0S2XXdJGw80d
xALqZY1I8t1ENiFnsNb5z2YajEPy7eQdgnxgSP-gvtx0aF6fZ4;_ga_QC7GTL4TRZ=GS1.1.1611734690.3.0.1611735923.0;_ga_0592TB7V5
2=GS1.1.1622116068.1.1.1622116123.0;_gcl_au=1.1.437656077.1623917466;_fbp=fb.2.1624539241291.1664119147;_gid=GA
1.3.1752746043.1626052177;_ga=GA1.1.1378741533.1586079215;_ga_8ZGQ4441W1=GS1.1.1626300280.44.1.1626300306.0
origin: https://aais5.nkust.edu.tw
referer: https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage
requestverificationtoken: CfD38NGSuNJZxsdB1v4pvXbfjWImVhp3L5LtgREv6tzEzt_qZj10qSW0fa_DqN-eswRfcVE15cv9f_d9ioNM0VMDHvedKMjpxWz4JpLo6f6egcb_G6kNvKLg4Yt0_BdHkXm
IkULKX7t0lgoOQXwM5eAkyIi_2nd001-9_ma92b2wpmrR1EqzSH9Gakzn1yKOL10ezk-kiM10K8s2yx04GziZda_tfg3L2y7FeUTQA1qw
sec-ch-ua: " Not;A Brand";v="99", "Google Chrome";v="91", "Chromium";v="91"
sec-ch-ua-mobile: ?0
sec-fetch-dest: empty
sec-fetch-mode: cors
sec-fetch-site: same-origin
user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4472.124 Sa
fari/537.36
x-requested-with: XMLHttpRequest
```

▼ Request Payload view source

```
{...}
  SearchViewModel: {cmp_area: "1", dgr_id: "14", unt_id: "UE29", cls_year: "3", cls_seq: "ALL", scr_selcode: "",...}
```

步驟：查看加選網頁原始碼，requestverificationtoken 一樣可以在這找到。



```
<div class="card mb-1">
  <div class="card-header bg-info text-white">
    <h5 class="label-success">依開課系所查詢課程 / Search courses based on department.</h5>
  </div>
  <div class="card-body m-1 p-1">
    <form action="/selcrs_std/FirstSelect/CourseSearch" class="form-inline" id="searchForm" method="post">
      <input type="hidden" name="StudentID" id="StudentID" value="C108152305">
      <div class="form-group mr-2"></div>
      <div class="form-group mr-2"></div>
      <div class="form-group mr-2"></div>
      <div class="form-group mr-2"></div>
      <div class="form-group mr-2"></div>
      <div class="form-group mr-2 align-self-end justify-content-center align-self-center"></div>
      <div class="form-group align-self-end"></div>
      <input name="__RequestVerificationToken" type="hidden" value="CfDJ8NGSuNJZxsdB1v4pvXbfjWKKQk_9ye-YCPQ-DrtUE8C6M-0DF1WBJ1sXIGWcu_1iM3gBaQ1mrVJu5yVMueBGrtLUFDIkULKX7t0lgoOQXwM5eAkyIi_2ndD01-9_ma92b2wpmtR1EgzsH9Gakzn1ykOL10ezk-kiM10K8s2yx04GziZda_tfg3L2v7FeUTQA1qw">
    </form>
  </div>
</div>
<div class="row">
  <div class="col-md-12">
    <div class="tab-content" style="border:0px">
      <div class="tab-pane active" id="tab_course">
        <div id="courseDataTable_wrapper" class="dataTables_wrapper dt-bootstrap4 no-footer">
          <div class="row">
            <div class="col-sm-12 col-md-6">
              <div class="dataTables_length" id="courseDataTable_length">
                <label>顯示
                <select name="courseDataTable_length" aria-controls="courseDataTable" class="custom-select custom-select-sm form-control form-control-sm">
                  <option value="10">10</option>
                  <option value="25">25</option>
                  <option value="50">50</option>
                  <option value="100">100</option>
                </select>
                項結果
              </label>
            </div>
            <div class="col-sm-12 col-md-6">
              <div id="courseDataTable_filter" class="dataTables_filter">
                <label></label>
              </div>
            </div>
          </div>
        </div>
      </div>
    </div>
  </div>
</div>
```

步驟：撰寫 python 程式查詢課程。

