

부산대 빅데이터 분석 과정 MINI프로젝트

CCTV & CRIMINAL

발표자: 박성훈, 권재경

HERO조

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HERO조

01

“ 팀원 소개 ”



이환희



박성훈



권재경



박홍근

프로젝트 주제 및 기획의도



연일 신문지상을 떠들썩하게 만든 강력 범죄를 해결하는 단초는
어디선가 조용히 촬영된 CCTV 영상인 경우가 많다.



CCTV에 대한 사람들의
관심도 증가

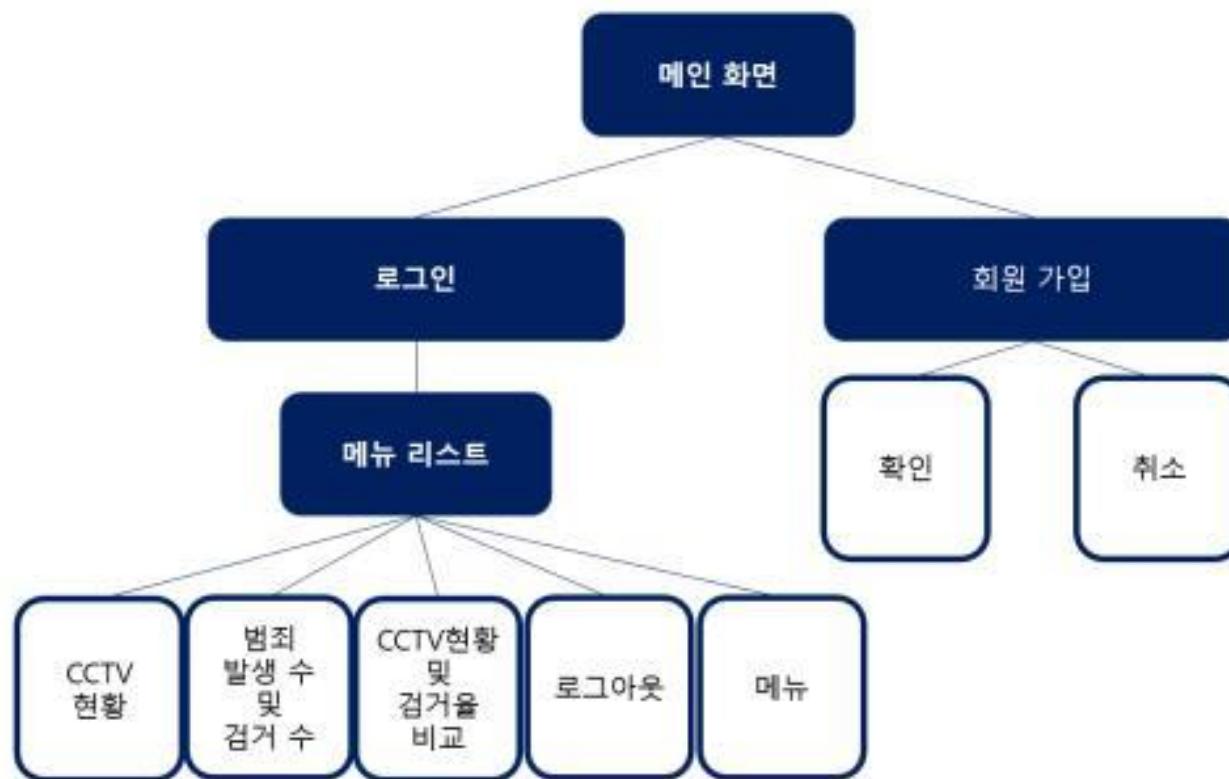
02

프로젝트 주제 및 기획의도

Do you want to know about Gu's Arrest_Rate where you living in?

서울시의 구별 CCTV 대수와 범죄검거율에 대한 서비스 제공

전체구조도



세부 내용 1 - views.py 및 html

메인화면

The screenshot shows a web browser window with the URL `127.0.0.1:8000/hero/main_vis`. The title bar says "CCTV & CRIMINAL". The main content area features a large, stylized illustration of a city at night with buildings and a bridge. Overlaid on the illustration is a semi-transparent box containing Korean text and a small surveillance camera icon. The text reads:

연일 신문지상을 떠들썩하게 만든 강력 범죄를 해결하는 단초는
어디선가 조용히 촬영된 CCTV 영상인 경우가 많다.

한국출판
강서구 전치 살인 피의자 구속
GPS·기발 등 철저 사전 개회

Do you want to know about Gu's Arrest_Rate where you living in?

Log-in | Make an Account

A green oval highlights the "Log-in" and "Make an Account" buttons at the bottom.

메인화면

views.py

```
@csrf_exempt
def main_vis(request):
    if request.method == 'GET' or request.method == 'POST':
        return render(request, 'hero/main_vis.html')
```

html파일 띄움

```
<!-- 보관되어 있는 서울시 구 지도 이미지 뒤집기 -->
<div class = "container">
    <img src = '/static/img/main.jpg' width = '900px' height = '600px' style = 'margin-left:100px; margin-top:150px; border-radius: 20px' /> !-- 파일이름 main.jpg --
</div>

<div class="row justify-content-center">
    <div class="cover-container">

        <main role="main" class="inner cover">
            <br /><br />

            <p style = "font-size: 21px"> Do you want to know about Gu's Arrest_Rate where you living in?</p>

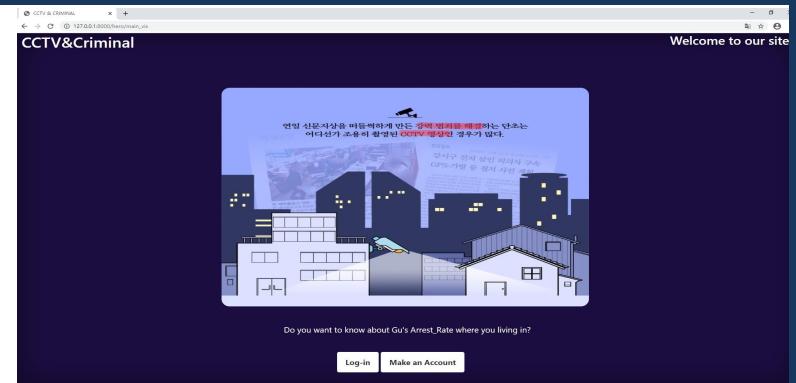
            <p class="lead">
                <br />
                <a href="/hero/main_login" class="btn btn-lg btn-secondary" style = 'margin-left:130px'>Log-in</a>
                <a href="/hero/main_join" class="btn btn-lg btn-secondary">Make an Account</a>
            </p>
        </main>

        <footer class="mastfoot mt-auto">
            <div class="inner">
```

태그

html

로그인, 회원가입 버튼



회원가입 화면

The screenshot shows a web browser window with the title 'CCTV & CRIMINAL'. The URL in the address bar is '127.0.0.1:8000/hero/main_join'. The page content is a registration form titled 'CCTV&Criminal' with the sub-instruction 'Make your own account and enjoy some benefits!'. The form fields are as follows:

Create ID	project1
Password	...
Password check	...
Name	project1
Your age	112

At the bottom of the form are two buttons: 'Confirm' and 'Cancel'.

회원가입 화면

views.py

```

77 @csrf_exempt
78 def main_join(request):
79     if request.method == 'GET':
80         return render(request, 'hero/main_join.html')
81
82     if request.method == 'POST':
83         id = request.POST['id']
84         na = request.POST['name']
85         ag = request.POST['age']
86         pw = request.POST['pw']
87
88         ar = [id, na, ag, pw]
89
90         sql = """
91             INSERT INTO TABLE_PR(ID,NAME,AGE,PW,JOINDATE)
92             VALUES (%s, %s, %s, %s, SYSDATE)
93             """
94
95         cursor.execute(sql,ar)
96
97         print(ar)
98
99         return redirect("/hero/main_join1")

```

사용자 입력 내용

TABLE_PR에 데이터 삽입

html

```

<div class="container">
<h1>Make your own account and enjoy some benefits!
<br><br />
<br><br />
<br><br />
<form action="/hero/main_join" method="post">

<div class="form-inline">
    <label style="width:130px">Create ID</label>
    <input type="text" name="id" style="width:300px"/>
</div>

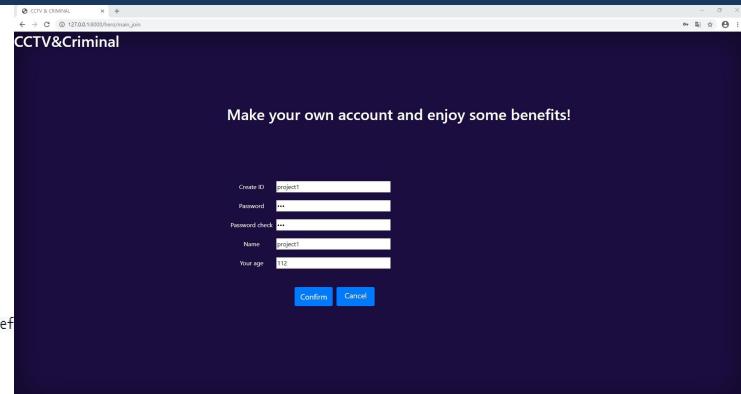
<div class="form-inline" style="margin-top: 20px;">
    <label style="width:130px">Password</label>
    <input type="password" name="pw" style="width:300px"/>
</div>

<div class="form-inline" style="margin-top: 20px;">
    <label style="width:130px">Password check</label>
    <input type="password" name="pw" style="width:300px"/>
</div>

<div class="form-inline" style="margin-top: 20px;">
    <label style="width:130px">Name</label>
    <input type="text" name="name" style="width:300px"/>
</div>

<div class="form-inline" style="margin-top: 20px;">
    <label style="width:130px">Your age</label>
    <input type="text" name="age" style="width:300px"/>
</div>
<br><br />
<div class="form-inline" style="margin-bottom:5px;">
    <label style="width: 100px;"></label>
    <input style="width:100px; height:50px; font-size:20px; margin-left:78px" type="submit" class="btn btn-primary" value="Confirm">
    <a href="/hero/main_vis" style="width:100px; height:50px; font-size:20px; margin-left:10px" class="btn btn-primary">Cancel</a>
</div>

