```
In [ ]: Crawling
         Scraping - content-type;text/html,application/json,/image/*,...
                              => Focused crawling+scraping
         Dynamic HTML (AJAX - XmlHttpRequest/JS/Doc...)
                    => DOM(Req/Resp), Data(Req/Resp => content-type), [웹툰]*
         Cookie/Session
                   HTTP
         Client
                            Server
            Req =====> login, 회원가입, ... => RESTful API(Put, Post)
           Resp <====== HTML Form[method, action / JS]</pre>
                             변수=우리정보
         Cookie(*)
                            Session
 In [1]: from requests import request
         from requests.compat import *
         from bs4 import BeautifulSoup
         headers = {
              'user-agent':'Mozilla/5.0 (Macintosh; Intel Mac OS X 10_15_7) AppleWebKit/537.36 (KH
 In [2]: url = 'https://pythonscraping.com/pages/cookies/login.html'
         resp = request('GET', url)
In [4]: dom = BeautifulSoup(resp.text, 'html.parser')
In [7]: form = dom.select_one('form')
In [8]: form.attrs['action']
Out[8]: {'method': 'post', 'action': 'welcome.php'}
In [12]: [tag.attrs['name'] for tag in form.select('[name]')]
Out[12]: ['username', 'password']
In [13]: urljoin(resp.url, form.attrs['action'])
Out[13]: 'https://pythonscraping.com/pages/cookies/welcome.php'
In [24]: params = {
             'username':'testest',
             'password': 'password'
         resp = request(form.attrs['method'],
                        urljoin(resp.url, form.attrs['action']),
                        data = params)
In [25]: resp.headers
         Client
                        Server
         id/wrong pw ===> req
                     <=== resp (headers cookie X)</pre>
         id/pw
                     ===> req
                     <=== resp (headers set-cookie)</pre>
```

```
Out[25]: {'Server': 'nginx', 'Date': 'Mon, 17 Jul 2023 01:27:49 GMT', 'Content-Type': 'text/html;
         charset=UTF-8', 'Content-Length': '123', 'Connection': 'keep-alive', 'X-Powered-By': 'PH
         P/7.4.33, PleskLin', 'Set-Cookie': 'loggedin=1, username=testest', 'Vary': 'Accept-Encod
         ing', 'Content-Encoding': 'gzip'}
In [29]: request('GET', urljoin(resp.url, 'profile.php')).text
Out[29]: 'You\'re not logged into the site!<br>Visit <a href="login.html">the login page</a> to l
         og in'
In [30]: request('GET', urljoin(resp.url, 'profile.php'),
                 cookies={'loggedin':'1', 'username':'test'}).text
Out[30]: "Hey test! Looks like you're still logged into the site!"
In [ ]: 1. FORM(action, method)
         2. FORM tags[name] = tags[value] ====> 검색창
         3. FORM.method, FORM.action, GET; params, POST; data
         4. Cookie 관리(set-cookie 확인, dict관리)
In [32]: resp.request.url, resp.request.body
         POST => body(data)
Out[32]: ('https://pythonscraping.com/pages/cookies/welcome.php',
          'username=testest&password=password')
In [33]: from requests.cookies import cookiejar from dict
In [36]: c = cookiejar_from_dict({'loggedin':'1','username':'whoami'})
In [37]: request('GET', urljoin(resp.url, 'profile.php'),
                 cookies=c).text
Out[37]: "Hey whoami! Looks like you're still logged into the site!"
In [41]: for row in resp.headers['set-cookie'].split(','):
             print(row.strip().split('='))
         ['loggedin', '1']
         ['username', 'testest']
In [42]: from requests.sessions import Session
         session = Session()
         => set-cookie => cookie jar 관리
In [43]: resp = session.request(form.attrs['method'],
                                urljoin(resp.url, form.attrs['action']),
                                data = params)
In [46]: session.request('GET', urljoin(resp.url, 'profile.php')).text
Out[46]: "Hey testest! Looks like you're still logged into the site!"
In [47]: url = 'https://lms.sunde41.net'
         resp = request('GET', url)
In [50]: dom = BeautifulSoup(resp.text, 'html.parser')
```

```
In [53]: form = dom.select_one('form')
In [61]:
         params = \{\}
         for tag in form.select('[name]'):
             params[tag.attrs['name']] = tag.attrs['value'] \
                 if tag.has_attr('value') else ''
In [65]: params
Out[65]: {'next': '/', 'email': '', 'password': '', 'remember': ''}
In [ ]: %%writefile lms.txt
             "id":"value",
             "pw":"pw"
In [63]: import json
         # 이건 내꺼 - 작성 X
         with open('lms.txt', 'r', encoding='utf-8') as fp:
             lms = json.load(fp)
In [66]: params['email'] = lms['id']
         params['password'] = lms['pw']
In [67]: session.cookies.clear()
In [69]: form.attrs
Out[69]: {'action': '/auth/login',
           'method': 'POST',
          'name': 'login_user_form',
          'class': ['m-form']}
In [70]: resp = session.request(form.attrs['method'],
                                urljoin(resp.url, form.attrs['action']),
                                data=params)
In [76]: dom = BeautifulSoup(session.request('GET', url).text, 'lxml')
In [79]: dom.select('a[href^="/course"]')
Out[79]: [<a class="m-menu link" href="/course/4">
          <i class="m-menu link-bullet m-menu link-bullet--line"><span></span></i><span class</pre>
         ="m-menu__link-text">수업 게시판</span></a>,
          <a class="m-menu__link" href="/course/assignment/list/4"><i class="m-menu__link-bullet</pre>
         m-menu__link-bullet--line"><span></i><span class="m-menu__link-text">과제/제출 게
         시판</span>
          <span class="m-badge m-badge--orange strong float-right" style="margin-top:10px;">
                                                          new</span>
          <a href="/course/assignment/submit/4/34" style="color:#6a1aff">제출</a>,
          <a href="/course/assignment/submit/4/38" style="color:#6a1aff">제출</a>,
          <a href="/course/assignment/submit/4/39" style="color:#6a1aff">제출</a>,
          <a href="/course/assignment/submit/4/41" style="color:#ff3d3d">제출</a>,
```

```
In [85]:
         resp = request('GET', urljoin(url, '/course/4'),
                        cookies=session.cookies)
In [86]:
         dom = BeautifulSoup(resp.text, 'lxml')
In [89]: for node in dom.select('a[href^="/static"]'):
             print(urljoin(resp.url, node.attrs['href']))
         https://lms.sunde41.net/static/uploads/lectures/4/%E1%84%83%E1%85%A6%E1%84%8B%E1%85%B5%E
         1%84%90%E1%85%A5%E1%84%87%E1%85%A6%E1%84%8B%E1%85%B5%E1%84%89%E1%85%B3.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/%E1%84%86%E1%85%A9%E1%84%83%E1%85%B3%E
         1%86%AB%20%E1%84%8F%E1%85%A5%E1%86%B7%E1%84%91%E1%85%B2%E1%84%90%E1%85%A5%20%E1%84%80%E
         1%85%AA%E1%84%92%E1%85%A1%E1%86%A8%E1%84%8C%E1%85%A1%E1%84%80%E1%85%A1%20%E1%84%8B%E1%8
         5%A1%E1%86%AF%E1%84%8B%E1%85%A1%E1%84%8B%E1%85%A3%20%E1%84%92%E1%85%A1%E1%86%AF%20%E1%8
         4%87%E1%85%AE%E1%84%83%E1%85%A9%E1%86%BC%20%E1%84%89%E1%85%A9%E1%84%89%E1%85%AE%E1%84%8
         C%E1%85%A5%E1%86%B7%E1%84%8B%E1%85%B4%20%E1%84%86%E1%85%A9%E1%84%83%E1%85%B3%E1%86%AB%E
         1%84%80%E1%85%A5%E1%86%BA.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0627.html
         https://lms.sunde41.net/static/uploads/lectures/4/0628.html
         https://lms.sunde41.net/static/uploads/lectures/4/Functional%20Programming%20in%20Pytho
         n.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/Regular%20Expression.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/2021.png
         https://lms.sunde41.net/static/uploads/lectures/4/2018.png
         https://lms.sunde41.net/static/uploads/lectures/4/0629.html
         https://lms.sunde41.net/static/uploads/lectures/4/HTTP.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0630.html
         https://lms.sunde41.net/static/uploads/lectures/4/0703.html
         https://lms.sunde41.net/static/uploads/lectures/4/Mastering%20Python%20Decorators.pdf.pd
         https://lms.sunde41.net/static/uploads/lectures/4/%E1%84%80%E1%85%A2%E1%86%A8%E1%84%8E%E
         1%85%A6%E1%84%8C%E1%85%B5%E1%84%92%E1%85%A3%E1%86%BC.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/DOM.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0704.html
