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Part I

**TUTORIAL**





# Chapter 1

# Installation

## 1.1 Python

As a Python Web framework, Django requires Python. The recommended installation of Python is to install Anaconda.

## 1.2 Database

Python includes a lightweight database called SQLite so you won't need to set up a database just yet. This step is only necessary if you'd like to work with a “large” database engine like PostgreSQL, MariaDB, MySQL, or Oracle.

## 1.3 Django

This is the recommended way to install Django.

1. Create a virtual python environment with `conda` (`conda create -n django`).
2. Activate the virtual environment (`source activate django`).
3. Install Django with `pip` (`python -m pip install Django`)

To test the installation of Django, run the command `python -m django --version`. If Django is installed, you should see the version of your installation. If it isn't, you'll get an error telling "No module named django".

## Chapter 2

# Request and response

### 2.1 Creating a project

```
1 django-admin startproject mysite
```

This will create the files shown in Figure 2.1:

### 2.2 The development server

To start the project server to listen to all IPs on port 8000:

```
1 python manage.py runserver 0:8000
```

This will produce the following website Figure 2.2:

### 2.3 Creating an app

Each application you write in Django consists of a Python package that follows a certain convention. Django comes with a utility that automatically generates the basic directory structure of an app, so you can focus on writing code rather than creating directories.

```
1 python manage.py startapp pdfs
```

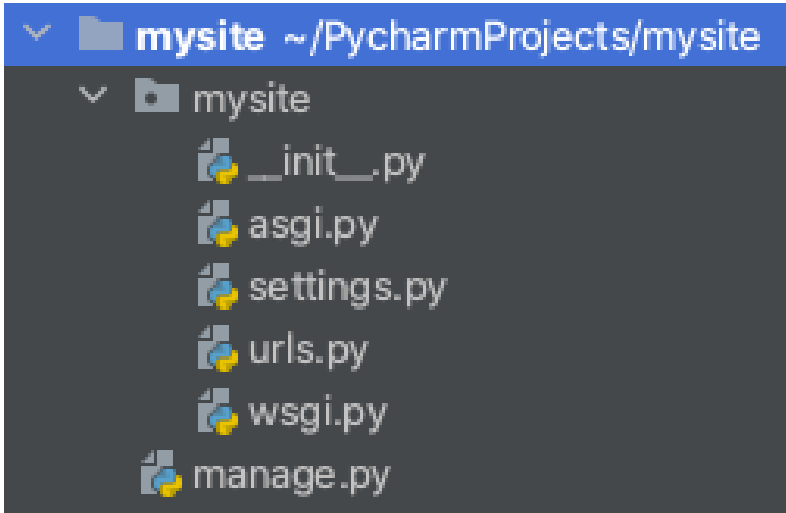


Figure 2.1: Start project

## 2.4 Write your first view

Open the file **polls/views.py** and put the following Python code in it:

```
1 from django.shortcuts import render
2 from django.http import HttpResponse
3
4
5 # Create your views here.
6 def index(request):
7     return HttpResponse("Hello, world. You're at the polls index.")
```

To call the view, we need to map it to a URL - and for this we need a URL conf.

To create a URLconf in the polls directory, create a file called

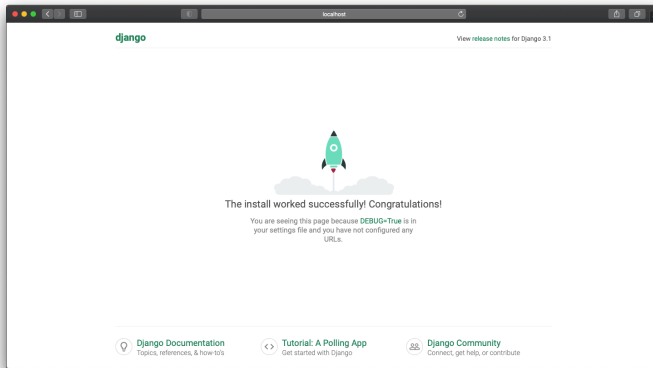


Figure 2.2: Run server

`polls/urls.py`. In it include the following code:

```
1 from django.urls import path
2
3 from . import views
4
5 urlpatterns = [
6     path('', views.index, name='index'),
7 ]
```

The next step is to point the root URLconf at the `polls.urls` module. In `mysite/urls.py`:

```
1 from django.contrib import admin
2 from django.urls import path, include
3
4 urlpatterns = [
5     path('polls/', include('polls.urls')),
6     path('admin/', admin.site.urls),
7 ]
```

Rerun the server and visit <http://localhost:8000/polls>.



## Chapter 3

# Models and the admin site

### 3.1 Database setup

Now, open up **mysite/settings.py**. It's a normal Python module with module-level variables representing Django settings.

By default, the configuration uses SQLite. SQLite is included in Python, so you won't need to install anything else to support your database. When starting your first real project, however, you may want to use a more scalable database like PostgreSQL, to avoid database-switching headaches down the road.

While you're editing **mysite/settings.py**, set `TIME_ZONE` to your time zone.

```
TIME_ZONE = 'Asia/Shanghai'
```

## 3.2 Creating models

In our poll app, we'll create two models: **Question** and **Choice**. A Question has a question and a publication date. A Choice has two fields: the text of the choice and a vote tally. Each Choice is associated with a Question.

These concepts are represented by Python classes. Edit the `polls/models.py` file so it looks like this:

```
1  from django.db import models
2
3
4  # Create your models here.
5  class Question(models.Model):
6      question_text = models.CharField(max_length=200)
7      pub_date = models.DateTimeField('data_published')
8
9
10 class Choice(models.Model):
11     question = models.ForeignKey(Question, on_delete=models.CASCADE)
12     choice_text = models.CharField(max_length=200)
13     votes = models.IntegerField(default=0)
```

## 3.3 Activating models

To include the app in our project, we need a reference to its configuration class in the `INSTALLED_APPS` setting. The **PollsConfig** class is in the `polls/apps.py` file, so its dotted path is `'polls.apps.PollsConfig'`. Edit the `mysite/settings.py` file and add that dotted path to the `INSTALLED_APPS` setting. It'll look like this:



```
INSTALLED_APPS = [  
    'polls.apps.PollsConfig',  
    'django.contrib.admin',  
    'django.contrib.auth',  
    'django.contrib.contenttypes',  
    'django.contrib.sessions',  
    'django.contrib.messages',  
    'django.contrib.staticfiles',  
]
```

Now Django knows to include the **polls** app.

