Djagno 기반의 웹프로그래밍

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Web Frameworks for Python(https://wiki.python.org/moin/WebFrameworks)
장고 공식 사이트(https://www.djangoproject.com/)
장고 공식 소스 저장소(http://github.com/django/django)
장고 참조 문서 영어(https://docs.djangoproject.com/en/3.2/)

Agenda

Django(장고) 기반의 파이썬 웹 프로그래밍

Ch01. Django 시작하기
1. Django 란?
2. 개발 환경 구축
3. Django 구조

Ch02. Django App
1. Django Project
2. Model
3. View

Ch03. Model
1. Model 속성 및 옵션
2. Relationship
3. Migrations
4. Admin App

Ch04. Django SQL
1. Django shell
2. Manager & QuerySet
3. 조회 SQL
4. 생성/수정/삭제 SQL
5. Django-Debug-Toolbar

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1. Template Loader
2. URL Dispatcher
3. Template 상속
4. Template Engines
5. Template Filter

Ch06. Django View
1. View 기본
2. View 활용

Ch07. Django Form
1. HTML form
2. CSRF
3. HttpRequest/HttpResponse
4. Django Form
5. Django Model Form
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Ch08. File 관리
1. Static Files
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3. Image Thumbnail

Ch09. 사용자 인증
1. Auth App
2. 회원가입 구현
3. 로그인/아웃 구현
4. Oauth 라이브러리 활용

Ch 02 Django App

1. Django Project
2. Model
3. View

Chapter 02. Django App

- 기본 converter
  (https://github.com/django/django/blob/3.2/django/urls/converters.py)

- HttpRequest 소스
  (https://docs.djangoproject.com/en/3.2/_modules/django/http/request/#HttpRequest)

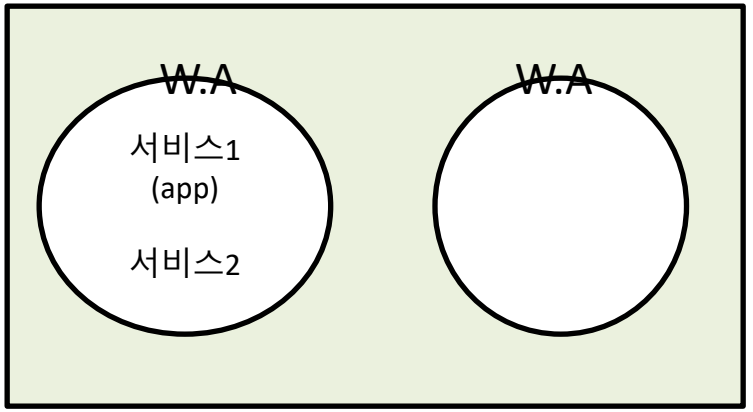
- HttpRequest 객체
  (https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects)

- HttpResponse 소스
  (https://github.com/django/django/blob/3.2/django/http/response.py)

- HttpResponse 객체
  (https://docs.djangoproject.com/en/3.2/ref/request-response/#httpresponse-objects)

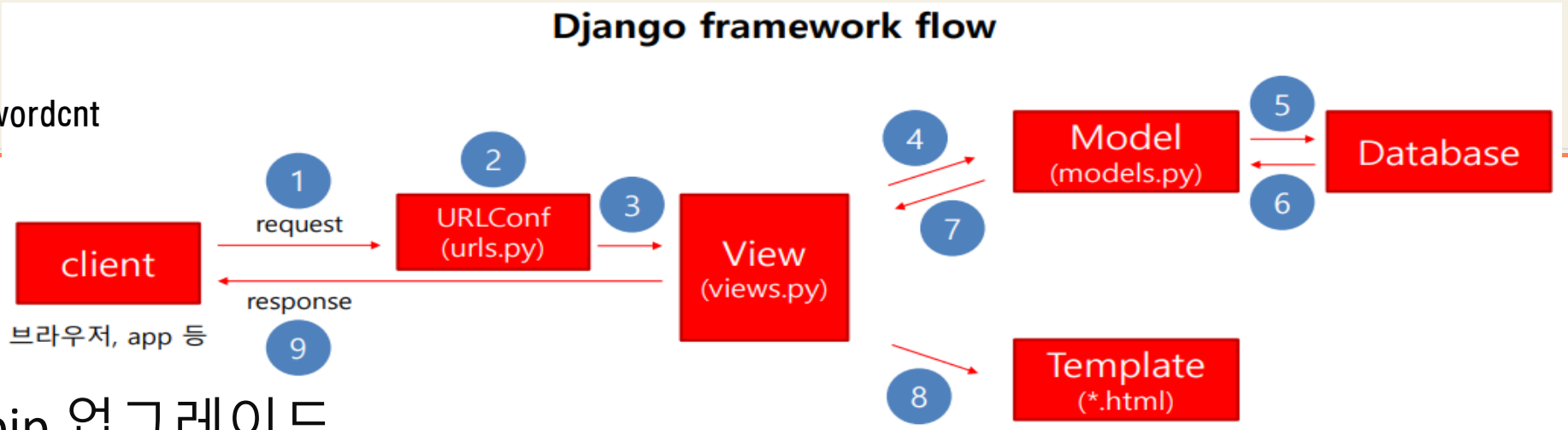
1. Django Project

Django Project = Web Application = web site



실습

ch02_wordcnt



1. pip 업그레이드
   - pip --version
   - python –m pip install --upgrade pip
   - pip --version
2. Django install
   - pip install django
3. 파이참에서 프로젝트 생성 후
   - Django-admin startproject ch02 .
4. SECRET_KEY 숨기기(.gitignore생성)
   - .env생성**(.gitignore에 .env추가)**
   - Pip install python-decouple
   - settings.py 를 수정하기
     From decouple import config
     SECRET_KEY = config('SECRET_KEY')

5. Home, wordcnt app 추가하기
   - python manage.py startapp home
   - python manage.py startapp wordcnt
   - Settings.py에 home과 wordcnt app 등록
6. URLconf
   - ch02/urls.py

```
urlpatterns = [
    path("admin/", admin.site.urls),
    path('', views.index, name='index'),
    path('test/', views.test, name='test'),
    path('showId/<int:id>/', views.intId, name='showIntId'),
    path('showId/<str:id>/', views.strId, name='showStrId'),
    path('wordcnt/', include('wordcnt.urls')),
]
```