```
def __init__(self, account, password):
    self.UserAccount = account
    self.UserPassword = password
    self.r = requests.session()#建立一個session，讓每次request都算同一次，才能連續執行動作。
    self.LoginPage_URL = "https://aais6.nkust.edu.tw/selcrs_std"#高科大學生選課系統登入首頁網址。
    self.LoginPage_RVT = ""#LoginPage_RequestVerificationToken
    self.LoginButton_URL = "https://aais6.nkust.edu.tw/selcrs_std/Login"#按下登入時post的網址。
    self.SelectPage_URL = "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage"#高科大學生選課系統選課網址。
    self.SelectPage_RVT = ""#SelectPage_RequestVerificationToken
    self.CourseUnitCollection_URL = "https://aais6.nkust.edu.tw/selcrs_std/Unit/CourseUnitCollection"#請求下拉選單資訊網址
    self.CourseUnitCollection_Data = ""#儲存選單資訊
    self.CourseSearch_URL = "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/CourseSearch"#請求查詢課程資訊網址
    self.CourseSearch_Data = ""#儲存課程資訊

    .....

def Get_SelectPage_RVT(self):
    request_out = 5
    head = {
        "referer" : "https://aais5.nkust.edu.tw/selcrs_std/Home/About",
        "User-Agent" : "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML,
    }
    while(request_out != 0):
        try:
            SelectPage_Html = self.r.get(self.SelectPage_URL, headers = head, timeout = 1)
            #對伺服器發出get，取得選課頁面。
            print(SelectPage_Html)
            #確認是否請求成功 200
            SelectPage_Html.encoding = "utf-8"#編碼成utf-8
            print(SelectPage_Html.text)
            #未解析的資料是一大串字串，難以抓取資料，因此需要解析。
            SelectPage_Soup = BeautifulSoup(SelectPage_Html.text, 'html.parser')
            #解析LoginPage_Html。
            print(SelectPage_Soup)
            #查看解析後內容
            SelectPage_Input = SelectPage_Soup.select("input")
            #抓取頁面中為input的標籤。
            print("RVT :", SelectPage_Input[len(SelectPage_Input)-1][ "value" ])
            #該頁面最後一個input有我們需要的RequestVerificationToken值。
            self.SelectPage_RVT = SelectPage_Input[len(SelectPage_Input)-1][ "value" ]
            #儲存到SelectPage_RVT。
            return True
        except:
            time.sleep(random.randint(1,3))
            request_out = request_out - 1
            continue
    return False
    .....
```

```

def CoursUnitCollection(self):
    request_out = 5
    head={
        "Content-Type": "application/x-www-form-urlencoded; charset=UTF-8",
        "origin": "https://aais6.nkust.edu.tw",
        "referer": "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage",
        "requestverificationtoken": self.SelectPage_RVT,
        "user-agent": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0.4472
        "x-requested-with": "XMLHttpRequest"
    }
    data = {
        "CrsType": "A",
        "ShortTerm": "N"
    }
    while(request_out != 0):
        try:
            CourseUnitCollection = self.r.post(self.CourseUnitCollection_URL ,data=data, headers = head, timeout = 0.5)
            #對伺服器發出post，取得下拉選單資訊。
            self.CourseUnitCollection_Data = json.loads(CourseUnitCollection.text)
            #將資料存成json型態
            print(self.CourseUnitCollection_Data[0])
            #印出第一筆資料來查看是否有成功
            return True
        except:
            continue
    return False

def CourseSearch(self,number = ""):
    request_out = 5
    head={
        "Content-Type": "application/json; charset=UTF-8",
        "origin": "https://aais6.nkust.edu.tw",
        "referer": "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage",
        "requestverificationtoken": self.SelectPage_RVT,
        "user-agent": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/91.0
        "x-requested-with": "XMLHttpRequest"
    }
    data = {
        "SearchViewModel":{#在此你可以依據取得的下拉表單資訊帶入查詢，我僅用課程代碼示範。
            "cmp_area": "1",
            "dgr_id": "14",
            "unt_id": "UE29",
            "cls_year": "3",
            "cls_seq": "ALL",
            "scr_selcode": number,#課程代碼，當課程代碼不為""時，僅查詢課程代碼。
            "scr_language": "",
            "scr_time": "",
            "CrsType": "N"
        }
    }
    while(request_out != 0):
        try:
            CourseSearch = self.r.post(self.CourseSearch_URL ,data=json.dumps(data), headers = head, timeout = 0.5)
            #對伺服器發出post，取得課程資訊。
            self.CourseSearch_Data = json.loads(CourseSearch.text)
            #將資料存成json型態
            #print(self.CourseSearch_Data["recordsTotal"])
            #總共查詢到幾個課程
            #print(self.CourseSearch_Data["data"][0])
            #第一筆課程資訊，以課程代碼查詢僅會查詢到一筆。
            return True
        except:
            time.sleep(random.randint(1,3))
            request_out = request_out - 1
            continue
    return False

```

執行程式查看結果。