```



회원가입 화면

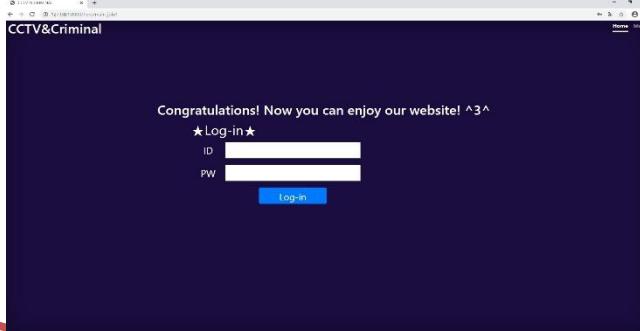
views.py

```

100 @csrf_exempt
101 def main_join1(request):
102     if request.method == 'GET':
103         return render(request, 'hero/main_join1.html')
104
105     if request.method == 'POST':
106         id = request.POST['id']
107         na = request.POST['name']
108         ag = request.POST['age']
109         pw = request.POST['pw']
110
111         ar = [id, na, ag, pw]
112
113         sql = """
114             INSERT INTO TABLE_PR(ID,NAME,AGE,PW,JOINDATE)
115             VALUES (%s, %s, %s, %s, SYSDATE)
116             """
117
118         cursor.execute(sql,ar)
119
120         print(ar)
121
122         return redirect("/hero/menu_list")

```

html



Congratulations! Now you can enjoy our website! ^3^

★ Log-in★

ID
PW

Log-in

회원가입 완료 후 또는 페이지

```

<h1> Congratulations! Now you can enjoy our website! ^3^</h1>
<div class="form-inline">
    <label style="margin-left:100px; font-size:40px;">★ Log-in★</label>
</div>
<form action="/hero/main_login" method="post">
    <div class="form-inline">
        <label style="width:100px; margin-left:100px; font-size:30px">ID</label>
        <input type="text" name="id" style="width:400px; height:50px;"/>
    </div>
    <div class="form-inline">
        <label style="width:100px; margin-left:100px; font-size:30px">PW</label>
        <input type="password" name="pw" style="width:400px; height:50px; margin-bottom:20px; margin-top:20px;"/>
    </div>
    <div class='form-inline' style="margin-bottom:5px;">
        <label style="width: 200px;"></label>
        <input style = "width:200px; height:50px; margin-left:100px; font-size:28px" type="submit" class="btn btn-primary" value="Log-in">
    </div>
</form>

```

로그인화면

The screenshot shows a web browser window with the title 'CCTV & CRIMINAL'. The address bar displays the URL '127.0.0.1:8000/hero/main_login'. The main content area has a dark blue background and features a centered form titled '★Log-in★'. The form includes two input fields: 'ID' and 'PW', each with a white rectangular input box. Below the input fields is a solid blue rectangular button with the text 'Log-in' in white. At the top right of the browser window, there are navigation icons for back, forward, and search, along with a refresh button and a user profile icon. The browser's header also shows the title 'CCTV&Criminal' and menu links 'Home' and 'Mem'.

CCTV & CRIMINAL

127.0.0.1:8000/hero/main_login

CCTV&Criminal

Home Mem

★Log-in★

ID

PW

Log-in

로그인화면(실패)

The screenshot shows a web browser window with the title 'CCTV & CRIMINAL' and the URL '127.0.0.1:8000/hero/main_login_wrong'. The page has a dark blue background. At the top left, it says 'CCTV&Criminal'. On the right, there are 'Home' and 'Menu' buttons. In the center, there is a form titled '★Log-in★'. It contains two input fields: 'ID' and 'PW', both represented by white rectangles. Below the fields is a blue button labeled 'Log-in'. Above the 'Log-in' button, a red oval highlights a message: 'You insert wrong information. Please log-in again ^_^.'

You insert wrong information. Please log-in again ^_^.

★Log-in★

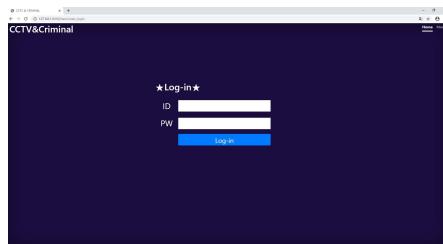
ID

PW

Log-in

로그인화면

views.py



```
@csrf_exempt
def main_login(request):
    if request.method == 'GET':
        return render(request, 'hero/main_login.html')

    elif request.method == 'POST':
        id = request.POST['id']
        pw = request.POST['pw']

        ar = [id, pw]

        print(ar)

        sql = """
            SELECT ID, NAME FROM TABLE_PR WHERE ID = %s AND PW = %s
        """
        cursor.execute(sql, ar)
        data = cursor.fetchone()

        if data:
            request.session['userid'] = data[0]
            request.session['username'] = data[1]
            return redirect('/hero/menu_list')

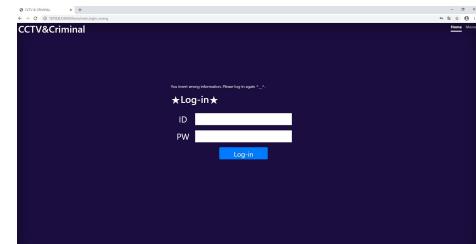
        return redirect('/hero/main_login_wrong')
```

TABLE_PR에 사용자 정보 유무 확인

session

로그인화면(실패)

views.py



```
@csrf_exempt
def main_login_wrong(request):
    if request.method == 'GET':
        return render(request, 'hero/main_login_wrong.html')

    elif request.method == 'POST':
        id = request.POST['id']
        pw = request.POST['pw']

        ar = [id, pw]
        print(ar)

        sql = """
            SELECT ID, NAME FROM TABLE_PR WHERE ID = %s AND PW = %s
        """
        cursor.execute(sql, ar)
        data = cursor.fetchone()

        if data:
            request.session['userid'] = data[0]
            request.session['username'] = data[1]
            return redirect('/hero/menu_list')

        return redirect('/hero/main_login_wrong')
```

정보 없으면 로그인 실패

로그인화면

html

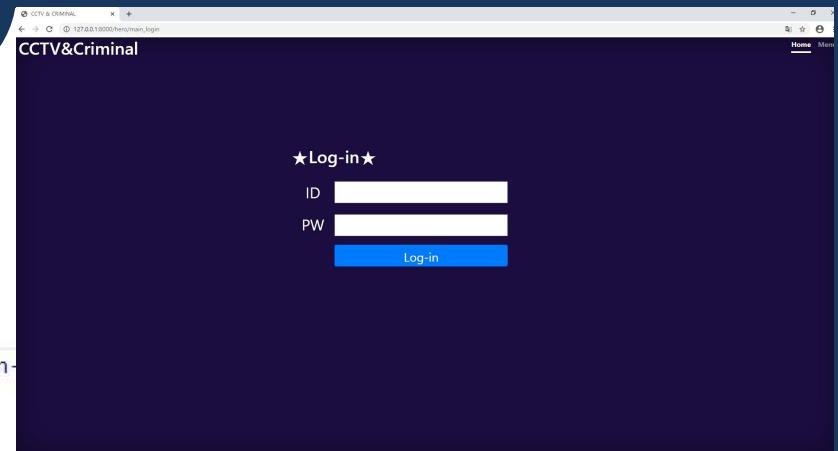
```

<main role="main" class="inner cover" style = 'margin-top: 250px; margin-left: 350px; background-color: #002060; color: white; padding: 20px; border-radius: 10px; font-family: sans-serif; font-size: 16px; line-height: 1.5; text-align: center; width: fit-content; margin-bottom: 20px;'>
    <h1>★Log-in★</h1>
    <hr/>
    <form action="/hero/main_login" method="post">
        <div class="form-inline">
            <label style="width:100px;font-size:25px">ID</label>
            <input type="text" name="id" style="width:400px; height:50px; border-radius: 10px; border: 1px solid black; padding: 5px; margin-bottom: 10px;" />
        </div>

        <div class="form-inline">
            <label style="width:100px; font-size:25px;">PW</label>
            <input type="password" name="pw" style="width:400px; height:50px; margin-bottom:20px; margin-top:25px; border-radius: 10px; border: 1px solid black; padding: 5px; font-size: 18px; font-weight: bold;" />
        </div>

        <div class='form-inline' style="margin-bottom:5px;">
            <label style="width: 100px;"></label>
            <input style = "width:400px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Log-in" />
        </div>
    </form>
</main>

```



로그인 버튼

로그인화면(실패)