Three steps to make model changes:

1. Change your models (in **models.py**)
2. Run `python manager.py makemigrations` to create migrations for those changes
3. Run `python manage.py migrate` to apply those changes to the database

## 3.4 Introducing the Django Admin

### 3.4.1 Creating an admin user

```
1 python manage.py createsuperuser
```

### 3.4.2 Make the poll app modifiable in the admin

We need to tell the admin that **Question** objects have an admin interface. To do this, open the **polls/admin.py** file, and edit it to look like this:

```
1 from django.contrib import admin
2 from .models import Question
3
4 # Register your models here.
5 admin.site.register(Question)
```

The registered website is shown in Figure 3.1:

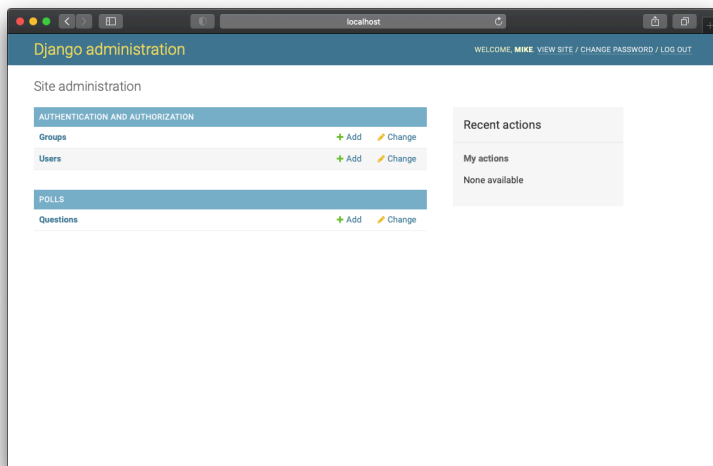


Figure 3.1: Register

## Chapter 4

# Views and templates

### 4.1 Overview

A view is a “type” of Web page in your Django application that generally serves a specific function and has a specific template.

In Django, web pages and other content are delivered by views. Each view is represented by a Python function (or method, in the case of class-based views). Django will choose a view by examining the URL that’s requested (to be precise, the part of the URL after the domain name).

To get from a URL to a view, Django uses what are known as ‘URLconfs’. A URLconf maps URL patterns to views.

### 4.2 Writing more views

Let’s add a few more views to `polls/views.py`.

```
1 from django.shortcuts import render
2 from django.http import HttpResponse
3
4
5 # Create your views here.
6 def index(request):
7     return HttpResponse("Hello, world. You're at the polls index.")
8
```

```

9
10 def detail(request, question_id):
11     return HttpResponse("You're looking at question %s." % question_id)
12
13
14 def results(request, question_id):
15     response = "You're looking at the results of question %s."
16     return HttpResponse(response % question_id)
17
18
19 def vote(request, question_id):
20     return HttpResponse("You're voting on question %s." % question_id)

```

Wire these new views into the `polls.urls` module by adding the following `path()` calls:

```

1 from django.urls import path
2 from . import views
3
4 urlpatterns = [
5     path('', views.index, name='index'),
6     path('<int:question_id>/', views.detail, name='detail'),
7     path('<int:question_id>/results/', views.results, name='results'),
8     path('<int:question_id>/votes/', views.vote, name='vote')
9 ]

```

Visit the website `localhost:8000/polls/1/` or `localhost:8000/polls/1/results` or `localhost:8000/polls/1/votes`, you will get the corresponding view.

See Figure 4.1:

### 4.3 Write views that actually do something

Each view is responsible for doing one of two things: returning an `HttpResponse` object containing the content for the requested page, or raising an exception such as `Http404`. The rest is up to you.

```

1 def index(request):
2     # return HttpResponse("Hello, world. You're at the polls index.")
3     latest_question_list = Question.objects.order_by('-pub_date')[:5]
4     output = ', '.join([q.question_text for q in latest_question_list])
5     return HttpResponse(output)

```

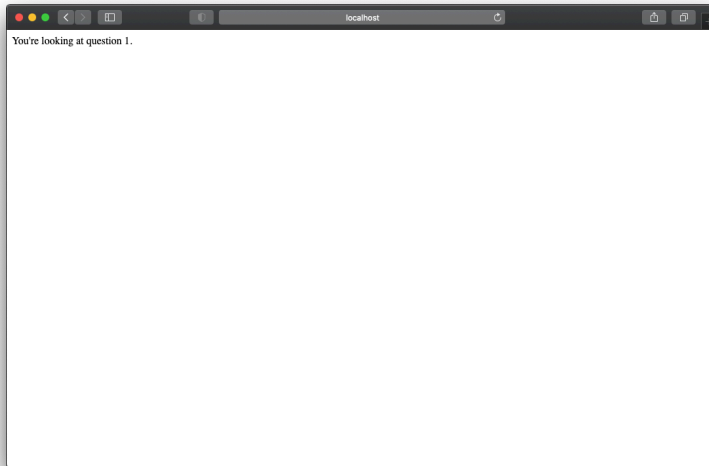


Figure 4.1: View

There's a problem here, though: the page's design is hard-coded in the view. If you want to change the way the page looks, you'll have to edit this Python code. So let's use Django's template system to separate the design from Python by creating a template that the view can use.

The structure is shown in Figure 4.2:

```
1 from django.shortcuts import render
2
3 from .models import Question
4
5
6 def index(request):
7     latest_question_list = Question.objects.order_by('-pub_date')[:5]
8     context = {'latest_question_list': latest_question_list}
9     return render(request, 'polls/index.html', context)
```

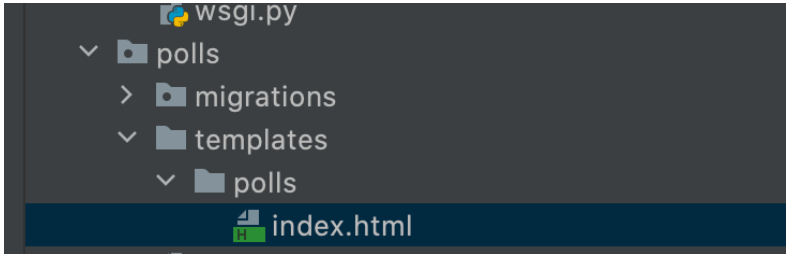


Figure 4.2: Templates

---

## 4.4 Raising a 404 error

polls/views.py:

```
1 from django.shortcuts import get_object_or_404, render
2
3 from .models import Question
4 # ...
5 def detail(request, question_id):
6     question = get_object_or_404(Question, pk=question_id)
7     return render(request, 'polls/detail.html', {'question': question})
```

polls/templates/polls/detail.html:

```
{{ question }}
```

## 4.5 Use the template system

polls/templates/polls/detail.html:

```
<h1>{{ question.question_text }}</h1>
```

```
<ul>
{% for choice in question.choice_set.all %}
    <li>{{ choice.choice_text }}</li>
{% endfor %}
</ul>
```

## 4.6 Removing hardcoded URLs in templates

From:

```
1 <li><a href="/polls/{{ question.id }}">{{ question.question_text }}</a></li>
```

To:

```
1 <li><a href="{% url 'detail' question.id %}">{{ question.question_text }}</a></li>
```

## 4.7 Namespacing URL names

polls/urls.py:

```
1 app_name = 'polls'
```

To:

```
1 <li><a href="{% url 'polls:detail' question.id %}">{{ question.question_text }}</a></li>
```