```
if __name__ == '__main__':
    Start = NKUST_Grab_A_Course("C108152305", " ")
    Start.Get_LoginPage_RVT()
    Start.Login()
    Start.Get_SelectPage_RVT()
    Start.CoursUnitCollection()
    Start.CourseSearch("0988")
```

結果相當符合預期，data 的資料僅需一一解讀就可以拿來利用。

```
====
<Response [200]>
Squeezed text (1154 lines).
Squeezed text (980 lines).
RVT : CfDJ8IGMRt5YZMBAv0JK_32tjtYIVPqN4zi5vZMnkNwrJ0TYt9sZVrk9mMMzop2VFUN23z3BoT0
FzYLvSZk9LPCx2YzvZmaOVqgc9etkTl14bJNRnyDK-coT9Hwc4QeyUrjW012Yh18RTPyLv0ew3hytiW9
GDa0aKiHhChtZwHJiEouaRtbGVM9x4za-82tviNT4s1Q
{'yms_year': 110, 'yms_smester': 1, 'dvs_id': '1', 'dvs_name': '日間部', 'cmp_ar
ea': 1, 'cmp_name_abr': '建工校區', 'dgr_id': '13', 'dgr_name': '日間部二技-Day
School(Two-year College)', 'unt_id': 'XF01', 'unt_name_abr': '服務教育-Community
service', 'CrsType': 'N'}
1
{'yms_year': 110, 'yms_smester': 1, 'Course_ID': '110-1-UE291433-09210-01', 'Crs
Type': 'N', 'SelfOpen': 'Y', 'scj_mso': '0', 'scj_mso_name': '選修', 'scr_selcod
e': '0988', 'Encrypt_selcode': 're80wDLuQ3E=', 'scj_sub_percode': '222C10499', '
scr_credit': 3.0, 'sub_name': '生產力4.0概論', 'sub_ename': 'Introduction to Pro
ductivity 4.0', 'scr_teach': '楊正宏,張珀銀', 'scr_time': '(五)5-7', 'scr_room':
'資809', 'cls_id': 'UE291433', 'scj_cls_id': 'UE291433', 'scj_dvs_id': '1', 'cl
s_name_abr': '四子三丙', 'scj_cls_name_abr': '四子三丙', 'scj_dgr_id': '14', 'sc
r_language': '國語', 'cls_firstyear_yn': 'N', 'scr_precnt': 48, 'scr_keep': 0, '
scr_acptcnt': 0, 'unt_id': 'UE29', 'scj_unt_id': 'UE29', 'scr_teach_eng': None,
'cls_ename_abr': 'Department of Electronic Engineering', 'scj_cls_ename_abr': 'D
epartment of Electronic Engineering', 'cmp_area': '1'}
```

三、加入課程

步驟：隨機點一堂課加入觀察。

選課修別 Req./Ele.	加選 Add	課號 Course No.	課程名稱 選課人數 Course Title
+ Ele.選 ▾	已加入 Completed	0973	半導體物理 選課人數 Semiconductor Physics
+ Ele.選 ▾	Add	0974	電磁波 選課人數 Wave Electromagnetics
+ Ele.選 ▾	Add	0974	電磁波 選課人數 Wave Electromagnetics
+ Req.必 ▾	Add	0975	實務專題(一) 選課人數 Special Topics (1)
+ Req.必 ▾	Add	0975	實務專題(一) 選課人數 Special Topics (1)
+ Req.必 ▾	Add	0975	實務專題(一) 選課人數 Special Topics (1)
+ Ele.選 ▾	Add	0976	機率與統計 選課人數 Probability and Statistics
+ Ele.選 ▾	Add	0977	非同步互動式網頁程式 設計 選課人數 Asynchronous Interactive Web Programming

Elements Console Sources **Network** Performance Memory >> 2

☒ Preserve log
 ☐ Disable cache
 No throttling

Filter ☒ Hide data URLs **All** XHR JS CSS Img Media Font Doc WS Manifest Other

☐ Has blocked cookies
 ☐ Blocked Requests

200 ms 400 ms 600 ms 800 ms 1000 ms 1200 ms 1400 ms 1600 ms 1800 ms 2000

Name

- ☐ TLog
- ☐ js?id=UA-107138823-5&...
- ☒ **AddPreSelCrs**
- ☐ analytics.js
- ☐ collect?v=1&_v=j91&a=...
- ☐ collect?v=2&tid=G-8ZG...

Headers Preview Response Initiator Timing Cookies

General

Request URL: https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/AddPreSelCrs

Request Method: POST

Status Code: 200

Remote Address: 140.133.78.205:443

Referrer Policy: strict-origin-when-cross-origin

Response Headers

content-type: application/json; charset=utf-8
date: Wed, 14 Jul 2021 22:16:09 GMT
server: Microsoft-IIS/10.0