   - Wordcnt/urls.py

실습

ch02_wordcnt

- Wordcnt/urls.py

```
# wordcnt 패키지  안의 urls.py :
#  /wordcnt/ : text  입력
#  /wordcnt/result :  입력된 text wordcount
#  /wordcnt/about  : 도움말  페이지
from django.urls import path
import wordcnt.views
app_name = 'wordcnt'
urlpatterns = [
  path('', wordcnt.views.wordinput, name='wordinput'),
  path('about/', wordcnt.views.about, name='about'),
  path('result/', wordcnt.views.result, name='result'),
]
```

실습

ch02_wordcnt

7. Views

```
from django.shortcuts import render
from django.http import HttpResponse

# Create your views here.
def index(request):
  context = {'msg':'wordCount welcome page'}
  return render(request,
                'home/index.html',
                context=context)
def test(request):
  return HttpResponse('<h1>테스트  페이지</h1>'+
                      '<button onclick="location=\'/\'">뒤로</button>')
def intId(request, id):
  msg = '숫자 ID는 ' + str(id)
  type = '숫자'
  return render(request,
                template_name='home/showId.html',
                context={'msg':msg, 'type':type})

def strId(request, id):
  msg = '문자 ID는 ' + str(id)
  type = '문자'
  return render(request,
                template_name='home/showId.html',
                context={'msg':msg, 'type':type})
```

7. Views

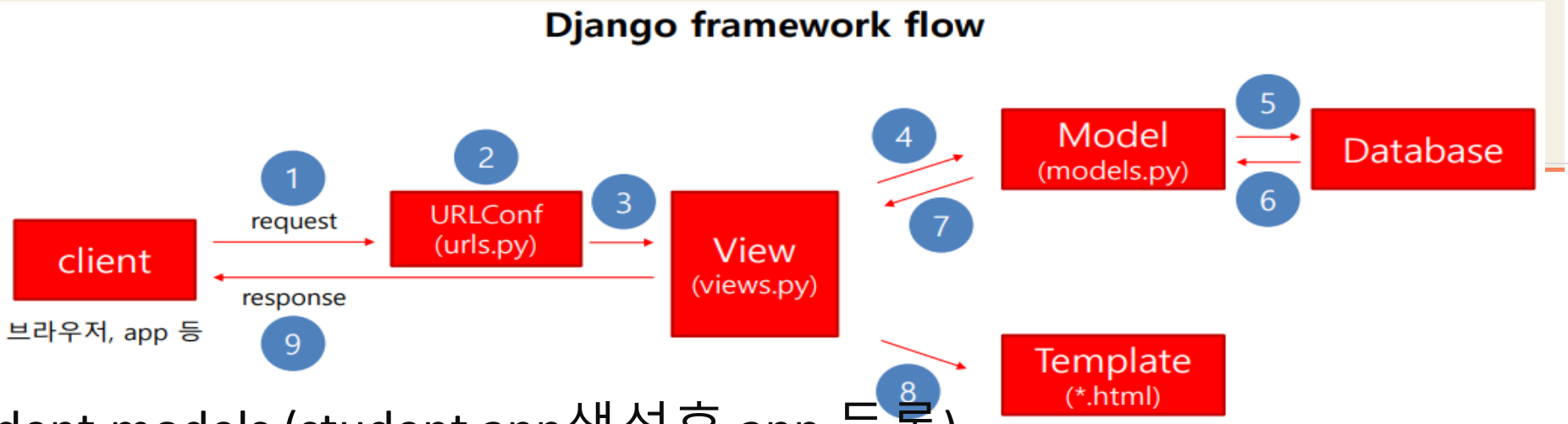
```
from django.shortcuts import render

# text 입력
def wordinput(request):
  return render(request, 'wordcnt/wordinput.html')
def about(request):
  return render(request, 'wordcnt/about.html')

def result(request):
  #print(request.POST)
  # full = request.POST['fulltext']
  #full = request.POST.get('fulltext','')
  full = request.GET['fulltext']
  strlength = len(full) # 글자수
    words = full.split()
  wordcnt = len(words) # 단어 갯수
    words_dic = dict() # 빈 딕셔너리
    for word in words:
    if word in words_dic.keys():
      words_dic[word] += 1 # words_dic['hong'] = 2
    else:
      words_dic[word] = 1
  print('★', full, wordcnt)
  context = {
    'full':full,
    'strlength':strlength,
    'wordcnt':wordcnt,
    'dict':words_dic.items() # [('hong',2),('good',1),('luck',1)]
  }
  return render(request,
                'wordcnt/result.html',
                context=context)
```

실습

Ch02_wordcnt

8. templates/home

```
<head>
  <meta charset="UTF-8">
  <!-- 파비콘 설정 : 아이콘 설정 (http://www.flaticon.com) -->
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet">
  {% load static %}
  <link href="{% static 'img/brand.png' %}" rel="icon">
  <link href="{% static 'css/ex.css' %}" rel="stylesheet">
  <title>Title</title>
</head>
<body>
<div class="p-5 mb-4 bg-body-tertiary rounded-3">
  <h2>템플릿을 index.html로 사용해 보았어요</h2>
  <h1 onclick="location='{% url 'wordcnt:wordinput' %}'">{{msg}}</h1>
  <img src="{% static 'img/django.png' %}" alt="django 그림"><br>
  <a href="test">TEST</a><br>
  <a href="{% url 'test' %}">TEST</a><br>
  <button class="btn btn-outline-danger" onclick="location='{% url 'test'%}'">TEST</button>
  <button class="btn btn-outline-danger" onclick="location='/test'">TEST</button>
  <hr>
  <a href="showId/123">showIntId/123</a><br>
  <a href="{% url 'showIntId' 124 %}">showIntId/124</a><br>
  <button class="btn btn-outline-warning" onclick="location='showId/123'">숫자ID</button>
  <button class="btn btn-outline-warning" onclick="location='{% url 'showIntId' 124 %}'">숫자ID</button>
  <hr>
  <a href="showId/aab">showIntId/123</a><br>
  <a href="{% url 'showStrId' 'abc' %}">showIntId/124</a><br>
  <button class="btn btn-outline-info" onclick="location='showId/abc'">문자ID</button>
  <button class="btn btn-outline-info" onclick="location='{% url 'showStrId' 'abc' %}'">문자ID</button>
</div>
</body>
```