## 4.8 Forms

polls/tempaltes/polls/detail.html:

```

1 <h1>{{ question.question_text }}</h1>
2
3 {% if error_message %}<p><strong>{{ error_message }}</strong></p>{% endif %}
4
5 <form action="{% _url_ 'polls:vote' _question.id _%}" method="post">
6 {% csrf_token %}
7 {% for choice in question.choice_set.all %}
8   <input type="radio" name="choice" id="choice{{ _forloop.counter _ }}" value="{{ _choice.id _
9   }}">
10   <label for="choice{{ _forloop.counter _ }}">{{ choice.choice_text }}</label><br>
11 {% endfor %}
12 <input type="submit" value="Vote">
13 </form>

```

polls/views.py:

```

1 from django.http import HttpResponseRedirect, HttpResponseRedirect
2 from django.shortcuts import get_object_or_404, render
3 from django.urls import reverse
4
5 from .models import Choice, Question
6 # ...
7 def vote(request, question_id):
8     question = get_object_or_404(Question, pk=question_id)
9     try:
10         selected_choice = question.choice_set.get(pk=request.POST['choice'])
11     except (KeyError, Choice.DoesNotExist):
12         # Redisplay the question voting form.
13         return render(request, 'polls/detail.html', {
14             'question': question,
15             'error_message': "You didn't select a choice.",
16         })
17     else:
18         selected_choice.votes += 1
19         selected_choice.save()
20         # Always return an HttpResponseRedirect after successfully dealing
21         # with POST data. This prevents data from being posted twice if a
22         # user hits the Back button.
23         return HttpResponseRedirect(reverse('polls:results', args=(question.id,)))

```

polls/views.py:

```

1 from django.shortcuts import get_object_or_404, render
2
3
4 def results(request, question_id):
5     question = get_object_or_404(Question, pk=question_id)
6     return render(request, 'polls/results.html', {'question': question})

```



**polls/templates/polls/results.html:**

```
1 <h1>{{ question.question_text }}</h1>
2
3 <ul>
4 {% for choice in question.choice_set.all %}
5 <li>{{ choice.choice_text }} — {{ choice.votes }} vote{{ choice.votes|pluralize }}</li>
6 {% endfor %}
7 </ul>
8
9 <a href="{% url 'polls:detail' question.id %}">Vote again?</a>
```



## Chapter 5

# Static files

### 5.1 Customize you app's look and feel

polls/static/polls/style.css:

```
1 li a {  
2     color: green;  
3 }  
4  
5 body {  
6     background: white url("images/background.jpeg") no-repeat;  
7     background-size: 100% 100%;  
8 }
```

Add the following at the top of `polls/static/polls/index.html`:

```
1 {% load static %}  
2  
3 <link rel="stylesheet" type="text/css" href="{% static 'polls/style.css' %}">
```

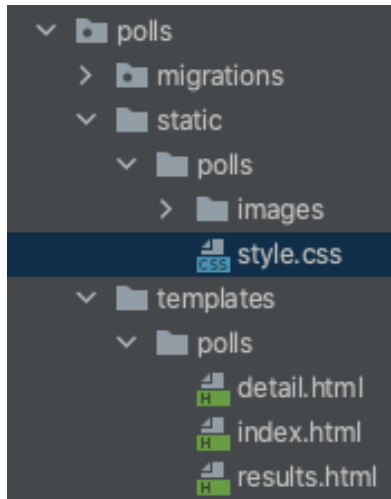


Figure 5.1: Style

## Chapter 6

# Customizing the admin site

polls/admin.py:

```
1 from django.contrib import admin
2
3 from .models import Question
4
5
6 class QuestionAdmin(admin.ModelAdmin):
7     fields = ['pub_date', 'question_text']
8
9 admin.site.register(Question, QuestionAdmin)
```

```
1 from django.contrib import admin
2
3 from .models import Question
4
5
6 class QuestionAdmin(admin.ModelAdmin):
7     fieldsets = [
8         (None, {'fields': ['question_text']}),
9         ('Date information', {'fields': ['pub_date']}),
10    ]
11
12 admin.site.register(Question, QuestionAdmin)
```

### 6.1 Adding related objects

polls/admin.py:

```

1 from django.contrib import admin
2
3 from .models import Choice, Question
4
5
6 class ChoiceInline(admin.StackedInline):
7     model = Choice
8     extra = 3
9
10
11 class QuestionAdmin(admin.ModelAdmin):
12     fieldsets = [
13         (None, {'fields': ['question__text']}),
14         ('Date information', {'fields': ['pub_date'], 'classes': ['collapse']}),
15     ]
16     inlines = [ChoiceInline]
17
18 admin.site.register(Question, QuestionAdmin)

```

## 6.2 Customizing the admin change list

polls/admin.py:

```

1 class QuestionAdmin(admin.ModelAdmin):
2     # ...
3     list_display = ('question__text', 'pub_date', 'was_published_recently')

```

## 6.3 Customize the admin look and feel

Open your setting file (mysite/settings.py) and add a **DIRS** option:

```

1 TEMPLATES = [
2     {
3         'BACKEND': 'django.template.backends.django.DjangoTemplates',
4         'DIRS': [BASE_DIR / 'templates'],
5         'APP_DIRS': True,
6         'OPTIONS': {
7             'context_processors': [
8                 'django.template.context_processors.debug',
9                 'django.template.context_processors.request',
10                'django.contrib.auth.context_processors.auth',
11                'django.contrib.messages.context_processors.messages',
12            ],

```

```
13     },  
14     },  
15 ]
```

Copy the default setting file `django/contrib/admin/templates/admin/base_site.html` into the new created directory `templates/admin`. Edit the file:

```
1 {% block branding %}  
2 <h1 id="site-name"><a href="{% _url_ 'admin:index' _%}">Polls Administration</a></h1>  
3 {% endblock %}
```





## Chapter 7

# How to write reusable apps

### 7.1 Your project and your reusable app

The project structure is shown in Figure 7.1

### 7.2 Packaging your app

Python packaging refers to preparing your app in a specific format that can be easily installed and used. For a small app like polls, this process isn't too difficult.

1. Create a parent directory for **polls**, outside of your Django project. Call this directory **django-polls**.
2. Move the **polls** directory into the django-polls directory.
3. Create a file **django-polls/README.rst** with the following contents:

```
=====
Polls
=====

Polls is a Django app to conduct Web-based polls. For each question,
visitors can choose between a fixed number of answers.

Detailed documentation is in the "docs" directory.

Quick start
-----

1. Add "polls" to your INSTALLED_APPS setting like this::

INSTALLED_APPS = [
    ...
    'polls',
]

2. Include the polls URLconf in your project urls.py like this::

path('polls/', include('polls.urls')),

3. Run ``python manage.py migrate`` to create the polls models.

4. Start the development server and visit http://127.0.0.1:8000/admin/
to create a poll (you'll need the Admin app enabled).

5. Visit http://127.0.0.1:8000/polls/ to participate in the poll.
```

4. Create a **django-polls/LICENSE** file.
5. Create **setup.cfg** and **setup.py** files which detail how to build and install the app.