         https://lms.sunde41.net/static/uploads/lectures/4/00P.zip
         https://lms.sunde41.net/static/uploads/lectures/4/AOP.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/%EC%9D%8C%EC%84%B1%EC%9D%B8%EC%8B%9D_%
         EC%9A%94%EC%95%BD_%EA%B9%80%EA%B4%91%ED%98%B8.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/%EC%9E%90%EC%97%B0%EC%96%B4%EC%B2%98%E
         B%A6%AC%EB%B0%8F%EC%96%B8%EC%96%B4%EB%AA%A8%EB%8D%B8%EB%A7%81 %EA%B9%80%EA%B4%91%ED%98%B
         8.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0706.html
         https://lms.sunde41.net/static/uploads/lectures/4/NumPy.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/numpy.ipynb
         https://lms.sunde41.net/static/uploads/lectures/4/0710.html
         https://lms.sunde41.net/static/uploads/lectures/4/data.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0711.html
         https://lms.sunde41.net/static/uploads/lectures/4/Crawling.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/PageRank.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/data.zip
         https://lms.sunde41.net/static/uploads/lectures/4/Tidy%20Data.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/0713.html
         https://lms.sunde41.net/static/uploads/lectures/4/recommendation.pdf
         https://lms.sunde41.net/static/uploads/lectures/4/recommendation.ipynb
         https://lms.sunde41.net/static/uploads/lectures/4/recommendation2.ipynb
         https://lms.sunde41.net/static/uploads/lectures/4/The%20Split-Apply-Combine%20Strategy%2
         Ofor%20Data%20Analysis.pdf
```

```
In [90]: resp = request('GET', 'https://lms.sunde41.net/static/uploads/lectures/4/%E1%84%83%E1%85
         root path = /
                    uri
          public path = /uploads/, /static/
In [91]: resp.headers
Out[91]: {'Server': 'nginx/1.18.0 (Ubuntu)', 'Date': 'Mon, 17 Jul 2023 02:00:03 GMT', 'Content-Ty
         pe': 'application/pdf', 'Content-Length': '8931190', 'Last-Modified': 'Thu, 29 Jun 2023
         01:02:52 GMT', 'Connection': 'keep-alive', 'ETag': '"649cd83c-884776"', 'Accept-Ranges':
          'bytes'}
In [94]: c = {}
         for k,v in session.cookies.get_dict().items():
             c[k] = v
In [97]: request('GET', url, cookies=c).text
Out[97]: '<!DOCTYPE html>\n<html lang="ko">\n<head>\n
                                                          <title>대시보드 : 고려대학교 지능정보SW아
         카데미</title>\n
                            <meta charset="UTF-8">\n
                                                         <meta http-equiv="X-UA-Compatible" conte</pre>
         nt="IE=edge,chrome=1">\n
                                     <meta name="viewport" content="width=device-width, initial-s</pre>
         cale=1, maximum-scale=1, shrink-to-fit=no">\n
                                                           <meta name="robots" content="noindex,no</pre>
                       <link href="/static/vendors/bootstrap.css?v=1.4" rel="stylesheet">\n
         follow">\n
         ink href="/static/vendors/main.css?v=1.8" rel="stylesheet">\n
                                                                         <link href="/static/ven</pre>
         dors/icon.css?v=1.0" rel="stylesheet">\n
                                                     <link href="/static/vendors/form.css?v=1.0"</pre>
         rel="stylesheet">\n
                                <link href="/static/vendors/style.css?v=2.10" rel="stylesheet">\n
         <link href="/static/vendors/fullcalendar.min.css?v=1.2" rel="stylesheet">\n<style>\n#att
         endace {\n\tdisplay: none;\n}\n.fc-unthemed .fc-event .fc-title {\n font-size: 11p
                 font-weight: 500;\n}\n.fc-unthemed .fc-event, .fc-unthemed .fc-event-dot {\n
                                           .fc .fc-bg-event {\n
         border: 1px solid #ebedf2;\n}\n
                                                                         opacity: 0.8;\n
                                                                                                ba
         ckground: red !important;\n
                                               .fc .fc-bg-event .fc-event-title {\n
                                        }\n
                                                                                             colo
         r: #FFF !important;\n
                                      font-style: normal;\n
                                                                   font-weight: bolder;\n
                                                                                              }\n.
         message {\n cursor: pointer;\n}\n.modal table {\n\twidth: 100%;\n\t\tmargin-bottom:
         1rem;\n}\n.modal table, \n.modal th,\n.modal td {\n border: 1px solid #ebedf2;\n borde
         r-collapse: collapse;\n padding: 0.75rem;\n\n</style>\n <link rel="shortcut icon" h
         ref="/static/favicon/favicon.ico" type="image/x-icon">\n
                                                                    <link rel="icon" href="/stat</pre>
         ic/favicon/favicon.ico" type="image/x-icon">\n</head>\n<body class="m-page--fluid m-cont
         ent--skin-light2 m-header--fixed m-header--fixed-mobile m-aside-left--enabled m-aside-le
         ft--skin-dark m-aside-left--fixed m-aside-left--offcanvas m-footer--push m-aside--offcan
         vas-default">\n<div class="m-grid m-grid--hor m-grid--root m-page">\n <header id="m_h
         eader" class="m-grid__item m-header " m-minimize-offset="200" m-minimize-mobile-offset
         ="200">\n
                          <div class="m-container m-container--fluid m-container--full-height">\n
         <div class="m-stack m-stack--ver m-stack--desktop">\n
                                                                               <div class="m-stack
                                                                     <div class="m-stack m-stack--</pre>
         __item m-brand m-brand--skin-dark ">\n
                                                          <div class="m-stack__item m-stack__item-</pre>
         ver m-stack--general">\n
                                                                   <img alt="" src="/static/img/lo</pre>
         -middle m-brand__logo">\n
         go.png" style="width:195px;height:50px;"/>\n
                                                                              </div>\n
         <div class="m-stack__item m-stack__item--middle m-brand__tools">\n\t\t
                                                                                            <a hre
         f="javascript:;" id="m aside left minimize toggle" class="m-brand icon m-brand toggler
         m-brand__toggler--left m--visible-desktop-inline-block m-brand__toggler--active">\n
                                                                                       <a href="ja
         <span></span>\n
                                                     </a>\n
         vascript:;" id="m_aside_left_offcanvas_toggle"\n
                                                                                         class="m-
         brand__icon m-brand__toggler m-brand__toggler--left m--visible-tablet-and-mobile-inline-
         block">\n
                                                   <span></span>\n
                                       <a id="m_aside_header_topbar_mobile_toggle" href="javascri</pre>
          \n
```

class="m-brand__icon m--visible-tablet-and-mobile-

pt:;"\n

```
inline-block">\n
                                       <i class="flaticon-more"></i>\n
</a>\n
                        </div>\n
                                               </div>\n
                                                                   </div>
\n\t\t<div class="m-stack__item m-stack__item--fluid m-header-head" id="m_header_nav">\n
\t\t<div id="m_header_menu"\n\tclass="m-header-menu m-aside-header-menu-mobile m-aside
-header-menu-mobile--offcanvas m-header-menu--skin-light m-header-menu--submenu-skin-li