- Student.models (student app생성후 app 등록)

```
from django.db import models

class Student(models.Model): # student_student(테이블명 : 앱명_클래스명소문자)
  id = models.AutoField(primary_key=True)
  name = models.CharField(max_length=100, unique=True)
  major = models.CharField(max_length=100, null=True) # 기본이 null=False
  age = models.IntegerField(default=0)
  grade = models.IntegerField(default=1)
  def __str__(self):
    return "{}:{}({}, {}세 {}학년)".format(self.id,
                                    self.name,
                                    self.major,
                                    self.age,
                                    self.grade)
```

실습

Ch03_orm

- python manage.py migrate : 사용자 및 그룹 테이블 생성
- python manage.py createsuperuser : 관리자 계정 생성(auth_user)
- python manage.py runserver 관리자 계정 로그인 확인
- python manage.py makemigrations : 변경사항이 있는지 models 검색
- python manage.py migrate : 변경사항 테이블 생성
- python manage.py shell : 장고 shell 모두 실행

```
CRATE
from student.models import Student
st = Student(name='hong', major='computer', age=22, grade=2)
st.save()
st = Student(name='kim', major='bigdata', age=21, grade=2)
st.save()
st = Student(name='lee', major='ai', age=23, grade=3)
st.save()
qs = Student.objects.all() # 전체 데이터 읽기READ
qs[0].name, qs[1]
for s in qs:
    print(s)
```

실습

Ch03_orm

qs = Student.objects.get(name='kim') # 조건에 맞는 한행 읽기 **READ**
Print(qs)
qs =Student.objects.filter(age__lt=30) # 필터로 읽기
__lt : 보다 작다
__lte : 보다 작거나 같다
__gt : ~보다 크다
__gte : ~보다 크거나 같다
__isnull : null인 자료
__contains : 특정 문자열 포함 name__contains = 'k'
qs = Student.objects.order_by('age') # age 필터 기준으로 오름차순 정렬 가져옴
qs = Student.objects.order_by('-age') # age 필터 기준으로 내림차순 정렬 가져옴
qs = Student.objects.get(name='kim')
qs.age = 40 # 데이터 수정 **UPDATE**
qs.save()
qs = Student.objects.get(name='hong')
qs.delete() # 데이터 삭제 **DELETE**

Django Project 생성

- 장고 프로젝트 생성

  django-admin startproject myproject .
  tree /f

```
myproject : manage.py
  └─ myproject : __init__.py : 패키지로 만들어짐
                 settings.py : 장고 프로젝트 설정
                 urls.py     : 들어온 요청과 view 연결
                 wsgi.py     : 실제 서버 배포시 사용
```

- Django 규칙에 따라 디렉터리, 파일 자동 생성

- cmd창이나 shift+오른쪽마우스클릭 – powershell창 열기 등 이용해서 명령어 수행

Django Project 생성

- Model을 DB에 반영(디폴트가 SQLite가 기본 설정)

  D:\src\ django\myproject> python manage.py migrate : model의 내용을DB에 반영

  D:\src\ django\myproject> python manage.py createsuperuser : admin로그인 id 추가

- 개발 서버 구동(실습용 개발 서버)

  D:\src\django\myproject> python manage.py runserver

  http://127.0.0.1:8000으로 Webserver 연결

Django Project 구조

- 장고 프로젝트는 여러 개의 App을 가짐
- App 생성 : python manage.py <app_name>

  D:\src\django\myproject> python manage.py –help : 도움말

  D:\src\django\myproject> python manage.py **startapp blog** : 앱생성. 서비스 구현은 앱 안에.
- App의 구조

```
myproject : manage.py
   ㄴ myproject : __init__.py, settings.py, urls.py, wsgi.py
   ㄴ blog : migrations
                __init__.py
                admin.py
                apps.py
                models.py
                tests.py
                views.py
```

Blog 앱 작성

1. Django Project

- myproject/settings.py

```
INSTALLED_APPS = [
 ~ 생략 ~ # 장고에서 미리 만들어 놓은 기능(앱) 있음
'blog',    # 앱 등록
]
```

- blog/views.py

```
from django.shortcuts import render
from django.http import HttpResponse

def index(request):
    return HttpResponse("Hello, World!")
```

Blog 앱 작성

1. Django Project

- myproject/urls.py

```
from django.contrib import admin
from django.urls import include, path
urlpatterns = [
  path('blog/', include('blog.urls'))
]
```

- blog/urls.py

```
from django.urls import path
from . import views
urlpatterns = [
    path('', views.index)
]
```

새로운 앱 작성

0. 프로젝트 생성
1. 앱 생성
2. 프로젝트/settings.py의 INSTALLED_APPS에 앱 등록
3. View 작성
4. 앱이름/urls.py 파일 생성
5. 프로젝트/urls.py에 include 적용

Django의 요청처리

1. root URLConf : settings.py의 ROOT_URLCONF

```
ROOT_URLCONF = 'myproject.urls'
```

2. ROOT_URLCONF 모듈 로드 후 urlpatters 변수 검색
3. ROOT_URLCONF의 include를 통해 TREE 구조로 확장
4. Tree 구조로 확장된 urlpatterns의 path()또는 re_path()들을 검색 리스트에 포함
5. 작성된 리스트에서 URL 패턴을 순차 검색
6. 요청된 URL과 일치하는 패턴을 찾으면 검색 중단
7. 일치된 패턴의 뷰 함수 호출
8. 뷰 함수에 다음의 인자를 전달
   - HttpRequest인스턴스
   - 이름이 지정되지 않은 인자는 위치 기반으로 전달
   - 키워드 인자는 kwargs 값에 설정되어 전달

url pattern

- URL 패턴의 끝은 "/"로 끝남
- 첫번째 /는 내부적으로 추가되기 때문에 지정하지 않음
  - "/articles/" 대신 "articles/"로 지정
- View의 인자로 사용되는 값은 꺽쇄괄호 <변수이름>를 사용
- View의 인자로 사용되는 값의 타입 지정 시 <데이터 타입:변수이름>으로 지정