## django-polls/setup.cfg

```
1  [metadata]
2  name = django-polls
3  version = 0.1
4  description = A Django app to conduct Web-based polls.
5  long_description = file: README.rst
6  url = https://www.example.com/
7  author = Your Name
8  author_email = yourname@example.com
9  license = BSD-3-Clause # Example license
10 classifiers =
11 Environment :: Web Environment
12 Framework :: Django
13 Framework :: Django :: X.Y # Replace "X.Y" as appropriate
14 Intended Audience :: Developers
15 License :: OSI Approved :: BSD License
16 Operating System :: OS Independent
17 Programming Language :: Python
18 Programming Language :: Python :: 3
19 Programming Language :: Python :: 3 :: Only
20 Programming Language :: Python :: 3.6
21 Programming Language :: Python :: 3.7
22 Programming Language :: Python :: 3.8
23 Topic :: Internet :: WWW/HTTP
24 Topic :: Internet :: WWW/HTTP :: Dynamic Content
25
26 [options]
27 include_package_data = true
28 packages = find:
```

## django-polls/setup.py

```
1  from setuptools import setup
2
3  setup()
```

6. Only Python modules and packages are included in the package by default. To include additional files, we'll need to create a **MANIFEST.in** file.

```
1 include LICENSE
2 include README.rst
3 recursive--include polls/static *
4 recursive--include polls/templates *
```

7. It's optional, but recommended, to include detailed documentation with your app. Create an empty directory **django-polls/docs** for future documentation. Add an additional line to **django-polls/MANIFEST.in**

```
1 recursive--include doc *
```

8. Try building your package with **python setup.py sdist** (run from inside **django-polls**). This creates a directory called **dist** and builds your new package, **django-polls-0.1.tar.gz**.

## 7.3 Using your own package

1. To install the package

```
1 python -m pip install --user django-polls/dist/django-polls-0.1.tar.gz
```

2. With luck, your Django project should now work correctly again. Run the server again to confirm this.

3. To uninstall the package, use pip:

```
1 python -m pip uninstall django-polls
```

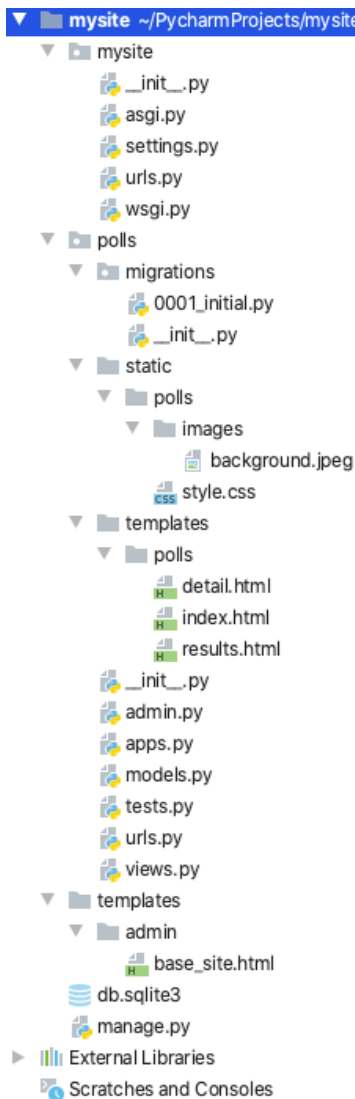


Figure 7.1: Project



## Part II

# BLOG PROJECT





## Chapter 8

# Overview

There are five applications:

- home
- pdf
- info
- technology
- plan

### 8.1 Install applications

settings.py:

```
1 INSTALLED_APPS = [  
2     'plan.apps.PlanConfig',  
3     'technology.apps.TechnologyConfig',  
4     'info.apps.InfoConfig',  
5     'home.apps.HomeConfig',  
6     'pdf.apps.PdfsConfig',  
7     'django.contrib.admin',  
8     'django.contrib.auth',  
9     'django.contrib.contenttypes',  
10    'django.contrib.sessions',  
11    'django.contrib.messages',  
12    'django.contrib.staticfiles',  
13 ]
```

## 8.2 Include urls

urls.py:

```
1 urlpatterns = [  
2     path('plan/', include('plan.urls')),  
3     path('technology/', include('technology.urls')),  
4     path('', include('home.urls')),  
5     path('info/', include('info.urls')),  
6     path('pdf/', include('pdf.urls')),  
7     path('admin/', admin.site.urls),  
8 ]
```

## Chapter 9

# Home

The goal of this application is to serve as the homepage.

The structure of home application is shown in Figure 9.1:

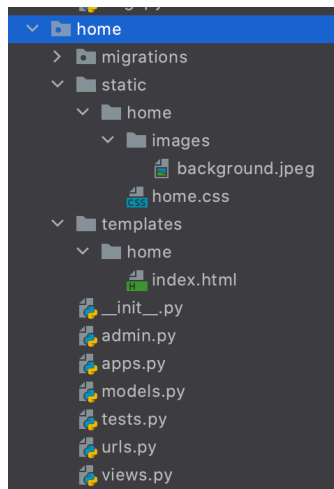


Figure 9.1: Home

## 9.1 index.html

```

1  {% load static %}
2  <link rel="stylesheet" type="text/css" href="{% static 'home/home.css' %}">
3
4
5  <html>
6  <head>
7      <meta name="author" content="Mike_Chyson">
8      <meta charset="UTF-8">
9      <meta name="description" content="Mike_Chyson's Blog">
10     <meta name="keywords" content="blog,python,ai,deep_learning">
11     <title>Mike Chyson</title>
12     <meta http-equiv="Cache-Control" content="no-cache,no-store,must-revalidate"/>
13     <meta http-equiv="Pragma" content="no-cache"/>
14     <meta http-equiv="Expires" content="0"/>
15 </head>
16
17 <body>
18 <h1 class="blog">Mike Chyson's Blog</h1>
19 <div class="navigator-container">
20     <div class="navigator"><a href="{% url 'pdf:index' %}"><h3>PDF</h3></a></div>
21     <div class="navigator"><a href="{% url 'plan:index' %}"><h3>Plan</h3></a></div>
22     <div class="navigator"><a href="{% url 'technology:index' %}"><h3>Technology</h3></a></div>
23     <div class="navigator"><a href="{% url 'home:index' %}"><h3>Placeholder</h3></a></div>
24     <div class="navigator"><a href="{% url 'info:index' %}"><h4>Author</h4></a></div>
25 </div>
26
27 {#<div class="navigator"><a href="{% url 'plan:index' %}">Plan</a></div>#}
28
29 <div class="content">
30     <div class="introduction">
31         <p>
32             This website for the following goals:
33         </p>
34         <ul>
35             <li>To review what I have learned</li>
36             <li>To help others with similar questions</li>
37             <li>To manage my plan</li>
38             <li>To visit the most new technologies conveniently</li>
39         </ul>
40     </div>
41     <div class="toolbar">
42         The time you visited this website: <br>
43         {{ now_time }}<br>
44         Asia/Shanghai
45     </div>
46 </div>
47
48 <footer>
49     <a href="https://chyson.net"><h3>My Old Website</h3></a>