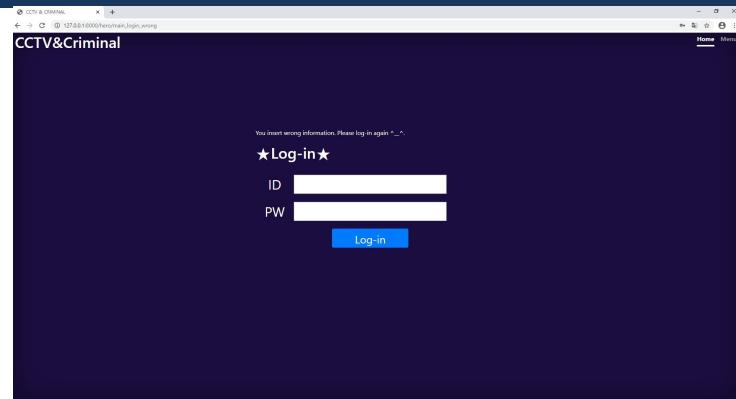
html

```
<div class="row justify-content-center">
    입력 내용이 잘못 되었을 경우 안내 메시지 출력
    <main role="main" class="inner-cover" style = 'margin-top: 250px; margin-right:20%;'>
        <p> You insert wrong information. Please log-in again ^__^.</p>
        <h1>★Log-in★</h1>
        <hr/>
        <form action="/hero/main_login" method="post">

            <div class="form-inline">
                <label style="width:100px;font-size:35px">ID</label>
                <input type="text" name="id" style="width:400px; height:50px"/>
            </div>

            <div class="form-inline">
                <label style="width:100px; font-size:35px;">PW</label>
                <input type="password" name="pw" style="width:400px; height:50px; margin-bottom:20px; margin-top:20px;"/>
            </div>

            <div class='form-inline' style="margin-bottom:5px;">
                <label style="width: 100px;"></label>
                <input style = "width:200px; height:50px; margin-left:100px; font-size:28px" type="submit" class="btn btn-primary" value="Log-in">
            </div>
        </form>
    </main>
</div>
```

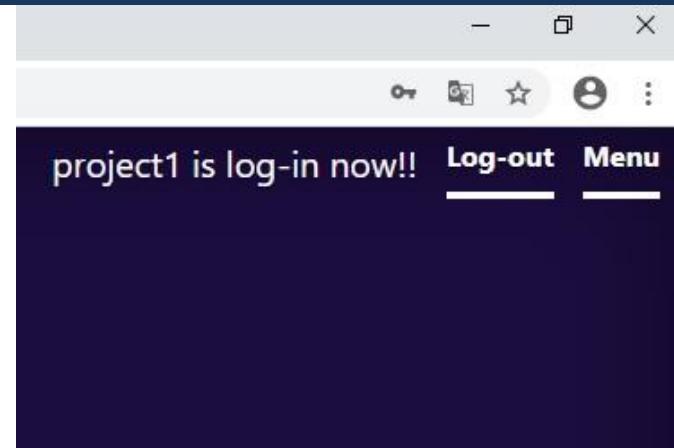


로그아웃

views.py

```
@csrf_exempt
def main_logout(request):
    if request.method == 'GET' or request.method == 'POST':
        del request.session['userid']
        del request.session['username']
        return redirect('/hero/main_vis')
```

session 삭제



메뉴리스트

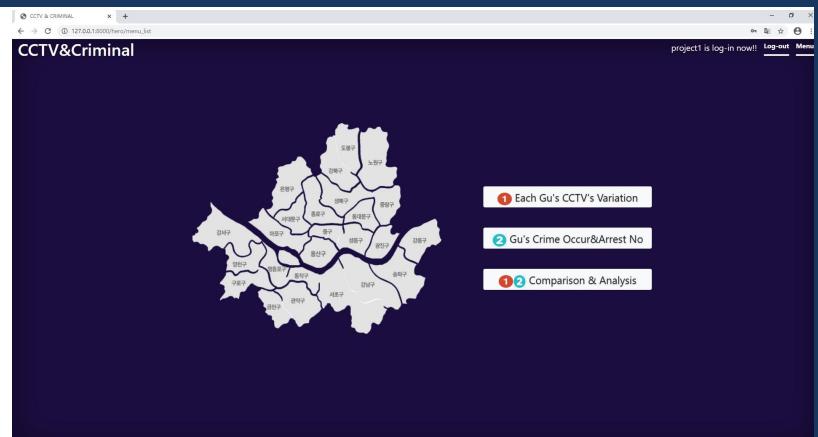
The screenshot shows a web browser window for 'CCTV & CRIMINAL' at the URL 127.0.0.1:8000/hero/menu_list. The page features a dark blue header with the title 'CCTV&Criminal'. In the top right corner, there is a message 'project1 is log-in now!!' with a red oval circle around it. Below the header is a map of Seoul's 25 administrative districts, each labeled with its name in Korean. To the right of the map, there are three white callout boxes with rounded corners, each containing a numbered item and text:

- ① Each Gu's CCTV's Variation**
- ② Gu's Crime Occur&Arrest No**
- ① ② Comparison & Analysis**

메뉴리스트

views.py

```
130  
131     @csrf_exempt  
132     def menu_list(request):  
133         if request.method == 'GET':  
134             return render(request, 'hero/menu_list.html')  
135
```



메뉴리스트

html

```

<body>
  <div class="container-fluid">
    <header class="masthead mb-auto">
      <div class="inner">
        <h1 class="masthead-brand">CCTV&Criminal</h1>
        <nav class="nav masthead justify-content-end">
          <a class="navbar-brand" href="#">{{request.session.username}}</a>
          <a class="nav-link active" href="/hero/main_vis">Log-out</a>
          <a class="nav-link active" href="/hero/menu_list">Menu</a>
        </nav>
      </div>
    </header>
  </div>

  <div class="container" style = 'width:1200px; height:800px'>
    <div class="container" style = 'width:1200px; height:350px'>
      <img src = '/static/img/seoul.png' width = '1200px' height = '350px' style = 'margin-top:200px; margin-right:400px'>
    </div>

    <div class="container" style = 'width:600px; height:50px; margin-left:700px'>
      <div style = 'width:400px; height:50px'>
        <a href="/hero/gu_cctv" class="btn btn-light" style = 'width:400px; height:50px'>
          <div style = 'font-size: 25px;'><img src = '/static/img/n1.png' width = '35px' height = '30px'> Each Gu's CCTV's Variation</div>
        </a>
      </div><br/><br/>
      <div style = 'width:400px; height:50px'>
        <a href="/hero/gu_crime" class="btn btn-light" style = 'width:400px; height:50px'>
          <div style = 'font-size: 25px;'><img src = '/static/img/n2.png' width = '35px' height = '30px'> Gu's Crime Occur&Arrest No</div>
        </a>
      </div><br/><br/>
      <div style = 'width:400px; height:50px'>
        <a href="/hero/gu_comp" class="btn btn-light" style = 'width:400px; height:50px'>
          <div style = 'font-size: 25px;'><img src = '/static/img/n1.png' width = '35px' height = '30px'><img src = '/static/img/n2.png' width = '30px' height = '30px'> Comp
        </a>
      </div>
    </div>
  </div>
</body>

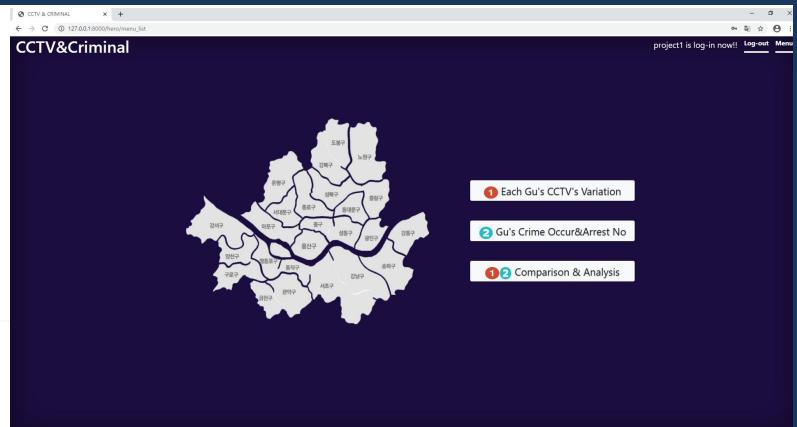
```

화면 상단 내용

로그인 중인 사용자 이름 표시

서울시 구 이미지

메뉴 버튼



CCTV현황 - 들어갈때

The screenshot shows a web browser window with the following details:

- Title Bar:** CCTV & CRIMINAL
- Address Bar:** 127.0.0.1:8000/hero/gu_cctv
- Page Content:**
 - Header:** CCTV&Criminal project1 is log-in now!! Log-out Men
 - Section:** 1. Each Gu's CCTV Variation Condition
 - Text:** Please insert a Gu's name.
 - Input Field:** (예) 강남구
 - Search Button:** Search

CCTV현황 - 들어갈때

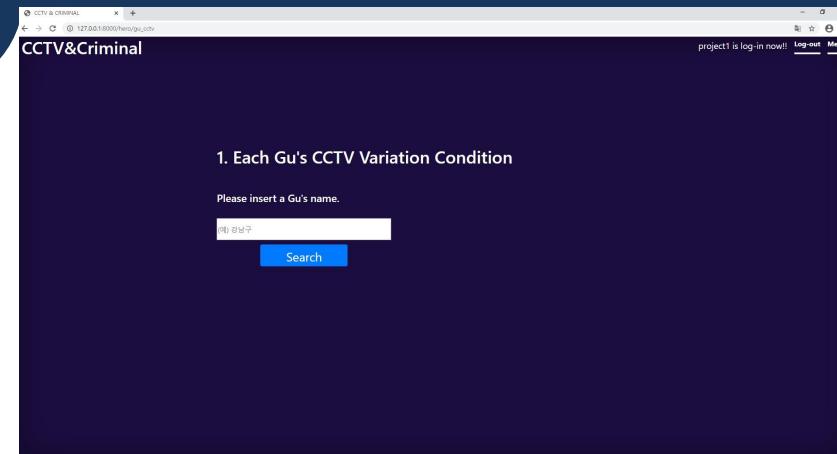
views.py

```
138 @csrf_exempt
139 def gu_cctv(request):
140     if request.method == 'GET':
141         return render(request, 'hero/gu_cctv.html')
```

```
<div class="row justify-content-center">
    <main role="main" class="inner cover" style = 'margin-top: 250px; margin-right:20%;>
        <h1>1. Each Gu's CCTV Variation Condition</h1><br/>
        <hr/>
        <h4> Please insert a Gu's name.</h4>
        <hr/>
        <form action="/hero/gu_cctv2" method="get">
            <div class="form-inline">
                <input type="text" name="gu_name" style="width:400px; height:50px; margin-bottom:10px" placeholder = "(예) 강남구"/>
            </div>
            <div class='form-inline' style="margin-bottom:5px;">
                <input style = "width:200px; margin-left: 100px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Search">
            </div>
        </form>
    </main>
</div>
```

placeholder

검색 버튼



html

HERO조

CCTV현황 - 검색

CCTV & CRIMINAL 127.0.0.1:8000/hero/gu_cctv?gu_name=강남구

CCTV&Criminal project1 is log-in now!! Log-out Men

1. Each Gu's CCTV Variation Condition

Please insult a Gu's name.
If you wanna know about CCTVs click "Search"
If you wanna see a chart, click "Chart"