set-cookie: .AspNetCore.Mvc.CookieTempDataProvider=CfDJ8NGSuNJJZxsdB1v4pvXbfjWKJfKUSTHz5ybuwCpgoc1Q8xgmNcKchP1dRhFI49xuVowfiHU9beSScxp1ZKXg18FDuNHJM71n-1A8PTZ6ApIk7L2GCIFFNErEATKx1Av3SOExWqWx2nOjLFWqang3ZM5WfrLuNTxRAqAwm2yey8GJsAtgKSzY2ThRxKvF89o47np00S7HVTfFamS2yEu7_VRcKDrPTOpIcrtV3GyBYdBhVppEtIhOS1AXbIAMrVS7UyvGenVuYF0dZ3Utq8G5p2bReuD81R44fW6jImerdRzn7NK7PKbjB8Z6LfdPA31Vuq-5ctatgUbBoeRHwqUpHd6zqf6T02Ys1oBrSRZ0Gw-Nt_-6Zniiq6raUNqJCoYrjF0Jv4IGssyoQ1ns1MVCzJd8; path=/selcrs_std; samesite=lax; httponly
strict-transport-security: max-age=2592000
x-powered-by: ASP.NET

Request Headers

:authority: aais5.nkust.edu.tw
:method: POST
:path: /selcrs_std/FirstSelect/AddPreSelCrs
:scheme: https
accept: */*
accept-encoding: gzip, deflate, br
accept-language: zh-TW,zh;q=0.9,en-US;q=0.8,en;q=0.7
content-length: 58
content-type: application/x-www-form-urlencoded; charset=UTF-8
cookie: .AspNetCore.Antiforgery.Ft-VTXwxkVk=CfDJ8NGSuNJJZxsdB1v4pvXbfjWJxXtXHQjpyw9LZe3jpN4a0q294GhHqhxISY-WlXGRcXph1hPk14_r-xwTmc0LTH1o14U4-8jSgsZiQhLSid

6 / 7 requests 631 B / 631

Console What's New

Elements Console Sources **Network** Performance Memory

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200 ms 400 ms 600 ms 800 ms 1000 ms 1200 ms 1400 ms 1600 ms 1800 ms 2000

Name	Headers	Preview	Response	Initiator	Timing	Cookies
<input type="checkbox"/> TLog						
<input type="checkbox"/> js?id=UA-107138823-5&...						
<input checked="" type="checkbox"/> AddPreSelCrs	YQiiFHF7yL0Dd6KQPPeMcFQhNjCBtBPKXT1ZRb2WFiUQfxpR70qvLKZdytC1egLzLC7N0UVA3DWh f0Gud-fIqxsKBvzTCxZq5V5NWaDt-YD0AijZhKEXc4wH2AeKGjjm5ZPijv07UiN2lv92nyf0; .A spNetCore.Mvc.CookieTempDataProvider=CfDJ8NGSuNJZxsdB1v4pvXbfjWl7vpzf6q1fKGA 6aNUbLfafveysIdPG57qisyQNmvK-Q_8ulzj7Cu280__liyBxrw7oC0aqbZe5tqz04Jy01GEzSsI hYPLkGdn3SY53f1A344S7suY98Ybtr3A6l7WaQeUChaPtXediiFHgh6M4xjdLbvBaw10iRrfsYy Zt2RI-I1bifRfgnG_i4TqMR0395zInxws9pUNqbqNQshtn4zicLtcMf10U8C1Gvn50xenASRNHVK MVXDajsm-CKxypqskB0_xg9VYPJ8ndunAIjAEkwXVDo17LZu8CuJCSbKw092wWC-92riLHVbeahC D4480-Zpv3V60XdhzLQvITDnA60xxNJvRXfFUI47Qg1ePGQmn3CQRxVEK8JNvvx4iZkM; _ga_QC 7GTL4TRZ=GS1.1.1611734690.3.0.1611735923.0; _ga_0592TB7VS2=GS1.1.1622116068. 1.1.1622116123.0; _gcl_au=1.1.437656077.1623917466; _fbp=fb.2.1624539241291. 1664119147; _gid=GA1.3.1752746043.1626052177; _gat_gtag_UA_107138823_5=1; _g a=GA1.1.1378741533.1586079215; _ga_8ZGQ4441W1=GS1.1.1626300280.44.1.16263009 63.0 origin: https://aais5.nkust.edu.tw referer: https://aais5.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage requestverificationtoken: CfDJ8NGSuNJZxsdB1v4pvXbfjWIjswO60BzDd0PaNV_GVNqMzFbYQ bQjQRGZ21HV9CpnsV3r-c2xKLhexHkoTd4EpXN98auI4vaprbAZ1DwaT_Me_90z78I_GCPKyR-B- QtjmVatOROAD7joBDaL2QtoDH4OC10aDZksMEQQTicrSrhbarrSjMXE1nUD1_0GLpDP1w sec-ch-ua: "Not;A Brand";v="99", "Google Chrome";v="91", "Chromium";v="91" sec-ch-ua-mobile: ?0 sec-fetch-dest: empty sec-fetch-mode: cors sec-fetch-site: same-origin user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHT ML, like Gecko) Chrome/91.0.4472.124 Safari/537.36 x-requested-with: XMLHttpRequest					
<input type="checkbox"/> analytics.js						
<input type="checkbox"/> collect?v=1&_v=j91&a=...						
<input type="checkbox"/> collect?v=2&tid=G-8ZG...						

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▼ Form Data view source view URL-encoded

CrsNo: 0973

PCrsNo: 222C10405

SelType: 0

CrsType: N

NewClass: N

步驟：撰寫 python 程式