```

```
50 </footer>
51
52 </body>
53 </html>
```



## Chapter 10

# PDF

### 10.1 Model

models.py:

```
1 from django.db import models
2
3
4 # Create your models here.
5
6 class Category(models.Model):
7     category_name = models.CharField('Category', max_length=200)
8
9     def __str__(self):
10         return self.category_name
11
12
13 class PDF(models.Model):
14     name = models.CharField(max_length=200)
15     author = models.CharField(max_length=200, null=True, blank=True)
16     keywords = models.CharField(max_length=200, null=True, blank=True)
17     date = models.DateTimeField(blank=True)
18     url = models.CharField(max_length=200)
19     category = models.ManyToManyField(to=Category)
20     introduction = models.CharField(max_length=1000, null=True, blank=True)
21
22     def __str__(self):
23         return self.name
24
25
26 class Comment(models.Model):
27     pdf = models.ForeignKey(PDF, on_delete=models.CASCADE)
28     content = models.CharField('Content', max_length=10000)
29     author = models.CharField('Author', max_length=200)
30     date = models.DateTimeField('Date', auto_now_add=True)
31     email = models.CharField('Email', max_length=200, null=True, blank=True)
32
```

```

33     def __str__(self):
34         return self.content

```

`null=True` is used to allow null value in database. `blank=True` is used to allow null in admin view.

`__str__` is used to show name instead of info table primary key. This is usefull in showing foreign key.

## 10.2 View

views.py:

```

1  from django.shortcuts import render, get_object_or_404
2  from django.http import HttpResponseRedirect, FileResponse, Http404
3  from .models import PDF, Comment
4  from django.template import loader
5  from django.views.generic import DetailView, ListView
6  from django.core.paginator import Paginator
7
8
9  # Create your views here.
10
11 def index(request):
12     pdf_list = PDF.objects.order_by('-name').reverse()
13     paginator = Paginator(pdf_list, 10)
14     page_number = request.GET.get('page')
15     page_obj = paginator.get_page(page_number)
16     context = {
17         'page_obj': page_obj
18     }
19     return render(request, 'pdf/index.html', context)
20
21
22 def detail(request, pk):
23     pdf = get_object_or_404(PDF, pk=pk)
24     comments = Comment.objects.filter(pdf=pk)[:5]
25     context = {
26         'pdf': pdf,
27         'comments': comments
28     }
29     return render(request, 'pdf/detail.html', context)

```

Paginator is easy to use class to provide page function. The corresponding `index.html` is:



```

1  {% if page_obj %}
2    <div class="pdf_list">
3      <table>
4        <tr>
5          <th>PDF NAME</th>
6          <th>AUTHOR</th>
7          <th>KEY WORDS</th>
8        </tr>
9        {% for pdf in page_obj %}
10         <tr>
11           <th><a href="{% url 'pdf:detail' _pdf.id _%}">{{ pdf.name }}</a></th>
12           <th>{{ pdf.author }}</th>
13           <th>{{ pdf.keywords }}</th>
14         </tr>
15         {% endfor %}
16       </table>
17     </div>
18
19     <div class="pagination">
20     <span class="step-links">
21       {% if page_obj.has_previous %}
22         <a href="?page=1">&laquo; first</a>
23         <a href="?page={{ _page_obj.previous_page_number }}">previous</a>
24       {% endif %}
25
26       <span class="current">
27         Page {{ page_obj.number }} of {{ page_obj.paginator.num_pages }}.
28       </span>
29
30       {% if page_obj.has_next %}
31         <a href="?page={{ _page_obj.next_page_number }}">next</a>
32         <a href="?page={{ _page_obj.paginator.num_pages }}">last &raquo;</a>
33       {% endif %}
34     </span>
35   </div>
36 {% else %}
37   <p>No pdfs are available.</p>
38 {% endif %}

```

## 10.3 Url

urls.py:

```

1  from django.urls import path
2
3  from . import views
4
5  app_name = 'pdf'
6  urlpatterns = [
7      path('', views.index, name='index'),

```

```
8     path('<int:pk>/', views.detail, name='detail')
9 ]
```

## 10.4 Install app in admin

admin.py:

```
1 from django.contrib import admin
2 from .models import PDF, Comment, Category
3
4
5 class CommentAdmin(admin.ModelAdmin):
6     list_display = ('content', 'author', 'date', 'pdf')
7     search_fields = ['content', 'author', 'pdf']
8     list_filter = ['pdf']
9
10
11 class PDFAdmin(admin.ModelAdmin):
12     list_display = ('name', 'author', 'date')
13     list_filter = ['date']
14     search_fields = ['name']
15
16
17 admin.site.register(Comment, CommentAdmin)
18 admin.site.register(PDF, PDFAdmin)
19 admin.site.register(Category)
```

## Chapter 11

# Favicon

This chapter is used to show an icon in my website tab.

### 11.1 Prepare an icon

The prepared icon is shown in Figure 11.1:



Figure 11.1: logo icon

## 11.2 Remove the background

You can remove the background in your icon on the website: <https://www.remove.bg/upload>. The icon with background removed is shown in Figure 11.2



Figure 11.2: icon with background removed

## 11.3 Generate the ico image

Generate the corresponding ico image with the image in Figure 11.2.

## 11.4 Add icon in html

Add the following code into your html's head.

```
1 <link rel="shortcut_ icon" type="image/x-icon" href="{%_static_'home/images/favicon.ico'_%}
    " media="screen"/>
```



## Chapter 12

# Web

### 12.1 Common Header and Footer

In developing my blog, there is a need to write common headers and footer for all the index pages. At first, I copy the common header and footer to every index page, because there are only 5 index pages in my blog. But soon I find the weakness this method. If I change the header or footer, I need to copy them every again. It's time consuming and error prone.

Here is another method I take.

1. Extract the header and footer into separate file, say `header.html` and `footer.html`.
2. use the code `{% include header.html %}` to include the html file where you want to include the html episode.

Note: The `header.html` and the `footer.html` does not contain the all html attributes. It is just the episode of the index page.





## Chapter 13

# Form

pip install django-cripsy-forms

Add to installed app:

```
1 INSTALLED_APPS = [  
2     'django.contrib.admin',  
3     'django.contrib.auth',  
4     'django.contrib.contenttypes',  
5     'django.contrib.sessions',  
6     'django.contrib.messages',  
7     'django.contrib.staticfiles',  
8     'home.apps.HomeConfig',  
9     'books.apps.BooksConfig',  
10    'articles.apps.ArticlesConfig',  
11    'od.apps.OdConfig',  
12    'crispy_forms'  
13 ]  
14  
15 CRISPY_TEMPLATE_PACK = 'bootstrap4'
```



## Chapter 14

# Upload Image

### 14.1 HTML

Remember to include “`enctype=’multipart/form-data’`” properly.



## Chapter 15

# Translation

The goal of translation is to provide several language for end users.