(예) 강남구

Search Chart

강남구's Install Date's number of CCTV

Install Date	The number of CCTV
2011	172
2012	110
2013	176
2014	324
2015	530
2016	812
2017	616
2018	472

CCTV현황 - 검색

views.py

```

@csrf_exempt
def gu_cctv2(request):
    if request.method == 'GET':
        gu_name = request.GET.get('gu_name', "")
        type11 = request.GET.get('btn', "Search")

        if type11 == "Search":
            str = "%" + gu_name + "%"
            startyear= "2011"
            endyear="2019"

            print(str)
            sql = """
                SELECT SUM(CAMERA_N), SUBSTR(INSTALL_DATE, 0, 4)
                FROM CCTV
                WHERE C_ADDRESS LIKE %
                GROUP BY SUBSTR(INSTALL_DATE, 0, 4)
                HAVING SUBSTR(INSTALL_DATE, 0, 4) >= %s AND SUBSTR(INSTALL_DATE, 0, 4) < %
                ORDER BY SUBSTR(INSTALL_DATE, 0, 4) ASC
            """
            cursor.execute(sql, [str, startyear, endyear])
            data = cursor.fetchall()
            print(data)

    return render(request, 'hero/gu_cctv2.html', {'gu_list':data, 'gu_name': gu_name})

```

사용자가 입력한 구 이름

Install Date	The number of CCTV
2011	172
2012	110
2013	176
2014	324
2015	530
2016	612
2017	616
2018	472

년도별 CCTV 대수

CCTV현황 - 검색

html

```
<main role="main" class="inner cover" style = 'margin-top: 150px;'>

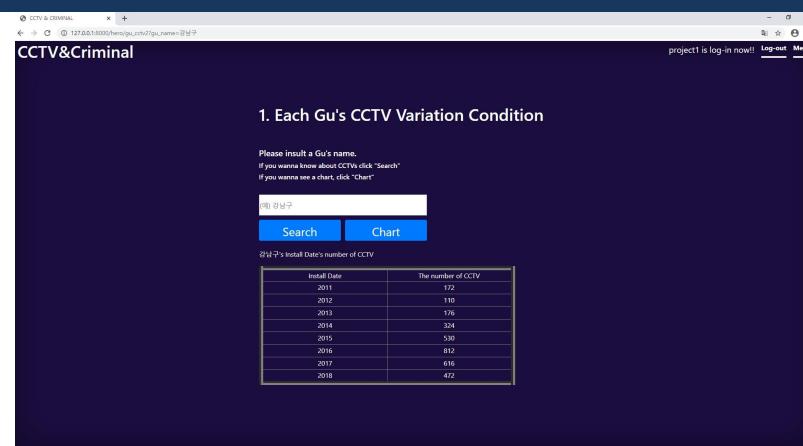
    <h1>1. Each Gu's CCTV Variation Condition</h1><br/> <br/>
    <h5> Please insult a Gu's name.</h5>
    <h6> If you wanna know about CCTVs click "Search"</h6>
    <h6> If you wanna see a chart, click "Chart" </h6>
    <hr/>
    <form action="/hero/gu_cctv2" method="get">

        <div class="form-inline">
            <input type="text" name="gu_name" style="width:400px; height:50px; margin-bottom:10px" placeholder = "(예) 강남구"/>
        </div>

        <div class='form-inline' style="margin-bottom:20px;">
            <input style = "width:195px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Search" name="btn">
            <input style = "width:195px; margin-left:10px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Chart" name="btn">
        </div>

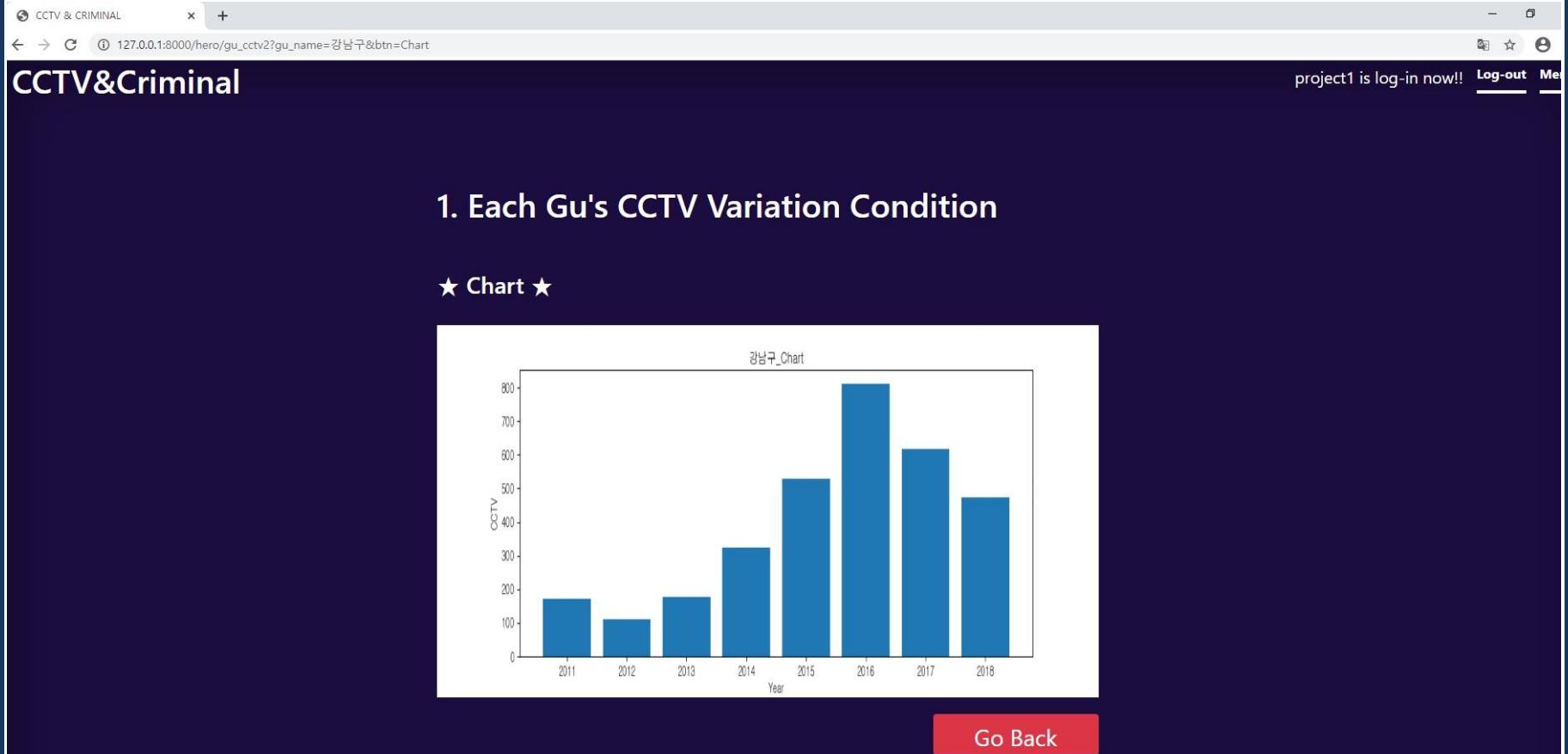
        <p> {{gu_name}}'s Install Date's number of CCTV </p>

        <table border = '10'>
            <tr>
                <td width = "300" height = "30" align = "center"> Install Date</td>
                <td width = "300" height = "30" align = "center"> The number of CCTV </td>
            </tr>
            {% for one in gu_list %}
            <tr>
                <td width = "300" height = "30" align = "center"> {{one.1}} </td>
                <td width = "300" height = "30" align = "center"> {{one.0}} </td>
            </tr>
            {% endfor %}
        </table>
    </form>
</main>
```



SQL문 결과 표 형태로 출력

CCTV현황(차트)



CCTV현황 - 차트

views.py

```

elif type11 == "Chart":
    str = "%" +gu_name+"%"
    startyear="2011"
    endyear="2019"

    font_name = font_manager.FontProperties(fname='C:/Windows/Fonts/gulim.ttc').get_name() # 폰트읽기
    rc('font', family=font_name) # 폰트적용
    plt.rcParams['figure.figsize'] = (12, 4)

    sql = """
        SELECT SUM(CAMERA_N), SUBSTR(INSTALL_DATE, 0, 4)
        FROM CCTV
        WHERE C_ADDRESS LIKE %
        GROUP BY SUBSTR(INSTALL_DATE, 0, 4)
        HAVING SUBSTR(INSTALL_DATE, 0, 4) >=%s AND SUBSTR(INSTALL_DATE, 0, 4) < %s
        ORDER BY SUBSTR(INSTALL_DATE, 0, 4) ASC
        """

    cursor.execute(sql, [startyear, endyear])
    data = cursor.fetchall()
    x= []
    y=[]
    for i in data :
        y.append(i[0])
        x.append(i[1])

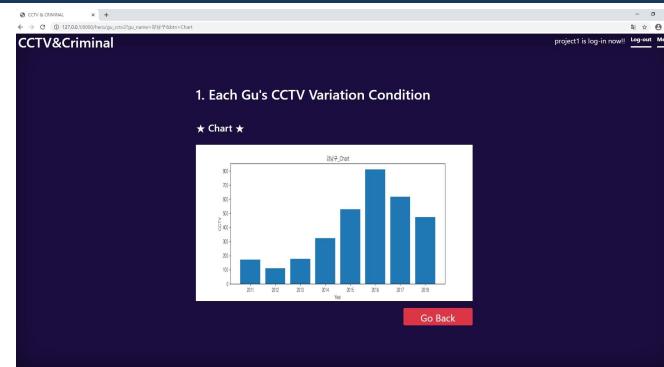
    chart_name = gu_name + "_Chart"
    plt.bar(x,y)
    plt.title(chart_name)
    plt.xlabel("Year")
    plt.ylabel("CCTV")

    #plt.show() #표시
    plt.draw() #안보이게 그림을 캡쳐
    img = io.BytesIO() # img에 byte배열로 보관
    plt.savefig(img, format="png") #png파일 포맷으로 저장
    img_url = base64.b64encode(img.getvalue()).decode()

    plt.close() #그래프 종료

return render(request, 'hero/gu_chart_1.html', {"gu_chart_1":'data:{}'.format(img_url)})