- 프로젝트/urls.py

```
urlpatterns = [
    # path('', root, name='root'),
    path('', lambda r: redirect('article:list'), name='root'),
    path('admin/', admin.site.urls),
    path('blog/',include('blog.urls')),
    path('bookmark/',include('bookmark.urls')),
    path('accounts/',include('accounts.urls')),
    path('accounts/',include('allauth.urls')),
    path('shop/',include('shop.urls')),
    path('article/',include('article.urls')),
    path('book/',include('book.urls')),
]
```

- 앱/urls.py

```
from django.urls import path
from . import views

app_name = 'article'
urlpatterns = [
    path('mine/', views.MyView.as_view(), name='my-view'),
    path('new/', views.article_new, name='new' ),
    path('home/',views.HomePageView.as_view(), name='home'),
    path('go-to-django/', views.RedirectView.as_view(url='https://djangoproject.com'), name='go-to-django'),
    path('<pk>/edit/',views.article_edit, name='edit'),
    path('<pk>/delete/',views.article_delete, name='delete'),
    path('<pk>/detail/',views.ArticleDetailView.as_view()),
    path('<pk>/', views.ArticleDV.as_view(), name='detail'),

    path('',views.article_list, name='list'),

]
```

2. Model

데이터 베이스 설정

2. Model

- myproject/settings.py

```
DATABASES = {
  'default': {
    'ENGINE': 'django.db.backends.sqlite3',
    'NAME': os.path.join(BASE_DIR, 'db.sqlite3'),
  }
}

LANGUAGE_CODE = 'ko-kr'

TIME_ZONE = 'Asia/Seoul'
```

Django Model

- Django 내장 ORM

- SQL문 없이 장고 모델을 통해 DB CRUD 작업 가능

- 파이썬 클래스와 DB 테이블
  - ◆ Model = DB Table
  - ◆ Model instance = Table의 1개 row

Model 정의

- blog/models.py

```
from django.db import models

class Post(models.Model):
  title = models.CharField(max_length=100)
  content = models.TextField()
  create_at = models.DateField(auto_now_add=True)
  updated_at = models.DateTimeField(auto_now=True)
  def __str__(self):
      return self.title
```

Mode의 활성화

- D:\src\django\myproject>python manage.py makemigrations blog

```
C:\dev\myproject>python manage.py makemigrations blog
Migrations for 'blog':
  blog\migrations\0001_initial.py
    - Create model Post
```

- D:\src\django\myproject>python manage.py sqlmigrate blog 0001

```
BEGIN;
--
-- Create model Post
--
CREATE TABLE "blog_post" ("id" integer NOT NULL PRIMARY KEY AUTOINCREMENT,
            "title" varchar(100) NOT NULL, "content" text NOT NULL,  "create
            _at" date NOT NULL, "updated_at" datetime NOT NULL);
COMMIT;
```

- D:\src\django\myproject>python manage.py migrate

```
C:\dev\myproject>python manage.py migrate
Operations to perform:
  Apply all migrations: admin, auth, blog, contenttypes, sessions
Running migrations:
  Applying blog.0001_initial... OK
```

DB API

2. Model

```
C:\dev\myproject> python manage.py shell (기본쉘은 장고 프로젝트 인식. 장고쉘은 환경값 인식하는 쉘)

ln[1] : from blog.models import Post
ln[2] : Post.objects.all()  #<QuerySet []>
ln[3] : p1 = Post(title='아이스하키', content='빙판에서 5명이 퍽을 가지고 하는 경기')
ln[4] : p1.save() # 실제 DB에 save(insert)
ln[5] : p1.id   #1
ln[6] : p1.title
ln[7] : p1.content
ln[8] : p1.create_at
ln[9] :  p2 = Post(); p2.title='농구'
Ln[10] :  p2.content='지상에서 5명이 농구공을 가지고 하는 경기'
ln[10] : p2.save()
ln[11] : p2.id  # 2

ln[12] : Post.objects.all() #<QuerySet [<Post: Post object (1)>, <Post: Post object (2)>]>
```

객체 표현

2. Model

- __str__ 메소드 오버라이딩

models.py

```python
from django.db import models

class Post(models.Model):
    title = models.CharField(max_length=100)
    content = models.TextField()
    create_at = models.DateField(auto_now_add=True)
    updated_at = models.DateTimeField(auto_now=True)

    def __str__(self):
        return self.title
```

- __str__ 메소드에서 반환 값 출력

```
In [1]: from blog.models import Post

In [2]: Post.objects.all()
Out[2]: <QuerySet [<Post: 아이스하키>, <Post: 농구>]>
```

Django Admin App

2. Model

- Super User 계정 생성

  D:\src\django\myproject> python manage.py createsuperuser

- 개발 서버 구동

  D:\src\django\myproject> python manage.py runserver

- Admin 페이지에서 blog 모델

```
# blog/admin.py

from django.contrib import admin
from .models import Post

admin.site.register(Post)
```

- Admin 페이지 접속

  http://localhost:8000/admin

3. View

View

- HttpRequest
  - ◆ View의 첫번째 인자로 전달, client의 요청 정보를 가짐
- HttpResponse
  - ◆ View의 반환 객체, client로 전달되는 응답 정보를 가짐
  - ◆ 문서 : https://docs.djangoproject.com/en/3.2/ref/request-response/#httpresponse-objects
  - ◆ 소스 : https://github.com/django/django/blob/3.2/django/http/response.py
- View 종류
  - ◆ FBV(Function Based View) ; 함수 기반 뷰
    - 호출 가능한 객체
  - ◆ CBV(Class Based View) ; 클래스 기반 뷰
    - 클래스이름.as_view()를 통해 호출 가능한 객체를 생성/반환

View의 인자

- 1번째 인자
  - HttpRequest ; client 의 요청 정보를 가짐
  - 문서 : https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects
  - 소스 : https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects

- 2번째이후
  - 요청 URL로부터 capture된 문자열들. Client가 넘겨준 데이터
  - url(), re_path()를 통한 모든 인자는 str타입으로 전달
  - Path를 통한 인자는 매핑된 Converter의 to_python()에서 반환된 타입으로 전달

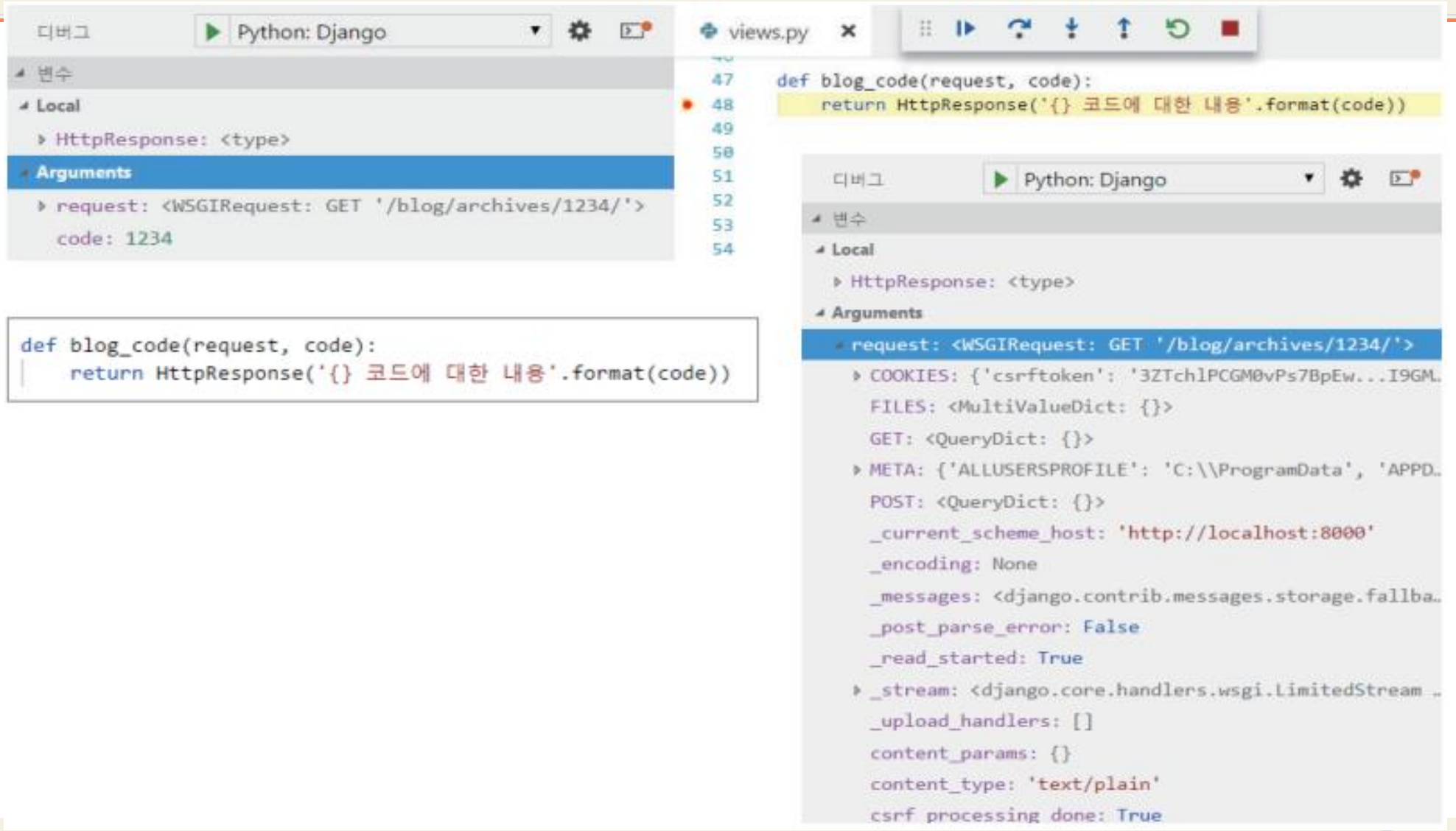
HttpRequest

- 문서
  - https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects
- 속성
  - HttpRequest.body
  - HttpRequest.path
  - HttpRequest.path_info
  - HttpRequest.method
  - HttpRequest.encoding
  - HttpRequest.content_type
  - HttpRequest.content_params
  - HttpRequest.GET
  - HttpRequest.POST
  - HttpRequest.COOKIES
  - HttpRequest.FILES
  - HttpRequest.META

```
[docs]class HttpRequest:
    """A basic HTTP request."""

    # The encoding used in GET/POST dicts. None means use default setting.
    _encoding = None
    _upload_handlers = []

    def __init__(self):
        # WARNING: The `WSGIRequest` subclass doesn't call `super`.
        # Any variable assignment made here should also happen in
        # `WSGIRequest.__init__()`.

        self.GET = QueryDict(mutable=True)
        self.POST = QueryDict(mutable=True)
        self.COOKIES = {}
        self.META = {}
        self.FILES = MultiValueDict()

        self.path = ''
        self.path_info = ''
        self.method = None
        self.resolver_match = None
        self._post_parse_error = False
        self.content_type = None
        self.content_params = None
```

HttpRequest

3. View



View의 반환값

- View는 반드시 HttpResponse 객체를 리턴해야 함
- 문서
  - https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects
  - 소스 : https://docs.djangoproject.com/en/3.2/ref/request-response/#httprequest-objects
- 속성
  - HttpResponse.content
  - HttpResponse.charset
  - HttpResponse.status_code
  - HttpResponse.reason_phrase
  - HttpResponse.streaming
  - HttpResonse.closed