ght m-aside-header-menu-mobile--skin-dark m-aside-header-menu-mobile--submenu-skin-dark
">\n\t\t\t<div class="m-subheader " style="padding: 15px 30px 0 30px;">\n\t\t\t\t\t\t\t\t\t\t\ul
m m-nav__item--home"><i class="m-nav__link-icon fa fa-home"></i>\n\t\t\t\t\t\t\t\t\t\t\
lass="m-nav_separator"><i class="m-menu_ver-arrow la la-angle-right"></i> \n\t\t
\t\t\t<h3 class="m-subheader__title m-subheader__title--separator">\n\t\t\t\t\t\t\t\
시보드\n\t\t\t\t\t\t\/h3>\n<a href="/dashboard/admin" class="btn btn-sm btn-primary"> 관
리자 대시보드 보기</a>\n\t\t\t\t\n\t\t\t</div>\n\t\t\t</div>\n\n\t\t\t<div id="m
_header_topbar" class="m-topbar m-stack m-stack--ver m-stack--general m-stack--fluid">
ar__nav m-nav m-nav--inline">\n\t\t\t\t\a href="javascript:;" id="m_aside_left_minimiz
e_toggle" class="m-brand__icon m-brand__toggler m-brand__toggler--left m--visible-deskto
v__item">\n\t\t\t\t\t\t\t\a href="#" class="m-nav__link m-dropdown__toggle" onclick="tog
gleFullScreen();">\n\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\span class="m-nav__link-icon"><i class="flaticon-ar</pre>
ser-profile m-topbar__user-profile--img">\n\t\t\t\t\t\t\t\a href="/dashboard/mypage">\n
g/default_avatar.jpeg"\n\t
                          class="user_pic_top"\n
                                                 onerror="if (this.src !=
\'/static/img/default_avatar.jpeg\') this.src = \'/static/img/default_avatar.jpeg\';">\n
-nav__item m-list-search m-list-search--skin-light">\n\t\t\t\t\t\t\t\t\t\t\
t" class="m-nav__link">\n\t\t\t\t\t\t\t\t\t\t\span class="m-nav__link-icon"><i class="flatic
on-logout"></i></span>\\n\t\t\t\t\t\t
</div>\n\t\</div>\n
                                     </div>\n
                                                   </div>\n
                                                            </header>\n
<div class="m-grid__item m-grid__item--fluid m-grid m-grid--ver-desktop m-grid--desktop</pre>
              <div id="m_aside_left" class="m-grid__item\tm-aside-left m-aside-left</pre>
--skin-dark "><div id="m_ver_menu" class="m-aside-menu m-aside-menu--skin-dark m-aside-
menu--submenu-skin-dark " m-menu-vertical="1"\n
                                          m-menu-scrollable="1" m-menu-dropdow
n-timeout="500">\n
                 \n\t\n\t
item--active "\n
                       aria-haspopup="true"><a href="/dashboard/admin"\n
class="m-menu__link "><span\n</pre>
                                    class="m-menu__item-here"></span><i class</pre>
="m-menu link-icon flaticon-home-1"></i><span\n
                                                    class="m-menu link-tex
                         \n\t
t">대시 보드</span></a>
                                                             aria-haspopu
p="true"><a href="/dashboard/faq"\n
                                                          class="m-menu li
                      class="m-menu__item-here"></span><i class="m-menu__link-icon")</pre>
nk "><span\n
flaticon-interface-3"></i><span\n</pre>
                                        class="m-menu link-text">규정</span></
                    a >  \ 
n\n"\n
                  aria-haspopup="true" m-menu-submenu-toggle="hover"><a href="javasc
ript:;"\n
="m-menu__link m-menu__toggle"><span\n
                                                  class="m-menu__item-here">
</span><i class="m-menu_link-icon flaticon-presentation"></i>\n
                                                                     <spa
n class="m-menu link-title">\n
                                             <span class="m-menu link-wrap">
                        <span class="m-menu link-text" style="font-weight:700;">
\n
데이터 청년 캠퍼스 (2023)\n
                                            </span>\n
</span>\n
                                               <i class="m-menu__ver-arrow la</pre>
                       </span>\n
la-angle-right"></i></a>\n
                                     <div class="m-menu__submenu "><span class</pre>
="m-menu__arrow"></span>\n
                                         \n
aria-haspopup="true"><a\n
href="/course/4" class="m-menu__link ">\n
                                                            <i class="m-men
u link-bullet m-menu link-bullet--line"><span></i><span\n</pre>
class="m-menu__link-text">수업 게시판</span></a>
lass="m-menu item "\n
                                            aria-haspopup="true"><a href="/cou
```

class="m

rse/assignment/list/4"\n

```
-menu link "><i\n
                                                 class="m-menu link-bullet m-menu
                                                   class="m-menu__link-text">과제/
_link-bullet--line"><span></span></i><span\n\t\t\t
제출 게시판</span>\n
                                                          <span class="m-badge m-b</pre>
adge--orange strong float-right" style="margin-top:10px;">\n
new</span>\n
                                            </a>\n\t\t\t
                                                               class="m-menu"
item "\n
                                    aria-haspopup="true"><a href="/qna/list/course/</pre>
4"\n
                                                       class="m-menu link "><i\n
class="m-menu_link-bullet m-menu_link-bullet--line"><span></i><span></i>
class="m-menu_link-text">질문/신청 게시판</span> \n\t\t\t
\n
class="m-menu__section-text" style="color:#ffffff;font-weight:700;">관리자 전용</h4>\n
\n\t\
             class="m-menu item "\n" 
                                                                     aria-haspopu
p="true"><a href=\'/dashboard/course-user-4\'\n
                                                        class="m-menu link-bullet
class="m-menu__link"><i\n</pre>
m-menu__link-bullet--line"><span></i><span\n</pre>
lass="m-menu_link-text">수강생 관리</span></a>
                                                                           <li c
lass="m-menu__item "\n
                                                 aria-haspopup="true"><a href=\'/da
shboard/course-lesson-4\'\n
="m-menu link"><i\n
                                                   class="m-menu__link-bullet m-men
u__link-bullet--line"><span></i><span\n
="m-menu_link-text">수업 관리</span></a>\n\t\t\t
                                                    aria-haspopup="true"><a href=\'/dashboard/course-notice-4\'\n</pre>
class="m-menu__link"><i\n</pre>
                                                        class="m-menu__link-bullet
m-menu__link-bullet--line"><span></i><span\n</pre>
lass="m-menu link-text">공지 관리</span></a>
                                                                         clas
                                              aria-haspopup="true"><a href=\'/dashb
s="m-menu__item "\n
oard/course-assignment-4\'\n
s="m-menu__link"><i\n</pre>
                                                    class="m-menu__link-bullet m-me
nu__link-bullet--line"><span></i><span\n</pre>
="m-menu link-text">과제/제출 관리</span></a>\n\t\t\t
                                                        class="m-menu item" item
"\n
                                aria-haspopup="true"><a href=\'/dashboard/course-assi
gnment-submit-4\'\n
                                                                    class="m-menu
__link"><i\n
                                            class="m-menu__link-bullet m-menu__link-
bullet--line"><span></i><span\n
                                                                    class="m-menu
_link-text">제출 결과 관리</span></a>
                                                      \t\t
aria-haspopup="true"><a href=\'/dashboard/course-submit-resources-4\'\n
class="m-menu__link"><i\n</pre>
                                                        class="m-menu__link-bullet
m-menu link-bullet--line"><span></i><span\n</pre>
lass="m-menu_link-text">제출 파일 관리</span></a>\n\t\t\t
                                                            m "∖n
                                  aria-haspopup="true"><a href=\'/dashboard/course-me
ntoring-4\'\n
                                                               class="m-menu__lin
k"><i\n
                                       class="m-menu link-bullet m-menu link-bulle