```



폰트 및 사이즈

x축 : 설치 년도
y축 : CCTV 대수

그림 형식으로 가공

CCTV현황(차트)

html

```

</header>
<div class="row justify-content-center">

    <main role="main" class="inner cover" style = 'margin-top: 150px;'>

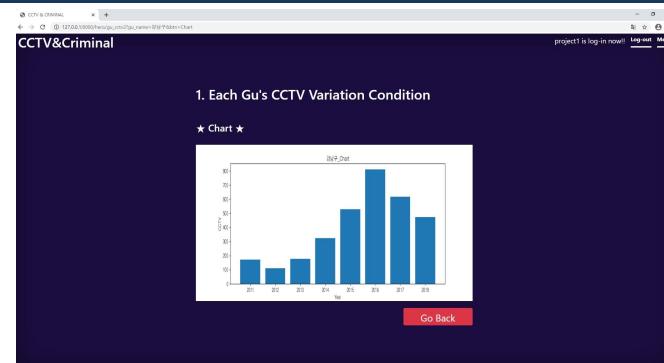
        <h1>1. Each Gu's CCTV Variation Condition</h1><br/> <br/>
        <h3> ★ Chart ★ </h3>
        <hr/>
        <form action="/hero/gu_cctv" method="get">

            <div class="form-inline">
                
            </div>

            <div class='form-inline' style="margin-bottom:5px; margin-top:20px">
                <input style = "width:200px; height:50px; font-size:28px; margin-left:600px" type="submit" class="btn btn-danger" value="Go Back">
            </div>

        </form>
    </main>
</div>

```



범죄 발생 수

The screenshot shows a web browser window with the title 'CCTV & CRIMINAL'. The URL in the address bar is '127.0.0.1:8000/hero/gu_crime'. The page header includes the site name 'CCTV&Criminal' and a user status message 'project1 is log-in now!!' with 'Log-out' and 'Men' links. The main content area has a dark blue background. A heading '2. Gu's Crime_Occur_NO and Crime_Arrest_NO' is displayed. Below it, a text input field contains the placeholder 'Please insert Gu's name here.' and has '(예) 강남구' (Example: Gangnam-gu) as a suggestion. A blue 'Search' button is positioned below the input field.

2. Gu's Crime_Occur_NO and Crime_Arrest_NO

Please insert Gu's name here.

(예) 강남구

Search

범죄 발생 수 및 검거 수 (들어가면)

views.py

```
@csrf_exempt
def gu_crime(request):
    if request.method == 'GET':
        return render(request, 'hero/gu_crime.html')
```

```
<main role="main" class="inner cover" style = 'margin-top: 250px; margin-right:20%;'>
    <h1>2. Gu's Crime_Occur_NO and Crime_Arrest_NO </h1>
    <br/> <br/>
    <h6> Please insert Gu's name here.</h6>
    <hr/>
    <form action="/hero/gu_crime2" method="get">
        <div class="form-inline">
            <input type="text" name="gu_name_c" style="width:400px; height:50px; margin-bottom:10px" placeholder = "(예) 강남구"/>
        </div>
        <div class='form-inline' style="margin-bottom:5px;">
            <input style = "width:200px; margin-left: 100px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Search">
        </div>
    </form>
</div>
</div>
```

구 이름 입력 받는 textBox

검색 버튼



html

범죄 발생 수 및 검거 수 (검색)

CCTV & CRIMINAL 127.0.0.1:8000/hero/gu_crime2?gu_name_c=강남구 project1 is log-in now!! Log-out Member

2.Gu's Crime_Occur_NO and Crime_Arrest_NO

Please typing Gu's name here.

(예) 강남구

Search Chart

강남구's Crime_Occur and Crime_Arrest per Year

Year	Occur_No	Arrest_No
2011	34578	23443
2012	34385	21995
2013	34824	22333
2014	33150	22477
2015	33342	23608
2016	33047	23915
2017	30275	21201
2018	30751	21031

범죄 발생 수 및 검거 수 (검색)

views.py

```
@csrf_exempt
def gu_crime2(request):
    if request.method == 'GET':
        gu_name_c = request.GET.get('gu_name_c', "")
        type12 = request.GET.get('btn', "Search")

    if type12 == "Search":
        str = gu_name_c
        startyear="2011"
        endyear="2019"

        print(str)
        sql = """
            SELECT t4.YEAR, t4.sum1, t5.sum2
            FROM
                (SELECT t3.YEAR, SUM(t3.NUM) sum1
                FROM
                    (SELECT t1.NAME, t1.GU_NAME, t2.NUM, t2.YEAR
                    FROM POLICE_GU t1
                    INNER JOIN CRIME_ARREST14 t2
                    ON t1.NAME= t2.NAME) t3
                WHERE t3.GU_NAME = %
                GROUP BY t3.YEAR
                HAVING SUBSTR(YEAR, 0, 4) >= %s AND SUBSTR(YEAR, 0, 4) < %
                ORDER BY t3.YEAR ASC) t4
            INNER JOIN
            (SELECT t3.YEAR, SUM(t3.NUM) sum2
            FROM
                (SELECT t1.NAME, t1.GU_NAME, t2.NUM, t2.YEAR
                FROM POLICE_GU t1
                INNER JOIN CRIME_OCCUR14 t2
                ON t1.NAME= t2.NAME) t3
                WHERE t3.GU_NAME = %
                GROUP BY t3.YEAR
                HAVING SUBSTR(YEAR, 0, 4) >= %s AND SUBSTR(YEAR, 0, 4) < %
                ORDER BY t3.YEAR ASC) t5
            ON t4.YEAR = t5.YEAR
            """
        cursor.execute(sql, [str, startyear, endyear, str, startyear, endyear])
        data_c = cursor.fetchall()
        print(data_c)

    return render(request, 'hero/gu_crime2.html', {'gu_list_c':data_c, 'gu_name_c': gu_name_c})
```

Year	Occur_No	Arrest_No
2011	34348	21995
2012	34385	22333
2013	34824	22333
2014	33150	22477
2015	33342	23608
2016	33047	23055
2017	30275	21301
2018	30751	21031

JOIN

police_gu
crime_arrest14
crime_occur14

년도별 범죄 발생수

년도별 검거수

범죄 발생 수 및 검거 수 (검색)

html

```

<main role="main" class="inner cover" style = 'margin-top: 150px;'>

    <h1>2.Gu's Crime_Occur_No and Crime_Arrest_No</h1><br/> <br/>
    <h4> Please typing Gu's name here.</h4>
    <hr/>
    <form action="/hero/gu_crime2" method="get">

        <div class="form-inline">
            <input type="text" name="gu_name_c" style="width:400px; height:50px; margin-bottom:10px" placeholder= "(예) 강남구"/>
        </div>

        <div class="form-inline" style="margin-bottom:20px;">
            <input style = "width:105px; height:30px; font-size:28px" type="submit" class="btn btn-primary" value="Search" name="btn">
            <input style = "width:195px; margin-left:10px; height:30px; font-size:28px" type="submit" class="btn btn-primary" value="Chart" name="btn">
        </div>

        <p> {{gu_name_c}}'s Crime_Occur and Crime_Arrest per Year</p>

        <table border ='10'>
            <tr>
                <td width = "300" height = "30" align = "center"> Year</td>
                <td width = "300" height = "30" align = "center"> Occur_No</td>
                <td width = "300" height = "30" align = "center"> Arrest_No</td>
            </tr>
            {% for one in gu_list_c %}

                <tr>
                    <td width = "300" height = "30" align = "center"> {{one.0}} </td>
                    <td width = "300" height = "30" align = "center"> {{one.2}} </td>
                    <td width = "300" height = "30" align = "center"> {{one.1}} </td>
                </tr>
            {% endfor %}
        </table>
    </form>
</main>

```

Year	Occur_No	Arrest_No
2011	34078	23443
2012	34385	21995
2013	34824	22313
2014	33180	22477
2015	33342	23068
2016	33047	21985
2017	30275	21201
2018	30751	21031

SQL문 결과 표 형식으로 출력

범죄 발생 수 및 검거 수 (차트)



범죄 발생 수 및 검거 수 (차트)

views.py

차트 버튼을 누른 경우

```
elif type12 == "Chart":
    str = gu_name_c
    startyear="2011"
    endyear="2019"

    sql = """
        SELECT t4.YEAR, t4.sum1, t5.sum2
        FROM
            (SELECT t3.YEAR, SUM(t3.NUM) sum1
            FROM
                (SELECT t1.NAME, t1.GU_NAME, t2.NUM, t2.YEAR
                FROM POLICE_GU t1
                INNER JOIN CRIME_ARREST14 t2
                ON t1.NAME= t2.NAME) t3
            WHERE t3.GU_NAME = %
            GROUP BY t3.YEAR
            HAVING SUBSTR(YEAR, 0, 4) >= %s AND SUBSTR(YEAR, 0, 4) < %
            ORDER BY t3.YEAR ASC) t4
        INNER JOIN
        (SELECT t3.YEAR, SUM(t3.NUM) sum2
        FROM
            (SELECT t1.NAME, t1.GU_NAME, t2.NUM, t2.YEAR
            FROM POLICE_GU t1
            INNER JOIN CRIME_OCCUR14 t2
            ON t1.NAME= t2.NAME) t3
        WHERE t3.GU_NAME = %
    """
```