View의 반환값


```
#https://github.com/django/django/blob/3.2/django/http/response.py
class HttpResponseBase:
  status_code = 200
  def_init_(self, content_type=None, status=None, reason=None, charset=None):
    self._headers = {}
    self._closable_objects = []
    self._handler_class = None
    self.cookies = SimpleCookie()
    self.closed = False
    if status is not None:
      try:
         self.status_code = int(status)
      except (ValueError, TypeError):
        raise TypeError('HTTP status code must be an integer.')

      if not 100 <= self.status_code <= 599:
        raise ValueError('HTTP status code must be an integer from 100 to 599.')
    self._reason_phrase = reason
    self._charset = charset
    if content_type is None:
      content_type = '%s; charset=%s'% (settings.DEFAULT_CONTENT_TYPE,self.charset)
    self['Content-Type'] = content_type
```

View 내 function의 반환값

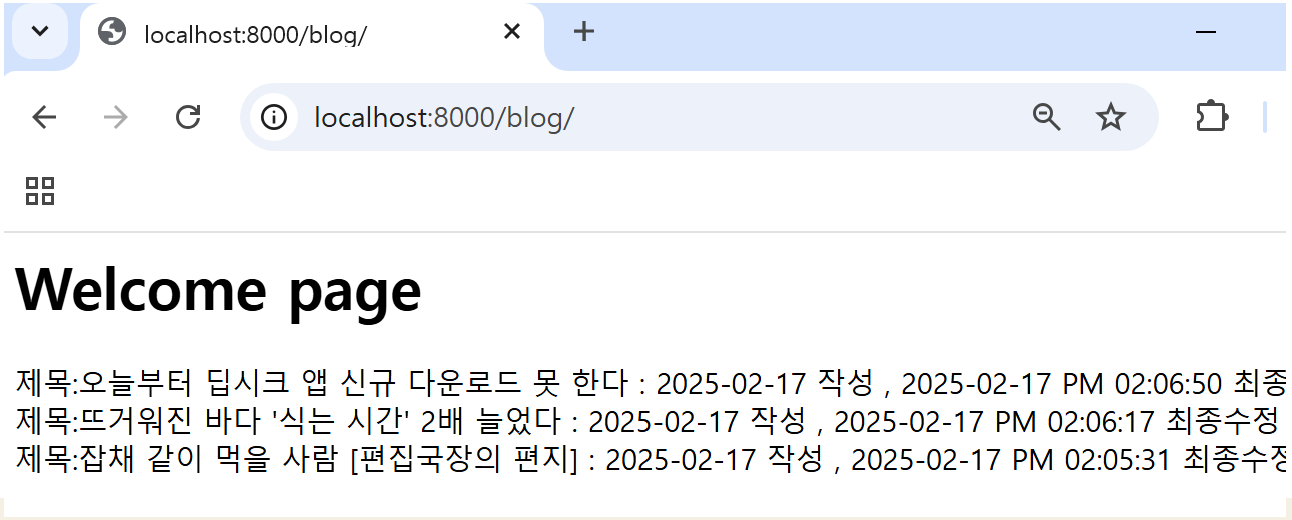

```
class HttpResponse(HttpResponseBase):
  streaming = False

  def_init_(self, content=b'', *args, **kwargs):
    super().__init__(*args, **kwargs)
    self.content = content

class StreamingHttpResponse(HttpResponseBase):
class FileResponse(StreamingHttpResponse):
class HttpResponseRedirectBase(HttpResponse):
class HttpResponseRedirect(HttpResponseRedirectBase):
class HttpResponseNotModified(HttpResponse):
class HttpResponseBadRequest(HttpResponse):
class HttpResponseNotFound(HttpResponse):
class HttpResponseForbidden(HttpResponse):
class HttpResponseNotAllowed(HttpResponse):
class HttpResponseGone(HttpResponse):
class HttpResponseServerError(HttpResponse):
 class HttpResponseServerError(HttpResponse):
 class Http404(Exception):
class JsonResponse(HttpResponse):
```

응답 정보 직접 처리

3. View

- blog/views.py

```
from django.http import HttpResponse
from .models import Post

def index(request):
  post_list = Post.objects.all()
  output= ' <br>'.join([p.__str__() for p in post_list])
  return HttpResponse("<h1>Welcome page</h1>" + output)
```



return

Template 사용

3. View

```
# blog/views.py
from django.shortcuts import render
def index(request):
   post_list = Post.objects.all()
   return render(request, 'blog/index.html', {'post_list':post_list})
                                          # 템플릿페이지에서 사용할 이름
```

```
# blog/templates/blog/index.html
{% if post_list %}
  <ul>
    {%for post in post_list %}
        <li><a href="/blog/{{post.id}}/">{{post.title}}</a></li>
    {% endfor %}
  </ul>
{% else %}
  <p> No posts are available.</p>
{% endif %}
```

템플릿페이지가 있는 곳은 앱/templates

Rander() 함수 – 주로 많이 씀

3. View

```
# blog/converters.py
class CodeConverter:
  regex = '\d{1,4}'

  def to_python(self, value):
    return int(value)

  def to_url(self, value):
    return str(value)
```

```
# blog/urls.py
from django.urls import path, register_converter
from . import views
from .converters import CodeConverter
register_converter(CodeConverter, 'dddd')
app_name="blog"
urlpatterns = [
  path('', views.index, name='index'), # url은 위에서부터 찾음
  #path('<int:post_id>/', views.detail, name='detail'),
  path('<dddd:post_id>/', views.detail, name='detail'),]
```