The process is:

1. Mark the content you want to translation.
2. Create language files.
3. Alter the messages files and compile.

About how to mark the content to translate, refer <https://docs.djangoproject.com/en/4.0/topics/i18n/translation/>.

### 15.1 Enable Translation

Alter the settings.py in project root directory (the directory containing the manage.py file).

```
1 LANGUAGE_CODE = 'en-us'
2
3 TIME_ZONE = 'UTC'
4
5 USE_I18N = True
6
7 USE_TZ = True
8
```

```

9 LOCALE_PATHS = [os.path.join(BASE_DIR, 'locale')]
10
11 LANGUAGES = [
12     ('en', 'English'),
13     ('fr', 'Français'),
14 ]

```

## 15.2 Mark

```

1  {% load i18n %}
2  {% load static %}
3  <link rel="stylesheet" type="text/css" href="{% _static_ 'home/pagination.css' _%}">
4  <div class="center">
5
6      <div class="pagination">
7      <span class="step-links">
8          {% if page_obj.has_previous %}
9              <a href="?page=1">&laquo; {% translate "first" %}</a>
10             <a href="?page={{ _page_obj.previous_page_number_ }}">{% translate "previous" %}
11                 </a>
12             {% endif %}
13
14             {% for i in page_list %}
15                 {% if i == page_obj.number %}
16                     <a class="active" href="?page={{ _i_ }}">{{ i }}</a>
17                 {% else %}
18                     <a href="?page={{ _i_ }}">{{ i }}</a>
19                 {% endif %}
20             {% endfor %}
21
22             {% if page_obj.has_next %}
23                 <a href="?page={{ _page_obj.next_page_number_ }}">{% translate "next" %}</a>
24                 <a href="?page={{ _page_obj.paginator.num_pages_ }}">{% translate "last" %} &
25                     raquo;</a>
26             {% endif %}
27
28             <a class="active"> {{ page_obj.number }}/{{ page_obj.paginator.num_pages }}</a>
29
30         </span>
31     </div>

```

## 15.3 URL patterns

Enable LocalMiddleware in setting.py (project root directory):

```
1 MIDDLEWARE = [  
2     'django.middleware.security.SecurityMiddleware',  
3     'django.contrib.sessions.middleware.SessionMiddleware',  
4     'django.middleware.common.CommonMiddleware',  
5     'django.middleware.csrf.CsrfViewMiddleware',  
6     'django.contrib.auth.middleware.AuthenticationMiddleware',  
7     'django.contrib.messages.middleware.MessageMiddleware',  
8     'django.middleware.clickjacking.XFrameOptionsMiddleware',  
9     'django.middleware.locale.LocaleMiddleware'  
10 ]
```

Edit the `urls.py` file:

```
1  
2  
3 urlpatterns = [  
4     path('i18n/', include('django.conf.urls.i18n')),  
5     path('admin/', admin.site.urls),  
6     path('', include('home.urls')),  
7     path('books/', include('books.urls')),  
8     path('articles/', include('articles.urls')),  
9     path('od/', include('od.urls'))  
10 ]  
11  
12 urlpatterns += i18n_patterns(*urlpatterns)
```

## 15.4 Create language files

First, create a locale directory in the project root directory (the directory containing the `manage.py` file)

```
1 mkdir locale
```

Second, run the command to create message files in the project root directory.

```
1 django-admin makemessages -l fr
```

`fr` stands for French.

## 15.5 Compile message files

After you create your message file – and each time you make changes to it – you’ll need to compile it into a more efficient form, for use by gettext. Do this with the `django-admin compilemessages` utility.

```
1 django-admin compilemessages
```

## 15.6 Switch language on webpage

```
1
2 {% get_current_language as LANGUAGE_CODE %}
3 {% get_available_languages as LANGUAGES %}
4 {% get_language_info_list for LANGUAGES as languages %}
5
6
7
8 <form action="{%_url_'set_language'_|%}" method="post">
9   {% csrf_token %}
10  <select name="language">
11    {% for language in languages %}
12      <option value="{{_language.code_|%}}"{% if language.code ==
13        LANGUAGE_CODE %} selected{% endif %}>
14        {{ language.name_local }} ({{ language.code }})
15      </option>
16    {% endfor %}
17  </select>
18  <input type="submit" value="{% translate "Go" %}">
  </form>
```

## 15.7 Model translation

doc: <https://django-modeltranslation.readthedocs.io/en/latest/index.html>

The `modeltranslation` application is used to translate dynamic content of existing Django models to an arbitrary number of languages without having to change the original model classes. It uses



a registration approach (comparable to Django’s admin app) to be able to add translations to existing or new projects and is fully integrated into the Django admin backend.

### 15.7.1 Install

```
1 pip install django-modeltranslation
```

### 15.7.2 Setup

1. Add modeltranslation to the `INSTALLED_APPS` variable of your project’s `settings.py`.

```
1 INSTALLED_APPS = [  
2     'modeltranslation',  
3     'django.contrib.admin',  
4     'django.contrib.auth',  
5     'django.contrib.contenttypes',  
6     'django.contrib.sessions',  
7     'django.contrib.messages',  
8     'django.contrib.staticfiles',  
9     'home.apps.HomeConfig',  
10    'books.apps.BooksConfig',  
11    'articles.apps.ArticlesConfig',  
12    'od.apps.OdConfig',  
13 ]
```

Make sure the “modeltranslation” is before the “django.contrib.admin”.

2. Set `USE_I18N = True` in `settings.py`.

3. Set `LANGUAGES` in `setting.py`. The first language is treated as the default language

```
1 gettext = lambda s: s  
2 LANGUAGES = [  
3     ('en', gettext('English')),  
4     ('fr', gettext('French')),  
5 ]
```

The gettext lambda function is not a feature of `modeltranslation`, but rather required for Django to be able to (statically) translate the verbose names of the languages using the standard `i18n` solution.

4. Create a `translation.py` in your app directory and register `TranslationOptions` for every model you want to translate.
5. Sync the database using “`python manage.py makemigrations`” and “`python manage.py migrate`”.