t--line"><span></i><span\n
                                                               class="m-menu link
-text">멘토링 관리</span></a>\n
                                                          class="m-menu item" item
"\n\t\t\taria-haspopup="true"><a href="/dashboard/group/4"\n\t\t\t \t\t
-menu__link "><i class="m-menu__link-bullet m-menu__link-bullet--line"><span></i></pan></i>
<span\n\t\t\tclass="m-menu__link-text">조 관리</span></a>\n\t\t\t
                        </div>\n
\n
                                              \n
                                                            \n
                                                                         ≺li clas
s="m-menu__item "\n
                                 aria-haspopup="true"><a href="/dashboard/mypage"\n</pre>
class="m-menu link "><span\n</pre>
                                         class="m-menu item-here"></span><i class</pre>
="m-menu__link-icon flaticon-customer"></i><span\n
                                                            class="m-menu__link-te
xt">나의 정보 / 출석 확인</span></a>\n
                                                class="m-menu section m-menu">
_section--first">\n
                                <h4 class="m-menu__section-text">과정 관리</h4>\n
<i class="m-menu section-icon flaticon-more-v2"></i>\n
                                                             \n\t
                                                                         clas
                                                      href="/attendance-sheet" clas
s="m-menu__item " aria-haspopup="true"><a\n</pre>
s="m-menu__link "><i\n</pre>
                                  class="m-menu link-icon flaticon-calendar-1"></i></i>
                    class="m-menu__link-text">출석부</span></a>\n
<span\n
                                                                         \n
                                                                   href="/assignme
\t
     <a\n</pre>
nt-sheet" class="m-menu__link "><i\n</pre>
                                               class="m-menu__link-icon flaticon-ca
```

```
lendar-1"></i><span\n</pre>
                                                class="m-menu link-text">과제 제출 현황</span></a>
                                    <a\n</pre>
                  \n\t
href="/dashboard/reattendance" class="m-menu__link "><i\n</pre>
class="m-menu__link-icon flaticon-calendar-1"></i><span class="m-menu__link-text">출석
재생성</span></a>\n
                                                                       \n\t
                                                                                       tem " aria-haspopup="true"><a\n</pre>
                                                             href="/dashboard/fags" class="m-menu lin
                               class="m-menu__link-icon flaticon-interface-3"></i><span\n\t\tcl</pre>
k "><i\n
ass="m-menu__link-text">규정 관리</span></a>\n
                                                                          \n
="m-menu__item " aria-haspopup="true"><a\n
                                                                                href="/dashboard/expenses"
class="m-menu__link "><i\n</pre>
                                                            class="m-menu__link-icon flaticon-eye"></i</pre>
                                    class="m-menu__link-text">공통경비</span></a>\n
><span\n
\n</div></div>\n
                                                                             <div class="m-grid item m-gr</pre>
                               \n
id__item--fluid m-wrapper">\n
                                                     <div class="m-content">\n
                                                                                                           <div c
lass="row">\n<div class="col-xl-8">\n\t<div class="m-portlet m-portlet--full-height">\n
\t\t<div class="m-portlet_head">\n\t\t\t<div class="m-portlet_head-caption">\n\t\t\t\t
<div class="m-portlet_head-title">\n\t\t\t\t\span class="m-portlet_head-icon">\n\t\t
tlet__head-text">\n\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\/div>\n\t\t\t\t\/div>\n\t
\t</div>\n\t\t<div class="m-portlet_body m--padding-top-10">\n\t\t<div id="m_calenda
r"></div>\n\t\</div>\n\t</div>\n<div>\ncdiv class="col-xl-4"> \n\t<div class="m-portle
                           <div class="m-portlet__head">\n
t">\n
                                                                                                   <div class
="m-portlet__head-caption">\n
                                                                               <div class="m-portlet_head</pre>
-title">\n\t\t\t\t\t<h5 class="message" data-toggle="modal" data-target="#modal1" style</pre>
="border-color:#7c011b; color:#7c011b;margin-bottom:0;">\n\t\t\t\t\t\t\t[교외 대학생을 위한
고려대 무선인터넷 사용 안내] 확인\n\t\t\t\t\t</h5>\n\t\t\t\t</div>\n
</div>\n\t\t<div class="ribbon ribbon-top ribbon-ver">\n\t\t\t<div class="ribbon-tar"
get bg-success" style="top: -3px; right: 25px; position: absolute;">\n\t\t\t\t\t\i class
="fa fa-star text-white"></i>\n\t\t\t</div>\n\t\t</div>\n
                                                                                                         </div>
\n\n\t<div class="modal fade" id="modal1" tabindex="-1" role="dialog" aria-labelledby="m</pre>
odal1title" aria-hidden="true">\n\t\<div class="modal-dialog modal-dialog-centered" rol
e="align-items: center;">\n\t\t\t\t\t<h5 class="modal-title" id="modal1title" style="fon
t-weight: 500; font-size: 1.3rem;">교외 대학생을 위한 고려대 무선인터넷 사용 안내</h5>\n\t\t
\t\t<button type="button" class="btn btn-danger" data-dismiss="modal">닫기</button>\n
\t\t\t\t</div>\n\t\t\t<div class="modal-body">\n\t\t\t\teduroam 접속을 위한 프로그
램 설치 및 설정 안내\r\n\r\n<a href="https://wifi.korea.ac.kr/wifi/about/edur
oam_info.do#none">https://wifi.korea.ac.kr/wifi/about/eduroam_info.do#none</a>\r\n\r
\n<강의실 와이파이 접속 계정&gt;\r\n\r\nID: Kordata\r\n\r\nPW: data20
23\r\n\r\n \r\n\r\n<!--[data-hwpjson]{\r\n"documentPr": {\r\n"di":
"",\r\n"dp": {\r\n"dn": "test.hwp",\r\n"ta": 1,\r\n"d1": 5,\r\n"d2": 1,\r\n"dv": 0,\r
\n"dr": 1,\r\n"do": 1,\r\n"vj": "1.1",\r\n"an": "Hancom Office Hangul",\r\n"av": "12, 0,
0, 3146",\r\n"ao": "WIN",\r\n"ab": "32",\r\n"ar": "LE",\r\n"as": "Windows_10"\r\n},\r
\n"dis": false,\r\n"ds": {\r\n"ti": "",\r\n"la": "ko",\r\n"cr": "",\r\n"su": "",\r\n"d
e": "",\r\n"cd": "2023-06-25T23:49:56.412Z",\r\n"ke": ""\r\n}\r\n},\r\n"dh": {\r\n"do":
{\r\n"pa": 1,\r\n"fo": 1,\r\n"eq": 1,\r\n"fo": 1,\r\n"fo":
[ ],\r\n"cd": {\r\n"tp": 0,\r\n"lc": {\r\n"af": false,\r\n"ui": false,\r\n"fu": false,\r
\n"dn": false,\r\n"ul": false,\r\n"el": false,\r\n"at": false,\r\n"tq": false,\r\n"da":
false,\r\n"dy": false,\r\n"bu": false,\r\n"bu": false,\r\n"al": false,\r
\n"ab": false,\r\n"ap": false,\r\n"aa": false,\r\n"ds": false,\r\n"de":
false,\r\n"as": false,\r\n"cp": false,\r\n"ao": false,\r\n"et": false,\r\n"ay": false,\r
\n"am": false,\r\n"a1": false,\r\n"bt": false,\r\n"av": false,\r\n"dh": false,\r\n"dp":
false,\r\n"d1": false,\r\n"mf": false,\r\n"bl": false,\r\n"ag": false,\r\n"dg": false,\r
\n"ae": false,\r\n"df": false,\r\n"do": false,\r\n"d1": false,\r\n"d2":
false,\r\n"d3": false,\r\n"ob": false,\r\n"ev": false,\r\n"d5": false,\r
\n"d6": false, \n'n"a2": false, \n'n"dc": false \n', \n"ld": {\r\n"pa": "", \r\n"pa": "", \r\n"pa"
i": true,\r\n"fo": false\r\n}\r\n"bf": {\r\n"01D9A7BFBF6C53C00000002F": {\r\n"id":
1,\r\n"td": false,\r\n"sh": false,\r\n"st": 0,\r\n"si": false,\r\n"bt": 0,\r
\n"bi": false,\r\n"cl": 0,\r\n"bc": false,\r\n"lt": 0,\r\n"lw": 0,\r\n"lc": 0,\r\n"rt":
0,\r\n"rw": 0,\r\n"tc": 0,\r\n"bbw": 0,\r\n"bbw": 0,\r\n"bbw":
```

```
0,\r\n"bbc": 0,\r\n"dt": 1,\r\n"dw": 0,\r\n"fi": { }\r\n},\r\n"01D9A7BFBF6C5
3C000000030": {\r\n"id": 2,\r\n"td": false,\r\n"sh": false,\r\n"st": 0,\r\n"sc": 0,\r
\n"si": false, \n'n"bt": 0, \n"bi": false, \n"cl": 0, \n"bc": false, \n'n"lt": 0, \n'n"lt": 0,
w": 0,\r\n"lc": 0,\r\n"rt": 0,\r\n"rw": 0,\r\n"rc": 0,\r\n"tt": 0,\r\n"tc":
0,\r\n"bbt": 0,\r\n"bbw": 0,\r\n"dt": 1,\r\n"dw": 0,\r\n"dc": 0,\r\n"fi":