detail View 작성

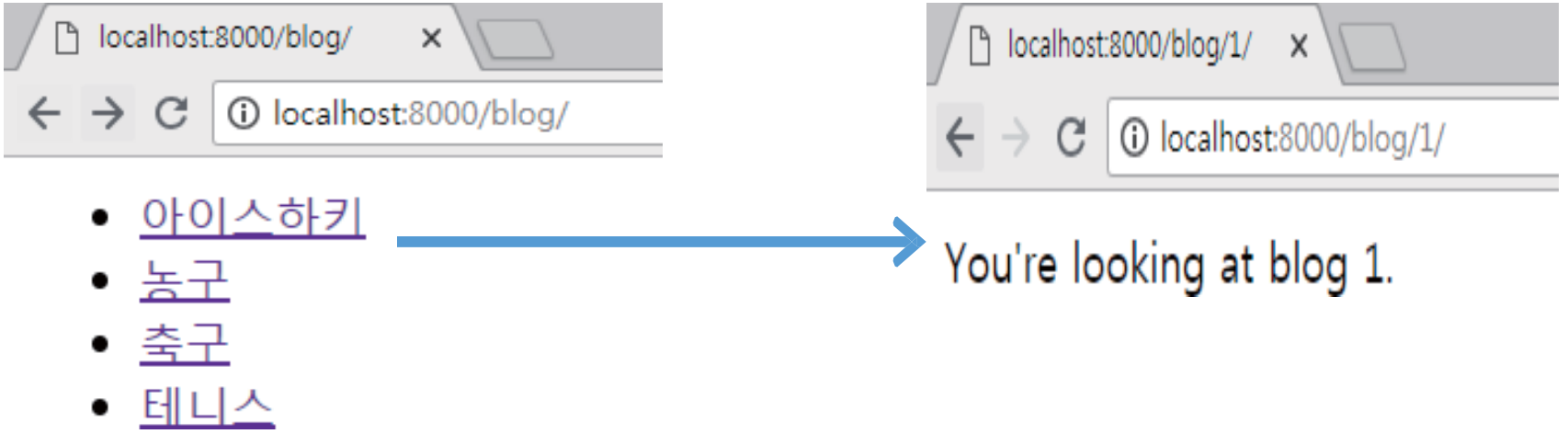
3. View

- blog/views.py

```
def detail(request, post_id):
  return HttpResponse("You're looking at blog %s." %post_id)
```

- blog/urls.py https://github.com/django/django/blob/3.2/django/urls/converters.py

```
path('<int:post_id>/', views.detail)
```



Converters

https://github.com/django/django/blob/3.2/django/urls/converters.py

- blog/converters.py

```
class Codeconverter:
  regex = "\d{1,4}"

  def to_python(self, value):
    return int(value)

  def to_url(self, value):
    return str(value)
```

- blog/templates/blog/detail.html

```
{{ post.content }}
```

404 오류 발생

- blog/views.py

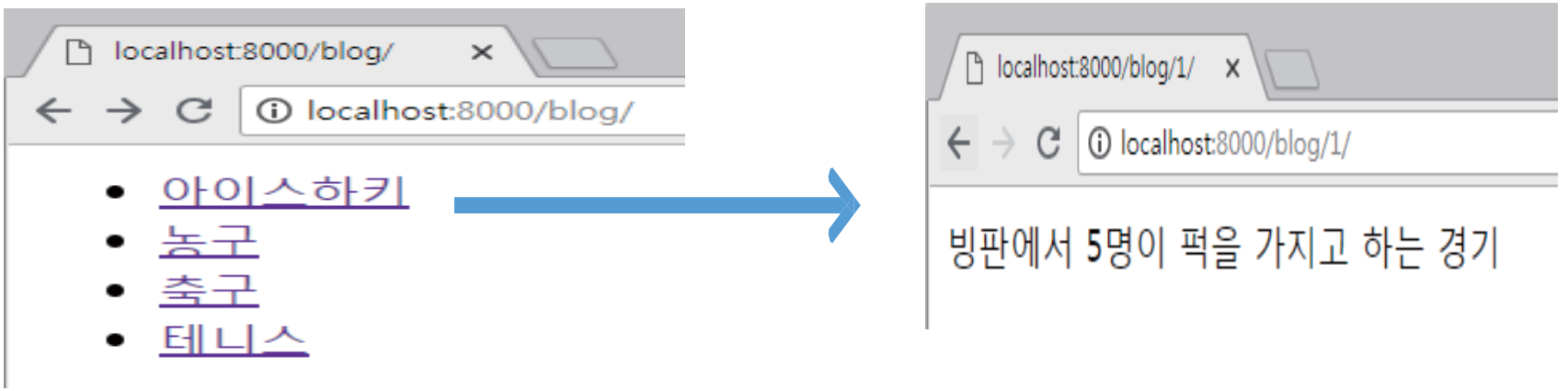
```
from django.http import Http404

def detail(request, post_id):
  try:
    post = Post.objects.get(pk=post_id)
  except Post.DoesNotExist:
    raise Http404("Post does not exist")
  return render(request, 'blog/detail.html', {'post':post})
```

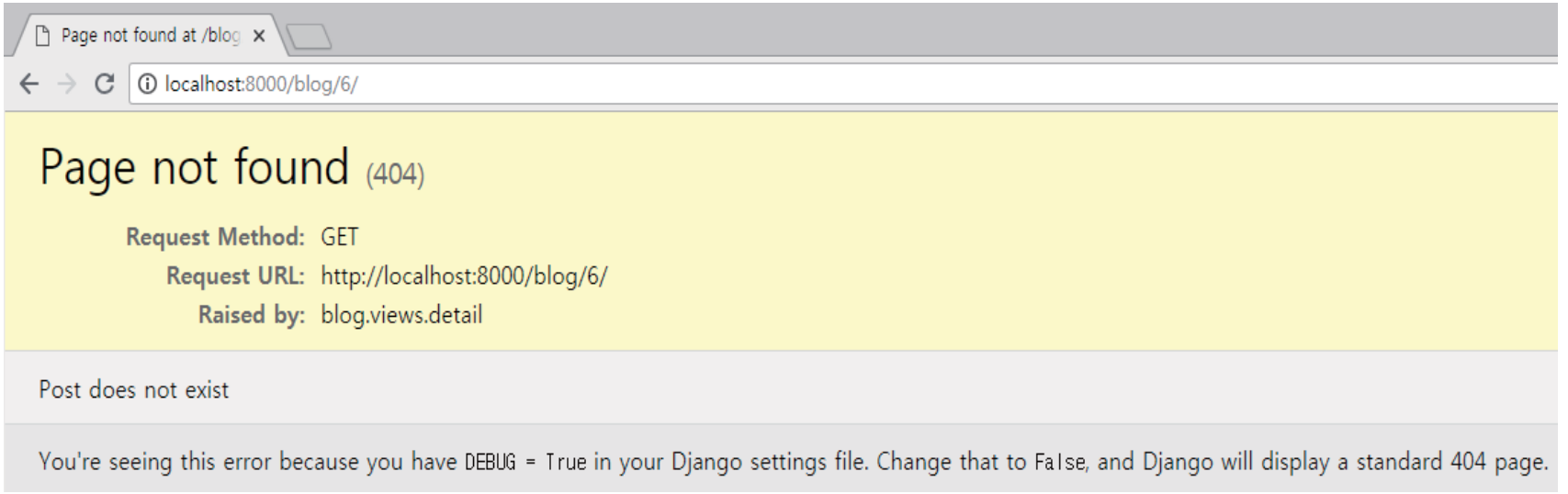
- blog/templates/blog/detail.html

```
{{ post.content }}
```