```
def __init__(self,account,password):
    self.UserAccount = account
    self.UserPassword = password
    self.r = requests.session()#建立一個session，讓每次request都算同一次，才能連續執行動作。
    self.LoginPage_URL = "https://aais6.nkust.edu.tw/selcrs_std"#高科大學生選課系統登入首頁網址。
    self.LoginPage_RVT = ""#LoginPage_RequestVerificationToken
    self.LoginButton_URL = "https://aais6.nkust.edu.tw/selcrs_std/Login"#按下登入時post的網址。
    self.SelectPage_URL = "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage"#高科大學生選課系統選課網址。
    self.SelectPage_RVT = ""#SelectPage_RequestVerificationToken
    self.CourseUnitCollection_URL = "https://aais6.nkust.edu.tw/selcrs_std/Unit/CourseUnitCollection"#請求下拉選單資訊網址
    self.CourseUnitCollection_Data = ""#儲存選單資訊
    self.CourseSearch_URL = "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/CourseSearch"#請求查詢課程資訊網址
    self.CourseSearch_Data = ""#儲存課程資訊
    self.AddPreSelCrs_URL = "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/AddPreSelCrs"#請求新增課程網址

def AddPreSelCrs(self,number = ""):
    request_out = 5
    head={
        "Content-Type": "application/x-www-form-urlencoded; charset=UTF-8",
        "origin": "https://aais6.nkust.edu.tw",
        "referer": "https://aais6.nkust.edu.tw/selcrs_std/FirstSelect/SelectPage",
        "requestverificationtoken": self.SelectPage_RVT,
        "user-agent": "Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome",
        "x-requested-with": "XMLHttpRequest"
    }
    data = {
        "CrsNo": number,#選課代號
        "PCrsNo": self.CourseSearch_Data["data"][0]['scj_sub_percode'],#可用剛剛查詢課程資訊的函示查詢該筆資料
        "SelType": "0",
        "CrsType": self.CourseSearch_Data["data"][0]['CrsType'],
        "NewClass": "N"
    }
    while(request_out != 0):
        try:
            AddPreSelCrs = self.r.post(self.AddPreSelCrs_URL ,data=data, headers = head, timeout = 0.5)
            #對伺服器發出post，新增課程。
            print(AddPreSelCrs.text)
            #印出資訊查看是否有新增成功
            return True
        except:
            time.sleep(random.randint(1,3))
            request_out = request_out - 1
            continue
    return False
```

執行程式察看結果。

```
if __name__ == '__main__':
    Start = NKUST_Grab_A_Course("C108152305", " ")
    Start.Get_LoginPage_RVT()
    Start.Login()
    Start.Get_SelectPage_RVT()
    Start.CoursUnitCollection()
    Start.CourseSearch("0973")
    Start.AddPreSelCrs("0973")
```

成功新增課程。

```
["result":1,"MessageBotton":"已加入\nCompleted","MessageShow":"加入選課志願完成  
!<br/>Completed!"]
```

步驟：執行完程式之後再實際到選課系統查看是否有該筆紀錄。

選課紀錄 Record of course selection					
#	作業 Operation	當期課號 Course No.	說明 Description	異動時間 Transaction of time	異動來源 Source of transaction
1	增加(Add)	0973	學生志願選 課(Course Pre- selection)	2021-07-15 08:16:50	學生選課 (Course selection)

參、搶課系統設計