{\r\n"wb": {\r\n"fc": 4294967295,\r\n"hc": 4278190080,\r\n"al": 0,\r\n"hs": -1\r\n}\r\n}
\r\n}\r\n"cp": {\r\n"01D9A7BFBF6C53C000000031": {\r\n"id": 0,\r\n"he": 1100,\r\n"t
c": 0,\r\n"sc": 4294967295,\r\n"uf": false,\r\n"uk": false,\r\n"sm": 0,\r\n"bf": "01D9A7
BFBF6C53C000000030",\r\n"f1": "함초롬바탕",\r\n"t1": 1,\r\n"f2": "함초롬바탕",\r\n"t2":
1,\r\n"f3": "한양신명조",\r\n"t3": 2,\r\n"f4": "함초롬바탕",\r\n"t4": 1,\r\n"f5": "함초롬
바탕",\r\n"t5": 1,\r\n"f6": "함초롬바탕",\r\n"t6": 1,\r\n"f7": "함초롬바탕",\r\n"t7": 1,\r
\n"r1": 100,\r\n"r2": 100,\r\n"r3": 100,\r\n"r4": 100,\r\n"r5": 100,\r\n"r6": 100,\r\n"r
7": 100,\r\n"s1": 0,\r\n"s2": 0,\r\n"s4": 0,\r\n"s5": 0,\r\n"s6": 0,\r\n"s
7": 0,\r\n"e1": 100,\r\n"e2": 100,\r\n"e4": 100,\r\n"e5": 100,\r\n"e6": 10
0,\r\n"e7": 100,\r\n"o1": 0,\r\n"o2": 0,\r\n"o3": 0,\r\n"o4": 0,\r\n"o5": 0,\r\n"o6":
0,\r\n"o7": 0,\r\n"it": false,\r\n"bo": false,\r\n"ut": 0,\r\n"us": 1,\r\n"uc": 0,\r\n"s
t": false,\r\n"ss": 1,\r\n"so": 0,\r\n"ht": 0,\r\n"hc": 0,\r\n"hx": 0,\r\n"h
y": 0,\r\n"em": false,\r\n"su": false,\r\n"sb": false\r\n},\r\n"01D9A7BF
BF6C53C000000032": {\r\n"id": 1,\r\n"he": 1200,\r\n"tc": 0,\r\n"sc": 4294967295,\r\n"u
f": false,\r\n"uk": false,\r\n"sm": 0,\r\n"bf": "01D9A7BFBF6C53C000000030",\r\n"f1": "함
초롬바탕",\r\n"t1": 1,\r\n"f2": "함초롬바탕",\r\n"t2": 1,\r\n"f3": "한양신명조",\r\n"t3":
2,\r\n"f4": "함초롬바탕",\r\n"t4": 1,\r\n"f5": "함초롬바탕",\r\n"t5": 1,\r\n"f6": "함초롬
바탕",\r\n"t6": 1,\r\n"f7": "함초롬바탕",\r\n"t7": 1,\r\n"r1": 100,\r\n"r2": 100,\r\n"r
3": 100,\r\n"r4": 100,\r\n"r5": 100,\r\n"r6": 100,\r\n"r7": 100,\r\n"s1": 0,\r\n"s2":
0,\r\n"s4": 0,\r\n"s5": 0,\r\n"s6": 0,\r\n"s7": 0,\r\n"e1": 100,\r\n"e2": 10
0,\r\n"e3": 100,\r\n"e4": 100,\r\n"e5": 100,\r\n"e6": 100,\r\n"e7": 100,\r\n"o1": 0,\r
\n"o2": 0,\r\n"o3": 0,\r\n"o4": 0,\r\n"o5": 0,\r\n"o6": 0,\r\n"o7": 0,\r\n"it": false,\r
\n"bo": false,\r\n"ut": 0,\r\n"us": 1,\r\n"uc": 0,\r\n"st": false,\r\n"ss": 1,\r\n"so":
0,\r\n"ot": 0,\r\n"ht": 0,\r\n"hx": 0,\r\n"hy": 0,\r\n"em": false,\r\n"en":
false,\r\n"su": false,\r\n"sb": false\r\n},\r\n"01D9A7BFBF6C53C000000033": {\r\n"id":
2,\r\n"he": 1000,\r\n"tc": 0,\r\n"sc": 4294967295,\r\n"uf": false,\r\n"uk": false,\r\n"s
m": 0,\r\n"bf": "01D9A7BFBF6C53C000000030",\r\n"f1": "한양신명조",\r\n"t1": 2,\r\n"f2":
"한양신명조",\r\n"t2": 2,\r\n"f3": "한양신명조",\r\n"t3": 2,\r\n"f4": "한양신명조",\r\n"t
4": 2,\r\n"f5": "한양신명조",\r\n"t5": 2,\r\n"f6": "한양신명조",\r\n"t6": 2,\r\n"f7": "명
조",\r\n"t7": 2,\r\n"r1": 100,\r\n"r2": 100,\r\n"r3": 100,\r\n"r4": 100,\r\n"r5": 100,\r
\n"r6": 100,\r\n"r7": 100,\r\n"s1": 0,\r\n"s2": 0,\r\n"s3": 0,\r\n"s4": 0,\r\n"s5": 0,\r
\n"s6": 0,\r\n"s7": 0,\r\n"e1": 100,\r\n"e2": 100,\r\n"e3": 100,\r\n"e4": 100,\r\n"e5":
100,\r\n"e6": 100,\r\n"e7": 100,\r\n"o1": 0,\r\n"o2": 0,\r\n"o3": 0,\r\n"o4": 0,\r\n"o
5": 0,\r\n"o6": 0,\r\n"o7": 0,\r\n"it": false,\r\n"bo": false,\r\n"ut": 0,\r\n"us": 1,\r
\n"uc": 0,\r\n"st": false,\r\n"ss": 1,\r\n"so": 0,\r\n"ot": 0,\r\n"ht": 0,\r\n"hc": 0,\r
\n"hx": 0,\r\n"em": false,\r\n"en": false,\r\n"su": false,\r\n"sb": false\r
\n}\r\n},\r\n"tp": {\r\n"01D9A7BFBF6C53C000000034": {\r\n"id": 0,\r\n"al": false,\r\n"a
r": false,\r\n"tp": [ \r\,\r\n"nu": { },\r\n"pp": {\r\n"01D9A7BFBF}
6C53C000000035": {\r\n"id": 0,\r\n"av": 0,\r\n"ht": 0,\r\n"hi": "",\r\n"hl":
0,\r\n"tp": "01D9A7BFBF6C53C000000034",\r\n"kb": 0,\r\n"kn": true,\r\n"ko": false,\r\n"k
k": false, r\n"kl": false, r\n"kw": 0, r\n"co": 0, r\n"fl": false, r\n"s
t": false,\r\n"s1": false,\r\n"ae": false,\r\n"aa": false,\r\n"mi": -4880,\r\n"ml": 0,\r
\n"mr": 0,\r\n"mp": 0,\r\n"mn": 0,\r\n"lt": 0,\r\n"lv": 140,\r\n"bf": "01D9A7BFBF6C53C00
0000030",\r\n"b1": 0,\r\n"bt": 0,\r\n"bb": 0,\r\n"bb": false,\r\n"bi": false
\r\n},\r\n"01D9A7BFBF6C53C000000036": {\r\n"id": 1,\r\n"ah": 0,\r\n"av": 0,\r\n"ht":
0,\r\n"hi": "",\r\n"hl": 0,\r\n"tp": "01D9A7BFBF6C53C000000034",\r\n"kb": 0,\r\n"kn": tr
ue,\r\n"ko": false,\r\n"kk": false,\r\n"kp": false,\r\n"kw": 0,\r\n"co":
0,\r\n"fl": false,\r\n"sl": false,\r\n"aa": false,\r\n"m
i": 0,\r\n"ml": 0,\r\n"mr": 0,\r\n"mp": 0,\r\n"mn": 0,\r\n"lt": 0,\r\n"lv": 160,\r\n"b
f": "01D9A7BFBF6C53C000000030",\r\n"bl": 0,\r\n"br": 0,\r\n"bt": 0,\r\n"bc":
false,\r\n"bi": false\r\n}\r\n"st": {\r\n"01D9A7BFBF6C53C000000037": {\r\n"id":
0,\r\n"ty": 0,\r\n"na": "바탕글",\r\n"en": "Normal",\r\n"pp": "01D9A7BFBF6C53C000000003
6",\r\n"cp": "01D9A7BFBF6C53C0000000033",\r\n"ns": "01D9A7BFBF6C53C0000000037",\r\n"li": 1
```

```
2C",\r\n"01D9A7BFBF6C53C00000002C": {\r\n"np": "01D9A7BFBF6C53C00000002D",\r\n"id": 0,\r
\n"pp": "01D9A7BFBF6C53C0000000035",\r\n"si": "01D9A7BFBF6C53C000000037",\r\n"bf": 3,\r
\n"ru": [\r\n{\r\n"cp": "01D9A7BFBF6C53C000000031",\r\n"ch": [\r\n{\r\n"cc": 2,\r\n"ci":
1936024420,\r\n"co": "01D9A7BFBF6C53C000000002A"\r\n}\r\n,\r\n{\r\n"cc": 2,\r\n"ci": 1668
246628,\r\n"co": "01D9A7BFBF6C53C00000002B"\r\n}\r\n,\r\n{\r\n"t": "\\u003C강의실 와이파
이 접속 계정\\u003E"\r\n}\r\n]\r\n}\r\n]\r\n},\r\n"01D9A7BFBF6C53C00000002D": {\r\n"np":
"01D9A7BFBF6C53C00000002E",\r\n"id": -2147483648,\r\n"pp": "01D9A7BFBF6C53C0000000035",\r
\n"si": "01D9A7BFBF6C53C000000037",\r\n"bf": 0,\r\n"ru": [\r\n{\r\n"cp": "01D9A7BFBF6C53
 \label{lem:condense} $$C000000031", \\ r\n"ch": [\r\n"t": "ID: Kordata"\r\n]\r\n]\r\n]\r\n]\r\n"o1D9A7B $$
FBF6C53C00000002E": {\r\n"np": "",\r\n"id": -2147483648,\r\n"pp": "01D9A7BFBF6C53C000000
035",\r\n"si": "01D9A7BFBF6C53C000000037",\r\n"bf": 0,\r\n"ru": [\r\n{\r\n"cp": "01D9A7B
FBF6C53C000000032",\r\n"ch": [\r\n{\r\n"t": "PW: data2023"\r\n}\r\n]\r\n]\r\n]\r\n]\r\n]\r\n]\r\n
\n},\r\n"sl": { },\r\n"cs": {\r\n"01D9A7BFBF6C53C00000002A": {\r\n"cc": 2,\r\n"ci": 1936
024420,\r\n"td": 0,\r\n"tv": false,\r\n"sc": 1134,\r\n"ts": 8000,\r\n"ms": "",\r\n"os":
"",\r\n"gl": 0,\r\n"gc": 0,\r\n"gw": false,\r\n"ns": 0,\r\n"np": 0,\r\n"ni": 0,\r\n"nt":
0,\r\n"he": 0,\r\n"hh": false,\r\n"hh": false,\r\n"hb": false,\r\n"hb": false,\r\n"hb": false,\r\n"hb":
false, \r = \frac{r}{n}: false, \r = \frac{r}{n}: false, \r = \frac{r}{n}: false, \r = \frac{r}{n}: false, \r = \frac{r}{n}
\n"lr": 0,\r\n"lc": 0,\r\n"ld": 0,\r\n"pp": {\r\n"ls": false,\r\n"wi": 5952
8,\r\n"he": 84188,\r\n"gt": 0,\r\n"m1": 8504,\r\n"mr": 8504,\r\n"mt": 5668,\r\n"mb": 425
2,\r\n"mh": 4252,\r\n"mg": 0\r\n},\r\n"fn": {\r\n"at": 0,\r\n"au": "",\r\n"fn": {\r\n"at": 0,\r\n"au": "",\r\n"at": 0,\r\n"at": 0,\r\n"a
\n"ap": "",\r\n"ac": ")",\r\n"as": false,\r\n"ll": -1,\r\n"lt": 1,\r\n"lw": 1,\r\n"lc":
0,\r\n"sa": 850,\r\n"sb": 567,\r\n"st": 283\r\n,\r\n"nt": 0,\r\n"nn": 1,\r\n"pp": 0,\r
\n"pb": false\r\n},\r\n"en": {\r\n"at": 0,\r\n"au": "",\r\n"ap": "",\r\n"ac": ")",\r\n"a
s": false,\r\n"l1": -4,\r\n"lt": 1,\r\n"lu": 1,\r\n"lc": 0,\r\n"sa": 850,\r\n"sb": 56
7,\r\n"st": 0\r\n,\r\n"nt": 0,\r\n"pp": 0,\r\n"pb": false\r\n},\r\n"pb": [\r
\n{\r}^0,\r\\
\n"fi": false,\r\n"fa": 0,\r\n"ol": 1417,\r\n"or": 1417,\r\n"ot": 1417,\r\n"ob": 1417\r
\n},\r\n{\r\n"ty": 1,\r\n"bf": "01D9A7BFBF6C53C00000002F",\r\n"tb": true,\r\n"hi": fals
e,\r\n"fi": false,\r\n"ol": 1417,\r\n"or": 1417,\r\n"ot": 1417,\r\n"ob": 141
7\r\n},\r\n{\r\n"ty": 2,\r\n"bf": "01D9A7BFBF6C53C00000002F",\r\n"tb": true,\r\n"hi": fa
lse,\r\n"fi": false,\r\n"of": 0,\r\n"ol": 1417,\r\n"or": 1417,\r\n"ot": 1417,\r\n"ob": 1
417\r\n}\r\n],\r\n"mp": [ ]\r\n}\r\n,\r\n"01D9A7BFBF6C53C00000002B": {\r\n"cc": 2,\r\n"c
i": 1668246628,\r\n"ty": 0,\r\n"co": 1,\r\n"ss": true,\r\n"sg": 0,\r\n"lt":
0,\r\n"lw": 0,\r\n"lc": 0,\r\n"cs": [ ]\r\n}\r\n"bi": [ ],\r\n"bidt": { }\r\n}-->
<div class="m-portlet head">\n
                                                                                                       <div class="m-portlet__head</pre>
="m-portlet__head-caption">\n
-title">\n\t\t\t\t\t\ch5 class="message" data-toggle="modal" data-target="#modal2" style
="border-color:#7c011b; color:#7c011b;margin-bottom:0;">\n\t\t\t\t\t\t[출석인정 기준 안
</div>\n\t\t\t<div cl
ass="ribbon ribbon-top ribbon-ver">\n\t\t\t\div class="ribbon-target bg-success" style
="top: -3px; right: 25px; position: absolute;">\n\t\t\t\t\t<i class="fa fa-star text-whi
te"></i>\n\t\t\t</div>\n\t\t</div>\n