SQL문 결과 -> dataframe

```

GROUP BY t3.YEAR
HAVING SUBSTR(YEAR, 0,
ORDER BY t3.YEAR ASC) ts
ON t4.YEAR = t5.YEAR
"""

cursor.execute(sql, [str, startyear, endyear, str, startyear, endyear])
data1 = cursor.fetchall()
data3 = []
for tmp in data1:
    data3.append(tmp)

print(data3)

figure(num=None, figsize=(12, 6), dpi=80, facecolor='w', edgecolor='k')
font_name = font_manager.FontProperties(fname="C:/Windows/Fonts/gulim.ttc").get_name() # 폰트읽기
rc('font', family=font_name) # 폰트적용
plt.rcParams['figure.figsize'] = (12, 4)

df = pd.DataFrame(data3, columns=['year', 'arrest', 'occur'])

plt.plot(kind="bar", title=str, fontsize= 10)
plt.xticks(rotation = 0 )
plt.ylabel() #안보이게 그림을 캡쳐

img = io.BytesIO() # img에 byte배열로 보관
plt.savefig(img, format="png") #png파일 포맷으로 저장
img_url = base64.b64encode(img.getvalue()).decode()
plt.close() #그래프 종료

return render(request, 'hero/gu_chart_2.html',{'gu_chart_2':data;:base64,{}'.format(img_url)})

```

차트 형태 및 사이즈

범죄 발생 수 및 검거 수 (차트)

html

```
<main role="main" class="inner cover" style = 'margin-top: 150px;'>

    <h1>2.Gu's Crime_Occur_NO and Crime_Arrest_NO</h1><br/> <br/>
    <h3> ★ Chart ★ </h3>

    <hr/>
    <form action="/hero/gu_crime" method="get">

        <div class="form-inline">
            
        </div>
    차트 화면에 출력
    <div class='form-inline' style="margin-bottom:5px; margin-top:20px">
        <input style = "width:200px; height:50px; margin-left:600px; font-size:28px" type="submit" class="btn btn-danger" value="Go Back">
    </div>
    </form>
</main>
</div>
</div>
```



뒤로 가기 버튼

CCTV대수 및 검거율 비교(들어가면)

CCTV & CRIMINAL 127.0.0.1:8000/hero/gu_comp

CCTV&Criminal project1 is log-in now!! Log-out Menu

3. ①, ② Comparison & Analysis

①, ② Data about Comparison & Analysis

(1) Each Gu's Install CCTV's Total_No(2011~2018) Chart

Rank	Gu's NAME	CCTV's No
1	강남구	11224
2	관악구	8404
3	구로구	6994
4	성북구	6640
5	은평구	6106

(2) Each Gu's ARREST_Rate(2011~2018)

Rank	Gu's Name	Crime Arr. Rate(%)
1	종로구	86
2	중랑구	82
3	은평구	81
4	강북구	81
5	도봉구	80

CCTV대수 및 검거율 비교(들어가면)

views.py

```
@csrf_exempt
def gu_comp(request):
    if request.method == 'GET':
```

구 별 CCTV 총 대수 및 순위

```
sql_cctv = """
    select row_number() over (order by sum(camera_n) desc), gu_name, sum(camera_n)
    from cctv
    group by gu_name
    order by sum(camera_n) desc
"""

cursor.execute(sql_cctv)
data_cctv = cursor.fetchmany(5)
```

1~5위까지만

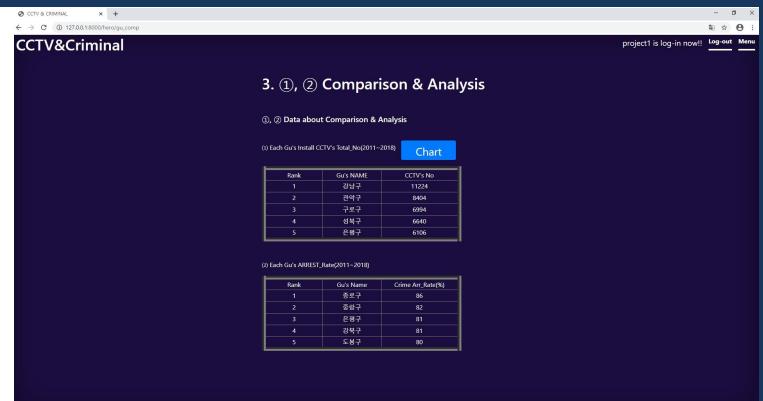
```
sql_rate = """
    select row_number() over (order by round(sum(crime_arrest14.num)/sum(crime_occur14.num),2)*100 desc), police_gu.gu_name, round(sum(crime_arrest14.num)/sum(crime_occur14.num),2)*100 as rate
    from police_gu, crime_arrest14, crime_occur14
    where crime_occur14.name = police_gu.name and crime_arrest14.name = police_gu.name and crime_occur14.name = crime_arrest14.name
    group by police_gu.gu_name
    order by rate desc
"""

cursor.execute(sql_rate)
data_rate = cursor.fetchmany(5)
```

구 별 검거율 (1~5위까지만)

```
return render(request, 'hero/gu_comp.html', {'data_cctv':data_cctv, 'data_rate': data_rate})

# elif request.method == 'Chart':
```



CCTV대수 및 검거율 비교(들어가면)

html

```

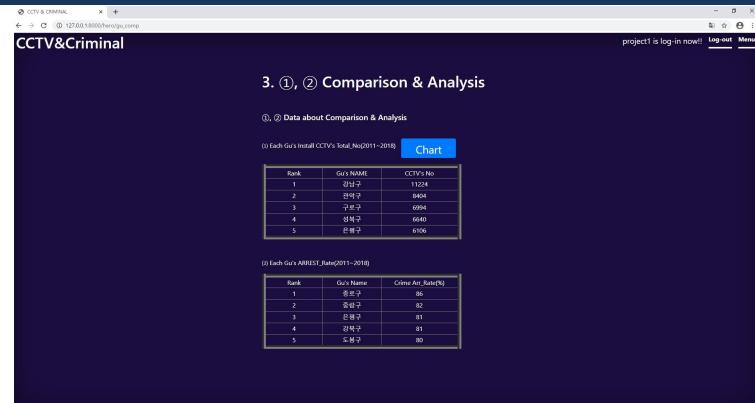
<h1>3. ①, ② Comparison & Analysis </h1><br/> <br/>
<h5> ①, ② Data about Comparison & Analysis</h5>
<br/>
<form action="/hero/gu_chart_3" method="GET">

    <p> (1) Each Gu's Install CCTV's Total_No(2011~2018) </p>
    <input style = "width:140px; margin-top:10px; margin-left:10px; height:50px; font-size:28px" type="submit" class="btn btn-primary" value="Chart" name="btn">
</p>
    <table border ='10'>
        <tr>
            <td width = "150" height = "30" align = "center"> Rank </td>
            <td width = "150" height = "30" align = "center"> Gu's NAME</td>
            <td width = "200" height = "30" align = "center"> CCTV's No </td>
        </tr>
        {% for one in data_cctv %}
        <tr>
            <td width = "150" height = "30" align = "center"> {{one.0}} </td>
            <td width = "150" height = "30" align = "center"> {{one.1}} </td>
            <td width = "200" height = "30" align = "center"> {{one.2}} </td>
        </tr>
        {% endfor %}
    </table>

    <br/> <br/>
    <p> (2) Each Gu's ARREST_Rate(2011~2018) </p>
    <table border ='10'>
        <tr>
            <td width = "150" height = "30" align = "center"> Rank </td>
            <td width = "150" height = "30" align = "center"> Gu's Name</td>
            <td width = "200" height = "30" align = "center"> Crime Arr_Rate(%) </td>
        </tr>
        {% for two in data_rate %}
        <tr>
            <td width = "150" height = "30" align = "center"> {{two.0}} </td>
            <td width = "150" height = "30" align = "center"> {{two.1}} </td>
            <td width = "200" height = "30" align = "center"> {{two.2}} </td>
        </tr>
        {% endfor %}
    </table>

```

SQL문 결과 표 형식으로 출력



CCTV대수 및 검거율 비교(차트)



CCTV대수 및 검거율 비교(차트)

views.py

```
@csrf_exempt
def gu_chart_3(request):
    if request.method == 'GET':
        return render(request, 'hero/gu_chart_3.html')
```



CCTV대수 및 검거율 비교(차트)

html

```

<h1>Each Gu's Install CCTV's Total_No & Each Gu's ARR_Rate </h1><br/> <br/>
<h3> ★ Chart ★ </h3>

<hr/>
<div style="background-color: □rgb(249, 249, 250);>
    <form action="/hero/gu_chart_3" method="POST">
        <div id="chart"></div>
    </form>
</div>
</main>
</div>
</div>

<script>
var chart = c3.generate({
  data: {
    x: 'x'
    ,columns: [
      ['x', '성북구','성동구','영등포구','서대문구','은평구','강남구','양천구','금천구','서초구','관악구','구로구','중구','광진구','송파구','용산구','동대문'
      ['CCTV_No(*100)', 99.14, 85.85, 76.37, 63.89, 60.07, 56.16, 53.23, 49.54, 47.67, 42.02, 35.11, 32.36, 31.42, 26.92, 21.62, 20.22, 19.55, 18.19, 17.8
      ['Arr_Rate', 80, 77, 71, 76, 81, 68, 75, 71, 67, 72, 70, 67, 73, 74, 74, 78, 73, 79, 81, 74, 71, 7
    ]
    ,types: {
      'CCTV_No(*100)':'bar'
      ,'Arr_Rate':'line'
    }
    ,colors: {
      'CCTV_No(*100)': '#dc3545'
      ,'Arr_Rate': '#20c997'
    }
  },
  axis : {
    x :{
      type:'category'
    }
  });
</script>