404오류 발생

3. View

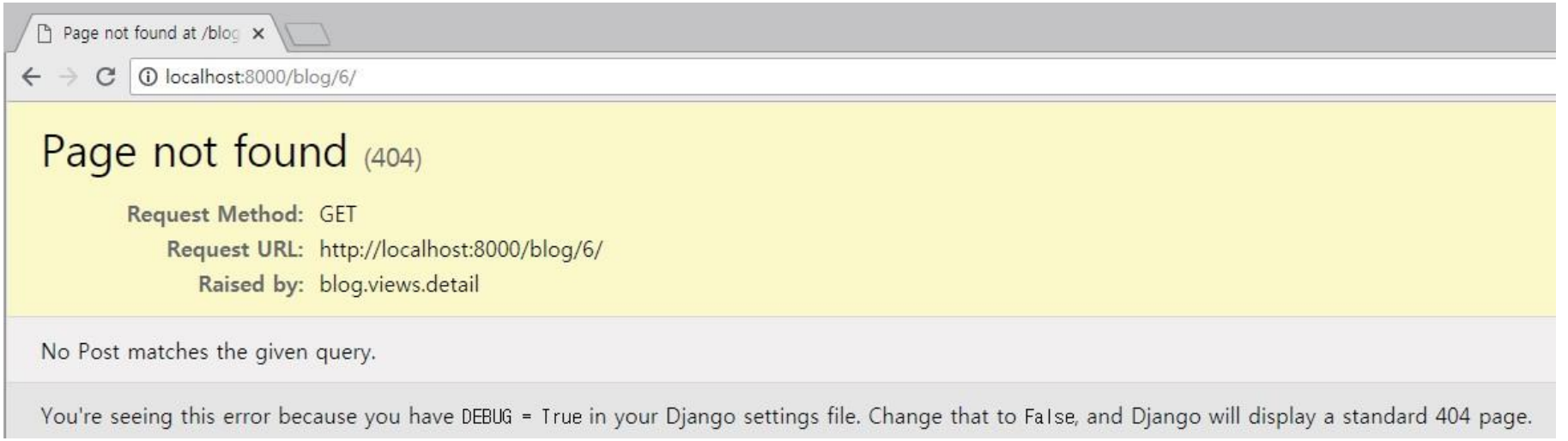




get_object_or_404() 함수

- blog/views.py

```
from django.shortcuts import render, get_object_or_404

def detail(request, post_id):
  post = get_object_or_404(Post, pk=post_id)
  return render(request, 'blog/detail.html', {'post':post})
```



JSON 데이터 응답

HttpResponse 객체의 HttpResponse subclasses 참조

3. View

- blog/views.py

```
from django.http import JsonResponse # HttpResponse 하위클래스

def json_test(request):
  music = {'singer':'BTS','songs': ['FAKE LOVE','DNA','피 땀 눈물','봄날'
  ]}
  return JsonResponse(music, json_dumps_params={'ensure_ascii':False}) #
  한글 깨지지 않으려
```

- blog/urls.py

```
urlpatterns = [
  path('json/', views.json_test),
]
```

JSON 데이터 응답

3. View

- blog/views.py

```
import os
from django.conf import settings

def excel_download(request):
  filepath = os.path.join(settings.BASE_DIR, 'demo.xlsx')
  filename =  'myproject.xlsx'
  with open(filepath, 'rb') as f:
    response = HttpResponse(f, content_type='application/vnd.ms-excel')
    response["Content-Disposition"] =
                "attachment; filename={}".format(filename)
  return response
```

- blog/urls.py

```
urlpatterns = [
    path('excel/', views.excel_download),
]
```

Pandas를 통해 CSV 응답

3. View

```
import pandas as pd
from io import StringIO
from urllib.parse import quote
from django.http import HttpResponse

def pandas_csv_download(request):
   df = pd.DataFrame([
     [100, 110, 120],
     [200, 210, 220],
     [300, 310, 320],
  ])

  io = StringIO()
  df.to_csv(io, index=None)
  io.seek(0)

  filename = quote('pandas_csv.csv')
  response = HttpResponse(io, content_type="text/csv")
  response['Content-Disposition'] =
              "attachment; filename={}".format(filename)
  return response
```

Pandas를 통해 excel 응답

3. View

```
import pandas as pd
from io import BytesIO
from urllib.parse import quote
from django.http import HttpResponse
# pip install openpyxl
def pandas_excel_download(request):
   df = pd.DataFrame([
     [100, 110, 120],
     [200, 210, 220],
     [300, 310, 320],
   ])

   io = BytesIO()
   df.to_excel(io)
   io.seek(0)

   filename = quote('pandas_excel.xlsx')
   response = HttpResponse(io, content_type="application/vnd.ms-excel")
   response['Content-Disposition'] =
             "attachment; filename={}".format(filename)
   return response
```

Redirect

3. View

```python
from django.shortcuts import redirect

def get_redirect1(request):
    return redirect('/blog/') # redirect('blog:index')
def get_redirect2(request):
    return redirect('http://google.com')
```

```python
from django.urls import path, register_converter
from . import views
from .converter import CodeConverter
Register_converter(CodeConverter, 'dddd')
app_name="blog"
urlpatterns = [
  path('', views.index, name="index"),
  path('<dddd:post_id>/', views.detail, name='detail'),
  path('<int:post_id>/', views.detail, name='detail'), # int 컨버터를 써달라는 얘기
  path('json/', views.json_test),
  path('excel/', views.excel_download),
  path('csv/', views.pandas_csv_download),
  path('csvexcel/', views.pandas_excel_download),
  path('re1/', views.get_redirect1),
  path('re2/', views.get_redirect2),
]
```