                                                                                                     </div>\n\n\t<div class="moda
l fade" id="modal2" tabindex="-1" role="dialog" aria-labelledby="modal2title" aria-hidde
n="true">\n\t\t<div class="modal-dialog modal-dialog-centered" role="document">\n\t\t\<
div class="modal-content">\n\t\t\t<div class="modal-header" style="align-items: cente</pre>
\label{linear_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_continuous_contin
ze: 1.3rem;">출석인정 기준 안내</h5>\n\t\t\t\t\t\toutton type="button" class="btn btn-dang
er" data-dismiss="modal">닫기</button>\n\t\t\t</div>\n\t\t\t<div class="modal-body">
\n\t\t\t\t\r\n한국데이터산업진흥원의 운영규정에 따라\r\n\r\n고려대학교 데이터청년캠퍼
스 교육생은 다음 사항에 해당하는 경우에 한해 출석으로 인정받을 수 있으니 참고바랍니다.</p
C%BA%A0%20%EC%B6%9C%EC%84%9D%EC%9D%B8%EC%A0%95%20%EA%B8%B0%EC%A4%80.pdf">/static/upload
s/ckeditors/2023-06-29 17-48-32 %EB%8D%B0%EC%B2%AD%EC%BA%A0%20%EC%B6%9C%EC%84%9D%EC%9D%B
iv>\n\t</div>\n\t<div class="m-portlet m-portlet--bordered-semi">\n\t\t<div class="m-por
tlet__head">\n\t\t\div class="m-portlet__head-caption">\n\t\t\t<div class="m-portlet</pre>
__head-title">\n\t\t\t\t\t<span class="m-portlet__head-icon">\n\t\t\t\t\t\t<i class="fla
ticon-signs-1"></i>\n\t\t\t\t\t</span>\n\t\t\t\t\t<h3 class="m-portlet_head-text">\n\t
```

```
portlet__head-tools">\n\t\t\t<ul class="nav nav-pills nav-pills--brand m-nav-pills--al
ign-right m-nav-pills--btn-pill m-nav-pills--btn-sm"\n\trole="tablist">\n\t\t\t\t\t\li c
lass="nav-item m-tabs__item">\n\t\t\t\t\t\a class="nav-link m-tabs__link active" data-
\t\t\t\t\t\/a>\n\t\t\t\t\t\t\t!i class="nav-item m-tabs__item">\n\t\t\t
\t\t\a class="nav-link m-tabs__link" data-toggle="tab" href="#table2_content"\n\t\t\
ing-right:30px !important;">\n\t\t\cdiv class="tab-content">\n\t\t\t\div class="tab-p
ane active" id="table1_content">\n\t\t\t\t\tdiv class="m-widget2">\n\t\t\t\t\t\table
\t\t과제/제출\n\t\t\t\t\t\t\t\t\t\t\t olass="fixed-td2-dashboard">마감\n\t\t
style="color:#6a1aff;border-color:#6a1af
-only m-btn--outline-2x m-btn--pill"\n\t\t
t:50px">\n\t\t\t\t\t\t\t\t\t\t\t\span style="color:#6a1aff">1차 합격자 서류 제출</span>\n\t
nowrap><span class="flask-moment" data-timestamp="2023-06-20T23:59:0
1px"\n\t\t
0" data-function="format" data-format="YYYY-MM-DD HH:mm" data-refresh="0" style="displa
tn m-btn--icon m-btn--icon-only m-btn--outline-2x m-btn--pill"\n\t\t
                           style="color:#6a
<span style="font-size:11px"\n\t\t\t</pre>
                nowrap><span class="flask-moment" data-times
tamp="2023-06-20T23:59:00" data-function="format" data-format="YYYY-MM-DD HH:mm" data-re
\t<button class="btn m-btn m-btn--icon m-btn--icon-only m-btn--outline-2x m-btn--pill"\n
\t
   style = "color: \#6a1aff; border-color: \#6a1aff; ">\n\t\t\t\t\t\t\t\t\t
="color:#6a1aff"\n\t\thref="/course/assignment/submit/4/39">제출</a>\n\t\t\t\t\t\t\t\t\t
<span style="font-size:11px"\n\t\t\t
                         nowrap><span class="f
lask-moment" data-timestamp="2023-06-28T23:59:00" data-function="format" data-format="YY
YY-MM-DD HH:mm" data-refresh="0" style="display: none">2023-06-28T23:59:00</span></span>
\t\n\t\t\t\t\t\t\t\t\t\div style="padding: 0;" class="ck
style="color:#ff3d3d;border-color:#ff3d3d;">\n\t\t\t\t\t\t
line-2x m-btn--pill"\n\t\t
\t\t\t\t\t\t<a style="color:#ff3d3d"\n\t\thref="/course/assignment/submit/4/41">제출</
```

```
nowrap><s
pan class="flask-moment" data-timestamp="2023-07-07T13:10:00" data-function="format" dat
a-format="YYYY-MM-DD HH:mm" data-refresh="0" style="display: none">2023-07-07T13:10:00</
\t\t<span style="font-size:11px"\n\t\t\t</pre>
                              nowrap><span cl
ass="flask-moment" data-timestamp="2023-07-09T23:59:00" data-function="format" data-form
at="YYYY-MM-DD HH:mm" data-refresh="0" style="display: none">2023-07-09T23:59:00</span>
style="color:#ff3d3d;border-color:#ff3d3d;">\n\t\t
btn--outline-2x m-btn--pill"\n\t\t
\t\t\t\t\t\t\t\t\t\t\t\t\t\t\armonomath{\t}\thref="/course/assignment/submit/4/4
3">M \leq (a) h(t)t(t)t(t)t(t)t(t)t(t)
owrap><span class="flask-moment" data-timestamp="2023-07-14T12:30:00" data-function="for
mat" data-format="YYYY-MM-DD HH:mm" data-refresh="0" style="display: none">2023-07-14T1
class="assignment_free">\n\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\t\span></span>\n
\t\t<span style="font-size:11px"\n\t\t\t</pre>
                             nowrap><span clas
s="flask-moment" data-timestamp="2023-07-16T23:59:00" data-function="format" data-format
="YYYY-MM-DD HH:mm" data-refresh="0" style="display: none">2023-07-16T23:59:00</span></s
\t\n\t\t\t\t</div>\n\t\t\t\t</div>\n\t\t\t\t<div class="tab-pane" id="table2 c
ontent">\n\t\t\t\t\t\t
\t</div>\n</div>\n\n\n<div class="modal fade" id="calendarModal" role="dialog" aria-hidd
en="true">\n
           <div class="modal-dialog modal-dialog-centered" role="docume</pre>
nt">\n
            <div class="modal-content">\n
<div class="modal-header" style="align-items: center;">\n
<h5 class="modal-title" id="title" style="font-weight: 500;font-size: 1.3rem;"></h5>\n
<button type="button" class="btn btn-danger" data-dismiss="modal">닫기</button>\n
                <div class="modal-body">\n\t\t\t\t\tdiv id="mod
</div>\n
                              </div>\n
alWhen" style="margin-top:5px;"></div>\n
</div>\n
          </div>\n
                </div>\n
                           </div>\n
                                   </di
v>\n
          </div>\n</div>\n<div id="m_scroll_top" class="m-scroll-top">\n
     </div>\n
<i class="la la-arrow-up"></i>\n</div>\n<script src="https://ajax.googleapis.com/ajax/li</pre>
bs/jquery/3.3.1/jquery.min.js"></script>\n<script>\n if (!window.jQuery) {\n
```

```
ocument.write(\'<script src=/static/vendors/jquery.js><\\/script>\');\n
          \n<script src="https://cdnjs.cloudflare.com/ajax/libs/popper.js/1.14.6/umd/popper.min.j
          s" integrity="sha384-wHAiFfRlMFy6i5SRaxvfOCifBUQy1xHdJ/yoi7FRNXMRBu5WHdZYu1hA6ZOblgut" c
          rossorigin="anonymous"></script>\n<script src="https://stackpath.bootstrapcdn.com/bootst
          rap/4.1.3/js/bootstrap.min.js" crossorigin="anonymous"></script>\n<script src="/static/v</pre>
          endors/basic.js?v=1.7"></script><script src="/static/vendors/admin.js?v=1.2"></script><s
          cript src="/static/vendors/scripts.bundle.js?v=1.3"></script>\n<script>\n\twindow.addEve
          ntListener(\'load\', function () {\n\t\Lightense(\'.zoom img\');\n\t}, false);\n</scrip</pre>
                  <script src="/static/vendors/fullcalendar.min.js?v=1.0"></script>\n
          rc="/static/vendors/fullcalendar_ko.js?v=1.0"></script>\n
                                                                       <script>\n\tdocument.addEve
          ntListener(\'DOMContentLoaded\', function() {\n\tvar calendarEl = document.getElementByI
          d(\'m calendar\');\n\t\tvar calendar = new FullCalendar.Calendar(calendarE1, {\n
          headerToolbar: {\n
                                                start: \'title\',\n
                                                                                        center:
          \'\',\n\t\t
                         end: \'dayGridMonth,listMonth prev,today,next\'\n
                                                                                           },\n
          // height: \'auto\',\n
                                                // contentHeight: \'auto\',\n\t\teventTimeFormat:
                                          omitZeroMinute: true,\n
          { // like \'14:30:00\'\n\t\t
                                                                                      hour: \'2-dig
          it\',\n
                                     minute: \'2-digit\',\n
                                                                               hour12: false,\n
          },\n\t\tlocale: \'ko\',\n
                                                   aspectRatio: 1.3,\n\t\tgoogleCalendarApiKey :
          "AIzaSyAouyh5ag-jvr8rNo5SDCAa49QKo86vuMs",\n\t\tinitialView: \'dayGridMonth\',\n
          weekNumberCalculation: \'ISO\',\n