```



세부 내용 2 - 수집데이터 및 DB구조

1. 데이터 삽입과정

1.csv

세부 내용 2 - 수집데이터 및 DB구조

2.Mongo db

```
cctv.py
```

```
project_01 > cctv > cctv.py > ...
1 #####파일명 cctv.py#####
2 import csv
3 import readline
4 import pymongo
5
6 conn = pymongo.MongoClient('192.168.99.100', 32766)
7 db = conn.get_database("db1")
8 coll = db.get_collection("cctv")
9
10 f = open('./cctv/hero/cctv.csv', 'r', encoding="utf-8")
11 rdr = csv.reader(f)
12 column = next(rdr)
13 for line in rdr:
14     dict1 = dict()
15     for idx, val in enumerate(line):
16         dict1[column[idx]] = val
17
18     coll.insert_one(dict1)
19 conn.close()
```

세부 내용 2 - 수집데이터 및 DB구조

3. 오라클

```

❶ insert_oracle_cctv.py •
project_01 > cctv > ❷ insert_oracle_cctv.py > ...
1  import pymongo
2  import cx_Oracle as oci
3
4  # 접속하기 (아이디/암호@서버주소:포트번호/SID)
5  conn = oci.connect('admin/1234@192.168.99.100:32764/xe', encoding="utf-8")
6  # 커서 생성
7  cursor = conn.cursor()
8
9  # 정규표현식
10 import re
11 seoul = re.compile('.*서울특별시.*', re.IGNORECASE) # compile the regex
12 conn_p = pymongo.MongoClient('192.168.99.100', 32766)
13 db = conn_p.get_database("db1") #없으면 db1생성
14 coll_cctv = db.get_collection("cctv") #collection 생성
15
16 |
17 data_cctv = coll_cctv.find({'$or': [{'소재지지번주소':seoul}, {'관리기관명':seoul}, {'소재지도로명주소':seoul}, {'제공기관명':seoul}], {'_id':False})
18 print(type(data_cctv))
19 for tmp in data_cctv:
20
21
22 # INSERT
23 sql = """
24     INSERT INTO CCTV(INSTITUTE,C_ADDRESS,O_ADDRESS,PURPOSE,CAMERA_N,PIXEL,FILE,SAVE,INSTALL_DATE,PHONE,LAT,LON,DATA,CODE,NAME)
25     VALUES(:1, :2, :3, :4, :5, :6, :7, :8,:9, :10, :11, :12,:13, :14, :15)
26 """
27 arr = [tmp['관리기관명'],tmp['소재지도로명주소'],tmp['소재지지번주소'],tmp['설치목적구분'],tmp['카메라대수'],tmp['카메라화소수'],tmp['촬영방면정보'],tmp['보관']
28 print(arr)
29
30 cursor.execute(sql, arr)
31 conn.commit()
32
33
34

```

세부 내용 2 - 수집데이터 및 DB구조

2. 데이터 삽입결과

(1) TABLE_PR

ADMIN.TABLE_PR	
P *	ID VARCHAR2 (20 BYTE)
	NAME VARCHAR2 (20 BYTE)
	PW VARCHAR2 (20 BYTE)
	AGE NUMBER
	JOINDATE DATE
PK	TABLE_PR_PK (ID)
PK	TABLE_PR_PK (ID)