### 15.7.3 Registering models for translation

Registering models and their fields for translation requires the following steps:

1. Create a “`translation.py`” in your app directory.
2. Create a translation option class for every model to translate.
3. Register the model and the translation option class at “`modeltranslation.translator.translator`”.

```

1 (base) li@Mingmings-MacBook-Pro mysite % tree articles
2 articles
3   __init__.py
4   __pycache__
5   __init__.cpython-38.pyc
6   admin.cpython-38.pyc
7   apps.cpython-38.pyc
8   models.cpython-38.pyc
9   urls.cpython-38.pyc
10  views.cpython-38.pyc
11 admin.py
12 apps.py
13 migrations
14   0001_initial.py
15   0002_remove_article_url_article_article_and_more.py
16   0003_rename_article_article_html.py
17   __init__.py
18   __pycache__
19   0001_initial.cpython-38.pyc

```

```

20 0002_remove_article_url_article_article_and_more.cpython-38.pyc
21 0003_rename_article_article_html.cpython-38.pyc
22 __init__.cpython-38.pyc
23 models.py
24 static
25     articles
26     index.css
27 templates
28     articles
29     index.html
30 tests.py
31 translation.py
32 urls.py
33 views.py
34
35 7 directories, 24 files

```

In “translation.py”:

```

1 from modeltranslation.translator import register, TranslationOptions
2 from .models import Article
3
4
5 @register(Article)
6 class ArticleTranslationOptions(TranslationOptions):
7     fields = ('name', 'author', 'keywords', 'date', 'introduction')

```

Notice: If you have only one field to be translated, write as following:

```

1 @register(Type)
2 class TypeTranslationOptions(TranslationOptions):
3     fields = ('title',) # Notice here

```

## 15.7.4 Add translation to administration

In you app’s admin.py file:

```

1 from .models import Article
2 from modeltranslation.admin import TranslationAdmin
3
4
5 # Register your models here.
6 class ArticleAdmin(admin.ModelAdmin):
7     list_display = ('name', 'keywords', 'date', 'introduction')
8     list_filter = ['date']
9     search_fields = ['name', 'keywords', 'introduction']
10

```

```
11
12 class MyTranslatedArticleAdmin(ArticleAdmin, TranslationAdmin):
13     pass
14
15
16 admin.site.register(Article, MyTranslatedArticleAdmin)
```

### 15.7.5 Manage commands

If you add translation to an existed project, run the command:

```
1
2 python manage.py update_translation_fields
```

You should run this command after adding a new language to your settings.LANGUAGES or a new field to the TranslationOptions of a registered model.

```
1 python manage.py sync_translation_fields
```

**Part III**

**PRODUCT**



## Chapter 16

# Deploy Django project with Apache

You can run Django project separately and it works. Then why did you deploy Django project to Apache or Nginx? Because Django is intended only for use while developing. It is in the business of making Web frameworks, not Web servers. Deploying Django with Apache and **mod\_wsgi**<sup>1</sup> is a tried and tested way to get Django into production.

## 16.1 Apache

### 16.1.1 Install Apache httpd

The operating system is CentOS 8.

1 

```
dnf install httpd
```

### 16.1.2 Start httpd

---

<sup>1</sup>wsgi: web server gateway interface

```
1 systemctl start httpd
```

### 16.1.3 Stop httpd

```
1 systemctl stop httpd
```

### 16.1.4 Enable httpd on operationg system start

```
1 systemctl enable httpd
```

## 16.2 mod\_wsgi

The `mod_wsgi` package implements a simple to use Apache module which can host any Python web application which supports the Python WSGI specification.

To install `mod_wsgi` in CentOS 8:

```
1 dnf search mod_wsgi
2 dnf install python3-mod_wsgi
```

## 16.3 Permission

Give apache the right to read, write and execute the files in your django project

```
1 sudo setfacl -m u:ec2-user:rwX /var
2 sudo setfacl -m u:ec2-user:rwX /var/www
```

Give apache the right to read, write and execute the files in your django project



```
1 setfacl -R -m u:apache:rwX /var/www/mysite
```

Note: Sometime you need to give apache permission to you home directory.

Add execute perssion to `wsgi.py` file:

```
1 chmod +x mysite/mysite/wsgi.py
```

## 16.4 Configure Apache

Create a new file `/etc/httpd/conf.d/mingmingli.net.conf`:

```
1
2 <VirtualHost *:80>
3     DocumentRoot "/var/www/html"
4     ServerName mingmingli.net
5     ServerAlias www.mingmingli.net
6
7
8 </VirtualHost>
9
10 # you can visit the static file system
11 Alias /static /var/www/mysite/static
12 <Directory /var/www/mysite/static>
13     Require all granted # permission
14 </Directory>
15
16 Alias /media /var/www/mysite/media
17 <Directory /var/www/mysite/media>
18     Require all granted # permission
19 </Directory>
20
21 # permission to access wsgi.py file
22 <Directory /var/www/mysite/mysite>
23     <Files wsgi.py>
24         Require all granted
25     </Files>
26 </Directory>
27
28
29 WSGIDaemonProcess mingmingli.net python-path=/var/www/mysite:/home/ec2-user/
30     anaconda3/lib/python3.9/site-packages
31 WSGIProcessGroup mingmingli.net
32 WSGIScriptAlias / /var/www/mysite/mysite/wsgi.py
```

Note: You should your apache permission to access the packages in your home.

```
1  chmod +x /home/ec2-user
```

Don't use setfacl command to give rwx permission to /home/ec2-user. If you do that, the website works but you cannot login ec2 with ssh anymore with the error:

```
1  ec2-user@ec2-3-129-43-26.us-east-2.compute.amazonaws.com: Permission denied (
    publickey,gssapi-keyex,gssapi-with-mic).
```

Otherwise, you may get a error with

```
1  from django.core.wsgi import get_wsgi_application
2  ModuleNotFoundError: No module named 'django'
```

Change /etc/httpd/conf/httpd.conf:

```
1  <Directory />
2    AllowOverride none
3    # Require all denied
4    Require all granted
5  </Directory>
```

## 16.5 Collect static files

In order to let django can find the static files, add the following configuration into `blog/setting.py`:

```
1  STATIC_ROOT = os.path.join(BASE_DIR, "static")
```

Then run the following command:

```
1  python manage.py collectstatic
```

This command collects all the installed application static files into “static” directory in blog.

## Chapter 17

# SSL certification

I use aliyun's certification service.

### 17.1 Generate SSL certificate

1. Login your aliyun account.
2. In Products and Services page, search SSL.
3. Select SSL Certificates.
4. Purchase Certificate. (See Figure 17.1)
5. Purchase the free certificate. (See Figure 17.2)

Another choice is visit the website <https://letsencrypt.org/> to generate the certificate.

### 17.2 Download your SSL certificate

Download your SSL certificate as shown in Figure 17.3 and 17.4.

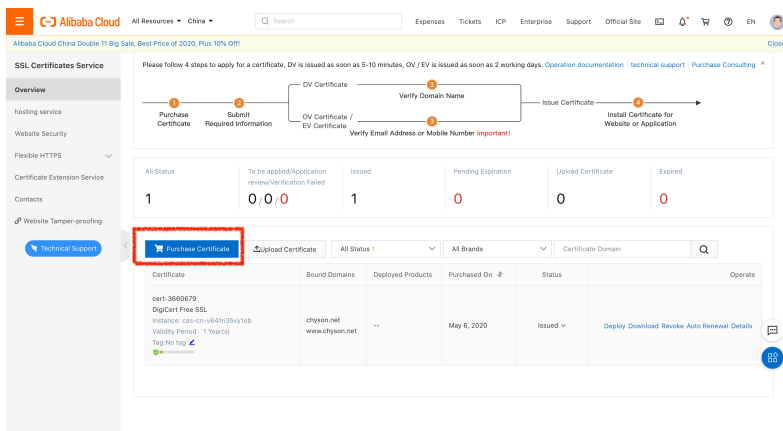


Figure 17.1: Purchase Certificate

## 17.3 Install SSL module

```
1 dnf install mod_ssl
```

## 17.4 Configure SSL certificate in Apache

Alter the configuration file `/etc/httpd/conf/httpd.conf`:

```
1 LoadModule ssl_module modules/mod_ssl.so
```