                                                           showNonCurrentDates: false,\n
                                                                               \turl: \'/event\',\n
          firstDay: 0,\n\t\teventSources: [\n
                                               \t\t
                                                       {\n
                 },\n\t\t
                           { //대한민국 공휴일\n
                                                                     \tgoogleCalendarId: \'19ijikc
          83v1ne5s61er6tava4iplm8id@import.calendar.google.com\',\n
                                                                                        \tdisplay:
          \'background\',\n
                                               \tcolor: \'red\',\n
                                                                                      }\n\t\t],\n\t
          \teventClick: function(arg) {\n
                                                          // endtime = $.fullCalendar.moment(even
          t.end).format(\'h:mm\');\n
                                                    // starttime = $.fullCalendar.moment(event.sta
          rt).format(\'dddd, MMMM Do YYYY, h:mm\');\n
                                                                     // var mywhen = starttime +
          \' - \' + endtime;\n
                                              $(\'#title\').html(arg.event.title);\n
          $(\'#modalWhen\').text(arg.event.start);\n
                                                                    $(\'#eventID\').val(arg.event.
          id);\n
                                $(\'#calendarModal\').modal();\n
                                                                             },\t\n\t\t});\n\t\tcal
          endar.render();\n\t});\n\t$(function(){\n
                                                                show_hide_me();\n\t
                                                                                       $(\'body\').
          on(\'click\', \':checkbox\', changeTodoStatus);\n
                                                                       $(\'.assignment_free\').cli
          ck(function () {\n
                                                                           url: \'/course/assignmen
                                            $.ajax({\n
          t/submit/free/\' + $(this).val(),\n
                                                                  type: \'get\',\n
          success: function (e) {\n
                                                       }\n
                                                                           });\n
                                                                                            });\n
                                                                  $(\'#attandace\').css(\'display
                         function show_hide_me () {\n\t
          });\n\n
                                            $(\'#attendace\').show();\n
          \',\'block\');\n
                                                                                }\n\n
                                                                                             functi
          on changeTodoStatus(e) {\n
                                                if ($(this).is(\':checked\')) {\n
                                                                                              } els
                                          var table_id = e.target.closest(\'table\').id;\n
          e {\n
                           }\n
                                                                         var table = $(this).close
          var row = $(this).closest("tr").remove().clone();\n
                                      if (table_id == "todolist1") {\n
          st(\'table\');\n
                                                                                       $(\'#todolis
                                                                           $(\'#todolist1 tbody\').
          t2 tbody\').append(row);\n
                                                } else {\n
                                                      </script>\n</body>\n</html>'
          append(row);\n
                                    }\n
                                               }\n
          auto/login -> /lms.sunde41.net -> /dashboard
 In [ ]:
In [99]: resp = request('POST', urljoin(url, '/auth/login'), data=params)
In [109]... url = 'https://nid.naver.com/nidlogin.login?mode=form'
          resp = request('GET', url)
In [104]... session.cookies.clear()
In [114]... c = {}
          for line in r.splitlines():
              if len(line) > 1:
                    print(line.split('\t')[:2])
```

```
c[line.split('\t')[0]] = line.split('\t')[1]
In [119]... url = 'https://mail.naver.com'
          request('GET', url, cookies=c).text
Out[119]: '<!doctype html><html><head lang="ko"><meta charset="UTF-8"/><meta name="viewport" cont
          ent="width=device-width,initial-scale=1,maximum-scale=1,minimum-scale=1,viewport-fit=co
          ver"/><title>메일</title><link rel="shortcut icon" href="/favicon.ico" type="image/x-ico
          n"/><link rel="apple-touch-icon-precomposed" sizes="72x72" href="https://ssl.pstatic.ne"
          t/static/pwe/naver_mail/hdpi_72X72.png"><link rel="apple-touch-icon-precomposed" sizes
          ="96x96" href="https://ssl.pstatic.net/static/pwe/naver_mail/xhdpi_96x96.png"><link rel
          ="apple-touch-icon-precomposed" sizes="144x144" href="https://ssl.pstatic.net/static/pw
          e/naver_mail/xxhpdi_144x144.png"><link rel="apple-touch-icon-precomposed" sizes="192x19"
          2" href="https://ssl.pstatic.net/static/pwe/naver_mail/xxxhpdi_192x192.png"><script>win
          dow.nhn = {}; \n
                               window.gnb_option = {\n
                                                               gnb_service: "mail",\n
                                                                                             gnb_t
          emplate: "gnb_utf8",\n
                                         gnb_logout: "https://www.naver.com",\n
                                                                                       gnb_one_nav
                                                             gnb_one_flat: 1,\n
                          gnb item hide option: 8,\n
          er: 1,\n
                                                                                       gnb one pw
                      };</script><script src="https://ssl.pstatic.net/tveta/libs/glad/prod/gfp-co</pre>
          e: 1\n
          re.js"></script><script>window.gladsdk = window.gladsdk || { cmd: [] };</script><script
          async src="/builds/v2/libs/jindo.js"></script><script src="/builds/v2/libs/es6-shim.j</pre>
          s"></script><script src="/builds/v2/libs/lcslog_v0.14.0.js"></script><script async src
          ="/builds/v2/libs/site-translator_v3.0.6.js"></script><script async src="/builds/v2/lib
          s/nclk_v0.8.1.js"></script><script id="postData">try {\n
                                                                           var __ONEWEB_POST_DATA_
                                                          if (typeof __ONEWEB_POST_DATA__ === \'un
           _ = (POST_DATA);\n
                                   } catch (e) {\n
          defined\') {\n
                                  var postDataEl = document.querySelector(\'#postData\');\n
          postDataEl.parentNode.removeChild(postDataEl);\n
                                                                   }\n
                                                                            }</script><link rel="s</pre>
          tylesheet" href="/builds/v2/css/index.3e723f4.css"/><script defer="defer" src="/builds/
          v2/js/runtime.3e723f4.js"></script><script defer="defer" src="/builds/v2/js/vendor.3e72
          3f4.js"></script><script defer="defer" src="/builds/v2/js/app.3e723f4.js"></script></he
          ad><body><div id="u_skip"><a href="#content">본문으로 바로가기</a></div><div id="root"></