TABLE_PR의 속성

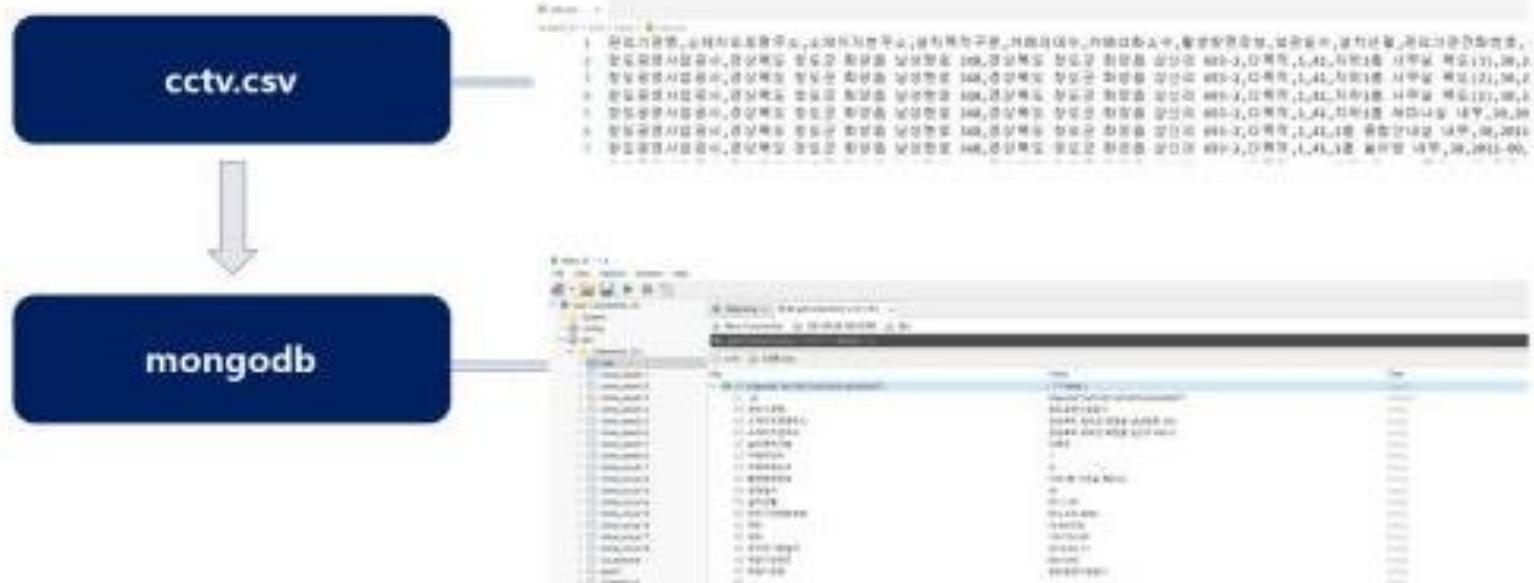


TABLE_PR의 기본키

세부 내용 2 - 수집데이터 및 DB구조

2. 데이터 삽입결과

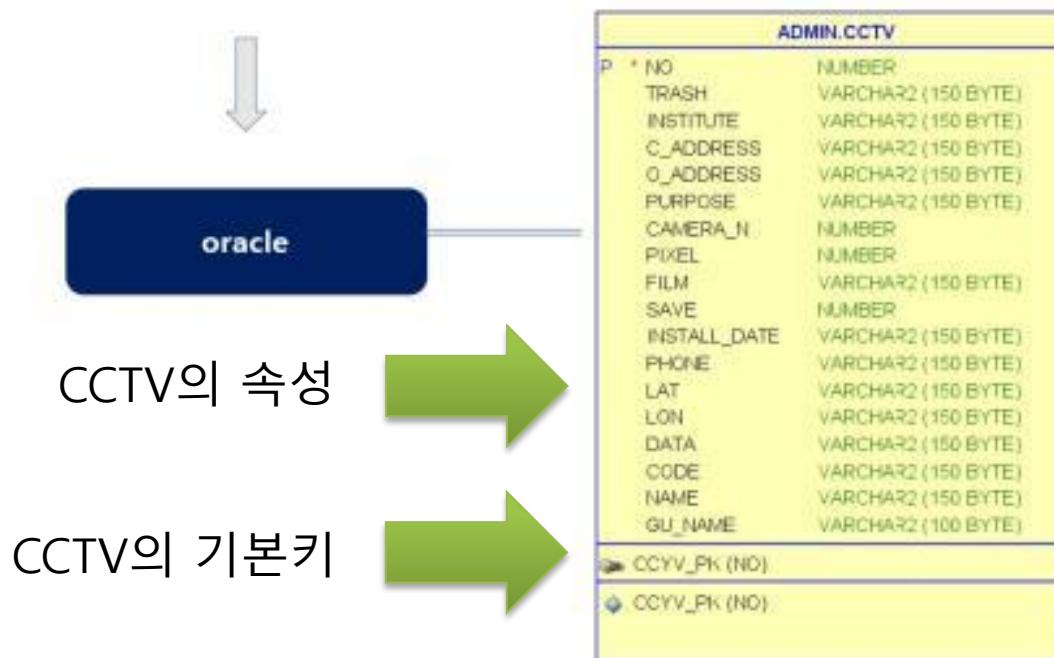
(2) CCTV



세부 내용 2 - 수집데이터 및 DB구조

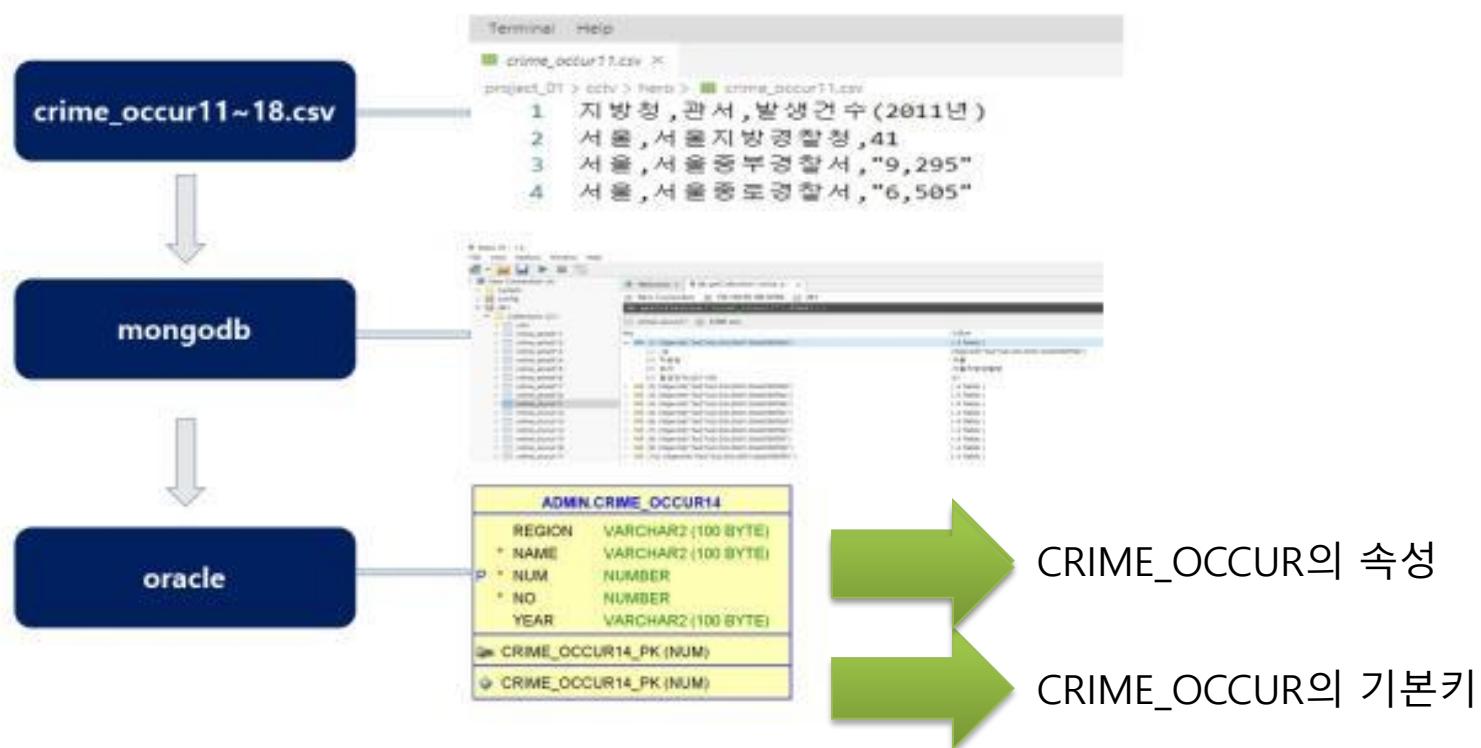
2. 데이터 삽입결과

(2) CCTV



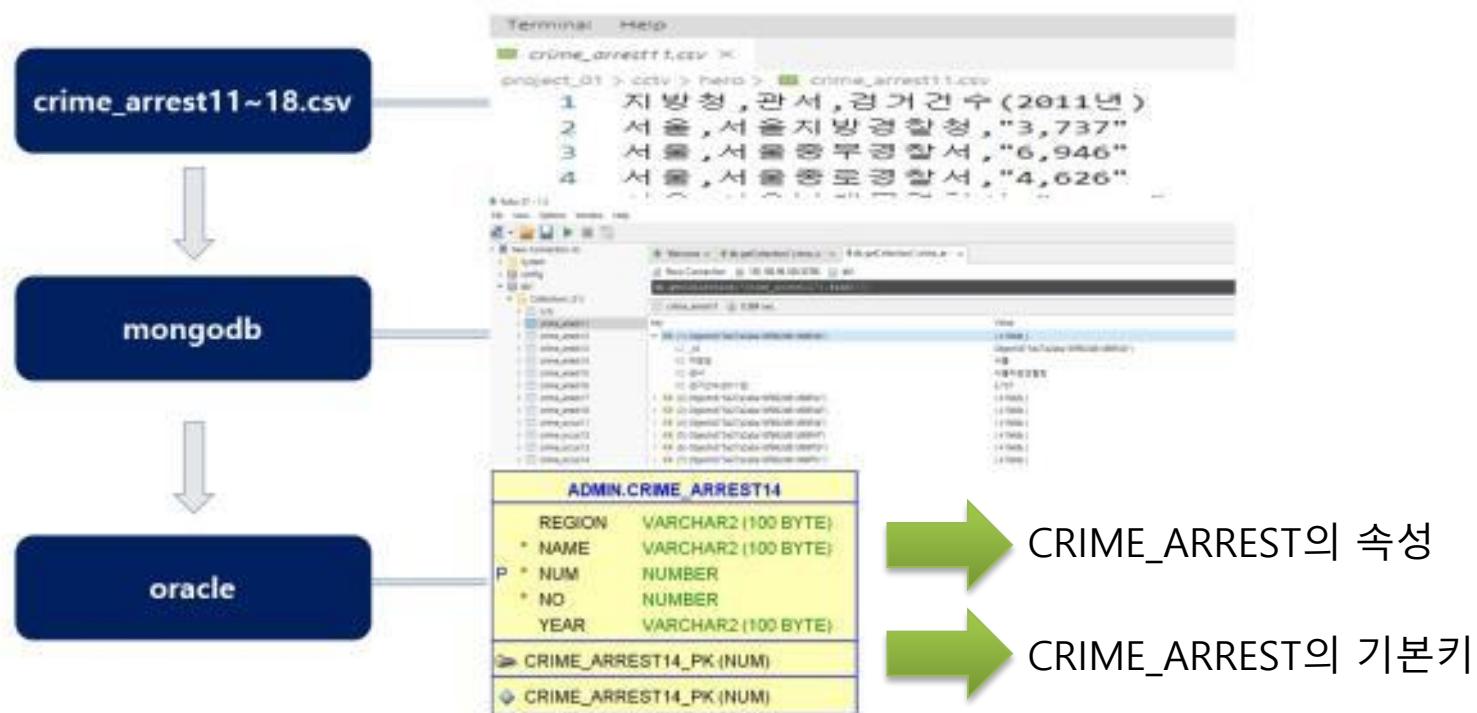
세부 내용 2 - 수집데이터 및 DB구조

2. 데이터 삽입결과 (3) CRIME_OCCUR



세부 내용 2 - 수집데이터 및 DB구조

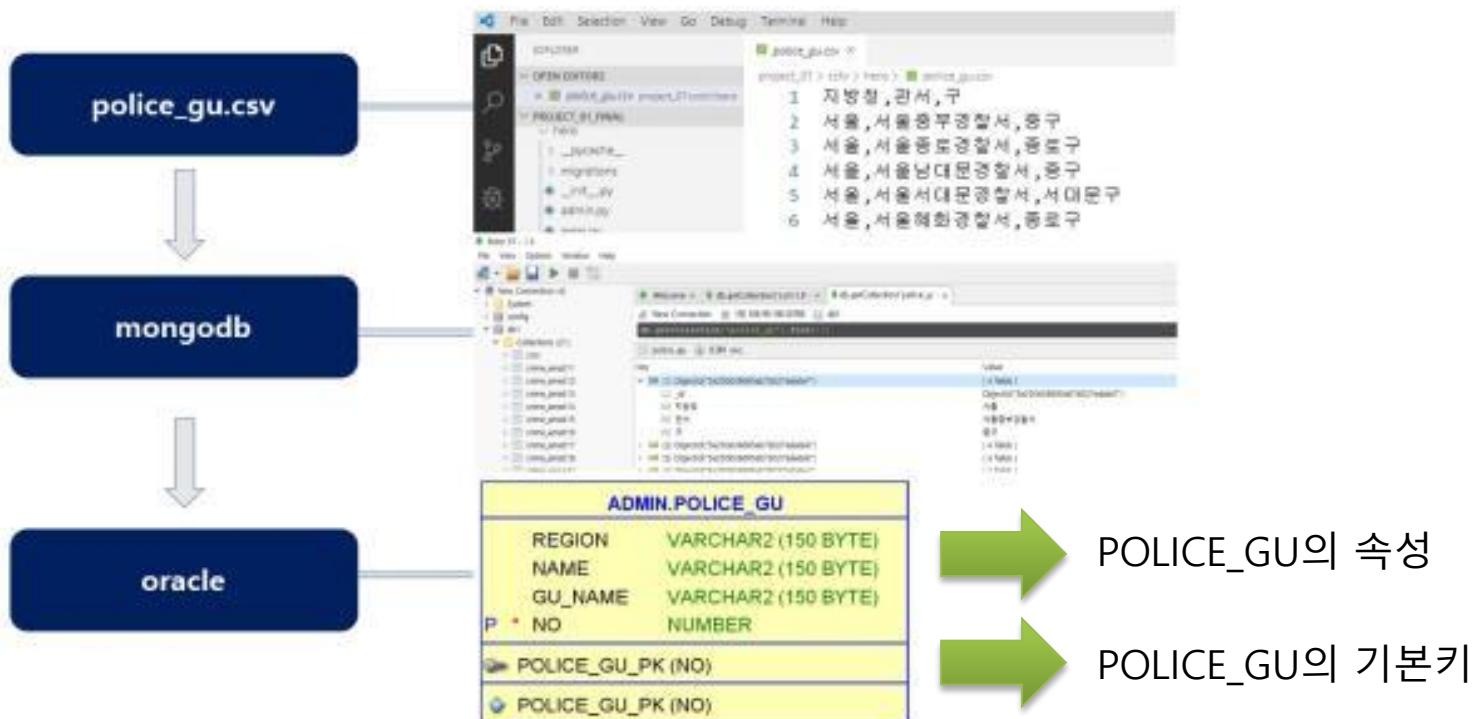
2. 데이터 삽입결과 (4) CRIME_ARREST



세부 내용 2 - 수집데이터 및 DB구조

2. 데이터 삽입결과

(5) POLICE_GU



THANK
YOU

HERO 조