Create a directory `/etc/httpd/cert` and put all you certificates in it.

```
/etc/httpd/cert/chyson.net_public.crt
```

```
/etc/httpd/cert/chyson.net.key
```

Purchase Certificate

Go to Buy Page

域名类型

通配符域名 (推荐)

单个域名

保护1个主域名或1个子域名。如[www.example.com](#)、[example.com](#)、[ssl.example.com](#)，如需保护同根下的多个子域名，建议选购通配符证书。  
支持公网IP绑定，仅GlobalSign SSL证书支持。

证书类型

OV企业级SSL (推荐)

DV域名级SSL

EV增强级SSL

DV SSL是企业/个人为纯信息类网站获得最基础的信任保证。拥有它才意味着您的网站所有权已经过严格审查。  
无人工审核，分钟级自动签发。  
如果您的域名含有.edu、.gov、.org、.jp (国家缩写)、.pay、.bank、.live、.nuclear等特殊词，签发机构需要人工严格验证您的身份，为避免签发失败，建议选购vTruSign产品证书。

域名个数

-

1

+

个

如需一张证书内同时绑定多个域名，请在此选择证书内需要绑定的域名个数 (目前仅OV和EV证书支持，DV证书后续将支持)  
一张证书绑定多个域名，更易管理到期时间及环境部署，大大提高运维效率。  
提示：注意：选择多个域名下单时，只能赠送一个主域名。

证书等级

普通版

免费版

建议个人或企业测试所用，非证书申请/签发流程造成的技术/售后问题仅支持文档解决  
不支持公网IP绑定，如需IP证书，请选购GlobalSign OV单域名证书  
每个客户仅支持签发20张/年DV单域名证书，获取更多额度需购买证书扩展服务

Total Configuration Cost

¥0.00

Buy Now

Figure 17.2: Purchase Free Certificate

Certificate	Bound Domains	Deployed Products	Purchased On	Status	Operate
cert-3680679 DigICert Free SSL Instance: cas-cn-v641n35vy1ob Validity Period: 1 Year(s) Tag No tag	chyson.net www.chyson.net	--	May 6, 2020	Issued	<a href="#">Deploy</a> <a href="#">Download</a> <a href="#">Revoke</a> <a href="#">Auto Renewal</a> <a href="#">Details</a>

Figure 17.3: Download ssl

```
/etc/httpd/cert/chyson.net_chain.crt

Alter the file /etc/httpd/conf.d/ssl.conf:
```

证书下载×

请根据您的服务器类型选择证书下载：

服务器类型	操作
Tomcat	<a href="#">帮助</a>   <a href="#">下载</a>
Apache	<a href="#">帮助</a>   <a href="#">下载</a>
Nginx	<a href="#">帮助</a>   <a href="#">下载</a>
IIS	<a href="#">帮助</a>   <a href="#">下载</a>
JKS	<a href="#">帮助</a>   <a href="#">下载</a>
其他	<a href="#">下载</a>
根证书下载	<a href="#">下载</a>

Figure 17.4: Download ssl

```
1 SSLCertificateFile /etc/httpd/cert/chyson.net_public.crt
2 SSLCertificateKeyFile /etc/httpd/cert/chyson.net.key
3 SSLCertificateChainFile /etc/httpd/cert/chyson.net_chain.crt
```

After the configuration, restart the httpd service.

```
1 systemctl restart httpd
```

### 17.5 Redict http to https

Alter /etc/httpd/conf/httpd.conf:

```

1 <Directory "/var/www/html">
2 #
3 # Possible values for the Options directive are "None", "All",
4 # or any combination of:
5 #   Indexes Includes FollowSymLinks SymLinksifOwnerMatch EzeCGI MultiViews
6 #
7 # Note that "MultiViews" must be named *explicitly* --- "Options All"
8 # doesn't give it to you.
9 #
10 # The Options directive is both complicated and important. Please see
11 # http://httpd.apache.org/docs/2.4/mod/core.html#options
12 # for more information.
13 #
14 Options Indexes FollowSymLinks
15
16 #
17 # AllowOverride controls what directives may be placed in .htaccess files.
18 # It can be "All", "None", or any combination of the keywords:
19 #   Options FileInfo AuthConfig Limit
20 #
21 AllowOverride None
22
23 #
24 # Controls who can get stuff from this server.
25 #
26 Require all granted
27 </Directory>

```

to

```

1 AllowOverride All

```

Then restart the httpd service.

Create .htaccess file in /var/www/html:

```

RewriteEngine On
RewriteCond %{HTTPS} !=on
RewriteRule ^/?(.*) https://chyson.net/$1 [R,L]

```

## 17.6 Cerbot

Environment: EC2 CentOS 8, Apache

Install epel:

```
1 sudo dnf install https://dl.fedoraproject.org/pub/epel/epel-release-latest-8.noarch.rpm
```

Install snapd:

```
1 sudo yum install snapd
2 sudo systemctl enable --now snapd.socket
3 sudo ln -s /var/lib/snapd/snap /snap
```

Install Certbot

```
1 sudo snap install --classic certbot
2 sudo ln -s /snap/bin/certbot /usr/bin/certbot
```

Run Cerbot

```
1 sudo certbot --apache
```

If you see the problem:

```
1 Saving debug log to /var/log/letsencrypt/letsencrypt.log
2 Error while running apachectl configtest.
3
4 AH00526: Syntax error on line 85 of /etc/httpd/conf.d/ssl.conf:
5 SSLCertificateFile: file '/etc/pki/tls/certs/localhost.crt' does not exist or is empty
6
7 The apache plugin is not working; there may be problems with your existing configuration.
8 The error was: MisconfigurationError("Error_while_running_apachectl_configtest.\n\nAH00526:
   Syntax_error_on_line_85_of_/etc/httpd/conf.d/ssl.conf:\nSSLCertificateFile:file_/etc/pki
   /tls/certs/localhost.crt'_does_not_exist_or_is_empty\n")
```

Restart the httpd service and run the same command again.

If you see:

```
1 Saving debug log to /var/log/letsencrypt/letsencrypt.log
2 Deploying certificate
3 Could not install certificate
4 Could not reverse map the HTTPS VirtualHost to the original
5 Ask for help or search for solutions at https://community.letsencrypt.org. See the logfile /var/log
   /letsencrypt/letsencrypt.log or re-run Certbot with -v for more details.
```

Maybe the problem lies in the `mignmingli.net.conf` file. There are extra empty line in the configuration file when you copy configuration from other document.



## Chapter 18

# Virtual host

Sometimes, you want to run several website on one server with only one ip. In this situation, you can use name-based virtual host.

### 18.1 Virtual host

To make the configuration clear, I create a two virtual hosts configuration `mingmingli.conf` in `/etc/httpd/conf.d`.