          div><div id="layer"></div><div id="toast"></div></body></html>'
In [121]... for k,v in c.items():
              session.cookies.set(k,v)
In [124]... import re
          re.search(r'<title>(.+)</title>', session.request('GET', url).text)
Out[124]: <re.Match object; span=(179, 196), match='<title>메일</title>'>
 In [ ]:
          받은메일함
          session.get('https://mail.naver.com/v2/folders/0').text
Out[125]: '<!doctype html><html><head lang="ko"><meta charset="UTF-8"/><meta name="viewport" cont
          ent="width=device-width,initial-scale=1,maximum-scale=1,minimum-scale=1,viewport-fit=co
          ver"/><title>메일</title><link rel="shortcut icon" href="/favicon.ico" type="image/x-ico
          n"/><link rel="apple-touch-icon-precomposed" sizes="72x72" href="https://ssl.pstatic.ne"
          t/static/pwe/naver_mail/hdpi_72X72.png"><link rel="apple-touch-icon-precomposed" sizes
          ="96x96" href="https://ssl.pstatic.net/static/pwe/naver_mail/xhdpi_96x96.png"><link rel
          ="apple-touch-icon-precomposed" sizes="144x144" href="https://ssl.pstatic.net/static/pw
          e/naver mail/xxhpdi 144x144.png"><link rel="apple-touch-icon-precomposed" sizes="192x19
          2" href="https://ssl.pstatic.net/static/pwe/naver_mail/xxxhpdi_192x192.png"><script>win
                                                               gnb_service: "mail",\n
          dow.nhn = {}; \n
                               window.gnb option = {\n
          emplate: "gnb_utf8",\n
                                         gnb_logout: "https://www.naver.com",\n
                                                                                       gnb_one_nav
          er: 1,\n
                          gnb item hide option: 8,\n
                                                             gnb_one_flat: 1,\n
                                                                                       gnb one pw
```

};</script><script src="https://ssl.pstatic.net/tveta/libs/glad/prod/gfp-co</pre>

re.js"></script><script>window.gladsdk = window.gladsdk || { cmd: [] };</script><script

e: 1\n

```
async src="/builds/v2/libs/jindo.js"></script><script src="/builds/v2/libs/es6-shim.j</pre>
s"></script><script src="/builds/v2/libs/lcslog_v0.14.0.js"></script><script async src
="/builds/v2/libs/site-translator_v3.0.6.js"></script><script async src="/builds/v2/lib
s/nclk_v0.8.1.js"></script><script id="postData">try {\n
                                                                var __ONEWEB_POST_DATA_
_ = (POST_DATA);\n
                                              if (typeof __ONEWEB_POST_DATA__ === \'un
                       } catch (e) {\n
defined\') {\n
                       var postDataEl = document.querySelector(\'#postData\');\n
                                                                 }</script><link rel="s</pre>
postDataEl.parentNode.removeChild(postDataEl);\n
                                                        }\n
tylesheet" href="/builds/v2/css/index.3e723f4.css"/><script defer="defer" src="/builds/
v2/js/runtime.3e723f4.js"></script><script defer="defer" src="/builds/v2/js/vendor.3e72
3f4.js"></script><script defer="defer" src="/builds/v2/js/app.3e723f4.js"></script></he
ad><body><div id="u_skip"><a href="#content">본문으로 바로가기</a></div><div id="root"></
div><div id="layer"></div><div id="toast"></div></body></html>'
```

```
In [126]... url = 'https://mail.naver.com/json/list'
          params = {
              'folderSN':'0',
              'page':'1',
               'viewMode':'time',
              'previewMode':'1',
              'sortField':'1',
               'sortType':'0',
               'u': 'gon0121'
          } # params['u'] <= 본인 아이디
          resp = session.request('POST', url, params=params)
In [132]... len(resp.json()['mailData'])
Out[132]: 15
In [133]... resp = request('POST', url, params=params, cookies=c)
          len(resp.json()['mailData'])
          스팸 메일함 불러오기
Out[133]: 15
In [134]... resp = session.request('GET', 'https://cafe.naver.com')
In [136]... resp.text
          카페 목록 불러오기
Out[136]: '<!DOCTYPE html><html lang=ko><head><meta charset=utf-8><meta http-equiv=Content-Type c</pre>
          ontent="text/html; charset=utf-8"><meta http-equiv=X-UA-Compatible content="IE=edge"><m
          eta name=robots content="noindex, nofollow"><meta name=viewport content="width=device-w
          idth,initial-scale=1"><link rel=icon href=https://ca-fe.pstatic.net/web-section/favico</pre>
          n.ico><title>네이버 카페</title><link href=https://ca-fe.pstatic.net/web-section/css/chu
          nk-vendors.d97ccb6b.css rel=stylesheet><link href=https://ca-fe.pstatic.net/web-sectio
          n/css/app.64391c97.css rel=stylesheet></head><body><noscript><strong>We\'re sorry but w
```

```
In [143]... url = 'https://www.ypbooks.co.kr/kor_index.yp'
resp = request('GET', url)
dom = BeautifulSoup(resp.text, 'lxml')
```

on/js/app.0ae076ff.js></script></body></html>'

eb-pc doesn\'t work properly without JavaScript enabled. Please enable it to continue.
</noscript><div id=app></div><script src=https://ca-fe.pstatic.net/web-sectio
n/js/chunk-vendors.6bebdfe4.js></script><script src=https://ca-fe.pstatic.net/web-secti</pre>

```
In [167]... form = dom.select('form')[-1]
    params = {node.attrs['name']:node.attrs['value']}
```

```
for node in form.select('[name]')}
          params['query'] = '뉴진스'
In [168]... form.attrs
Out[168]: {'name': 'searchFrm', 'method': 'post', 'action': '/search.yp'}
In [193]... params = {
              'query': '뉴진스',
              'collection': 'ALL',
              'searchfield': 'ALL',
              'sortField': 'DATE',
              'notSoldOut': 'N',
              'catesearch': 'false',
              'viewStyle': 'list',
               'pageNum': '1'
          resp = request('POST', 'https://www.ypbooks.co.kr/ypbooks/search/requestAjaxSearchTab.js
                         data=params)
 In [ ]: HTTP(Req/Resp)
          RE, DOM, CSSOM
          DHTML/AJAX(XHR)
          Session/Cookie(*)
          => Crawling + Scraping
             뉴스, 이미지, 메일, 소셜미디어, ...
In [201]... from datetime import datetime
In [204]... datetime.now().timestamp()
Out[204]: 1689566353.727519
 In [ ]: 1689565992
In [205]... datetime.fromtimestamp(1689565992)
Out[205]: datetime.datetime(2023, 7, 17, 12, 53, 12)
In [236]... t = int(datetime.now().timestamp())
          pw = 'toinstagram'
          f'#PWD_INSTAGRAM_BROWSER:0:{t}:{pw}'
Out[236]: '#PWD_INSTAGRAM_BROWSER:0:1689567174:toinstagram'
In [207]... url = 'https://www.instagram.com/api/v1/web/accounts/login/ajax/'
          params = {
              'enc_password': '#PWD_INSTAGRAM_BROWSER:10:1689566089:AVxQAGTw2LChRHhfhxoed0/Y8FxG6+
              'optIntoOneTap': 'false',
              'queryParams': '{}',
               'trustedDeviceRecords': '{}',
              'username': 'test@test.com'
          resp = request('POST', url, data=params)
          resp.text
Out[207]: '{"message":"CSRF token missing or incorrect","status":"fail"}'
```

```
In [ ]: Oauth, CSRF
          API - 내가(인증)
          API(인증)
In [208]... url = 'https://www.instagram.com'
          resp = request('GET', url)
In [232]... csrf = re.search(r'\"csrf_token\\":\\"([^\\]+)', resp.text).group(1)
In [237]... url = 'https://www.instagram.com/api/v1/web/accounts/login/ajax/'
          params = {
              'enc_password': '#PWD_INSTAGRAM_BROWSER:10:1689566089:AVxQAGTw2LChRHhfhxoed0/Y8FxG6+
              'optIntoOneTap': 'false',
              'queryParams': '{}',
              'trustedDeviceRecords': '{}',
              'username': '본인아이디'
          t = int(datetime.now().timestamp())
          pw = '비밀번호'
          params['enc_password'] = f'#PWD_INSTAGRAM_BROWSER:0:{t}:{pw}'
          resp = request('POST', url, data=params,
                         headers={'x-csrftoken':csrf})
          resp.text
Out[237]: '{"user":true, "userId": "49814451599", "authenticated":true, "oneTapPrompt":true, "statu
          s":"ok"}'
```