



UNIVERSITATEA TEHNICĂ
DIN CLUJ-NAPOCA

FACULTATEA DE AUTOMATICA ȘI CALCULATOARE

ADMINISTAREA SISTEMELOR DE OPERARE

Deploying Django and Docker

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Leucuta

Introducere

În acest proiect, va fi realizat un web-site minimal și se va simula lansarea acestuia în producție.

Site-ul va fi realizat folosind framework-ul Django, bazat pe Python.

Realizarea sa va cuprinde 3 etape și anume:

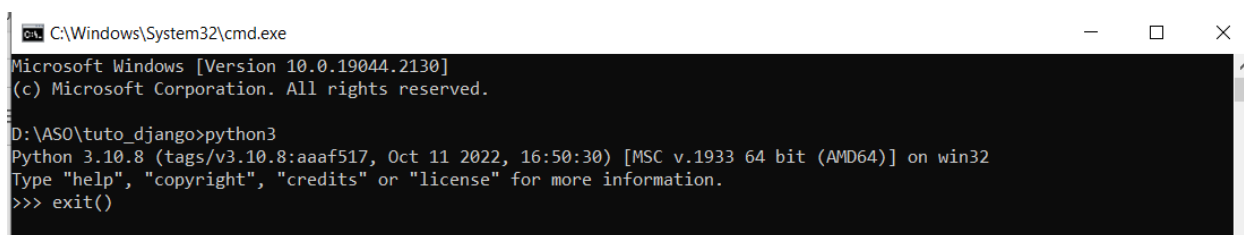
- Etapa 1: Instalare Python, Django și crearea unui site minimalist
- Etapa 2: Crearea unui chat minimalist
- Etapa 3: Presupunând că site-ul este funcțional, îl pregătim de lansarea în piață

Etapa I

În această etapă se vor instala resursele necesare în realizarea temei și se vor implementa cerințele minime, având astfel o bază a proiectului.

Pasi pentru crearea proiectului de baza:

1. Verificarea existenței **python3**. Dacă nu există, vom fi ghidați să îl instalăm.



```
C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19044.2130]
(c) Microsoft Corporation. All rights reserved.

D:\ASO\tuto_django>python3
Python 3.10.8 (tags/v3.10.8:aaaf517, Oct 11 2022, 16:50:30) [MSC v.1933 64 bit (AMD64)] on win32
Type "help", "copyright", "credits" or "license" for more information.
>>> exit()
```

2. Deschidem linia de comandă din locația unde vom dori să creăm proiectul

3. Cream un director numit `venv_django`, utilizand comanda **`python3 -m venv venv_django`**

```
C:\Windows\System32\cmd.exe
D:\ASO>cd tuto_django
D:\ASO\tuto_django>python3 -m venv venv_django
venv_django 24 oct. 2022 18:50
```

4. Activam virtual environment-ul creat. Se poate observa ca este activat atunci cand in fata prompt-ului obisnuit de CMD, avem intre paranteze numele al virtual environmentului.

```
D:\ASO\tuto_django>venv_django\Scripts\activate
(venv_django) D:\ASO\tuto_django>pip list
Package      Version
-----
pip          22.2.2
setuptools   63.2.0
[notice] A new release of pip available: 22.2.2 -> 22.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

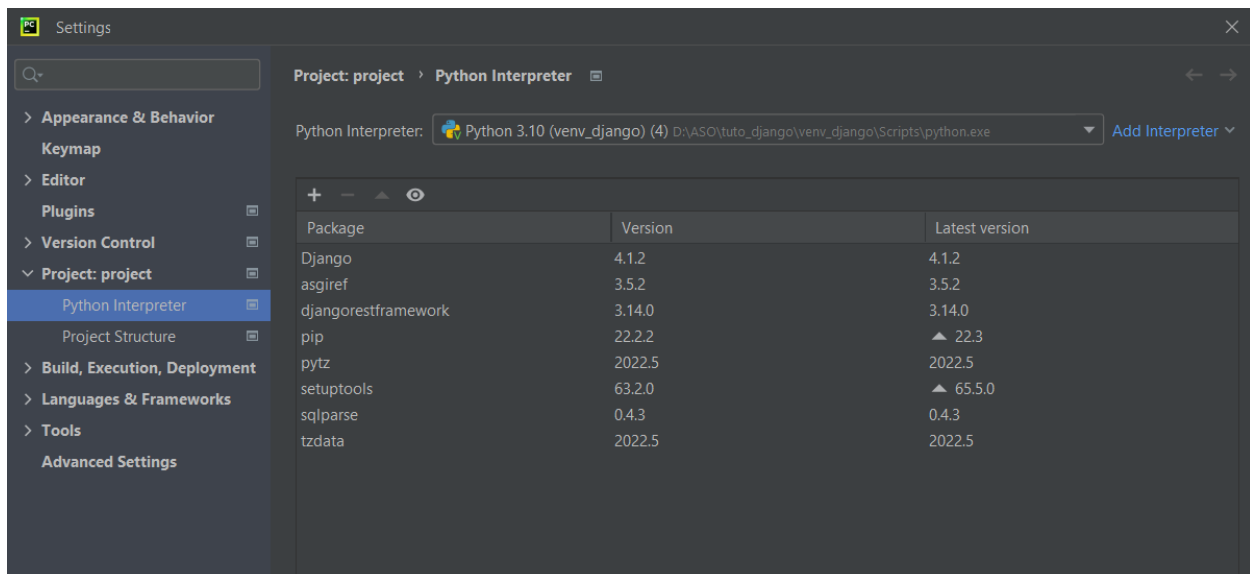
5. Instalam modulele Django si djangorestframework utilizand comanda **`pip`**

```
(venv_django) D:\ASO\tuto_django>cd venv_django
(venv_django) D:\ASO\tuto_django\venv_django>pip install django djangorestframework
Collecting django
  Using cached Django-4.1.2-py3-none-any.whl (8.1 MB)
Collecting djangorestframework
  Using cached djangorestframework-3.14.0-py3-none-any.whl (1.1 MB)
Collecting tzdata
  Using cached tzdata-2022.5-py2.py3-none-any.whl (336 kB)
Collecting asgiref<4,>=3.5.2
  Using cached asgiref-3.5.2-py3-none-any.whl (22 kB)
Collecting sqlparse>=0.2.2
  Using cached sqlparse-0.4.3-py3-none-any.whl (42 kB)
Collecting pytz
  Using cached pytz-2022.5-py2.py3-none-any.whl (500 kB)
Installing collected packages: pytz, tzdata, sqlparse, asgiref, django, djangorestframework
Successfully installed asgiref-3.5.2 django-4.1.2 djangorestframework-3.14.0 pytz-2022.5 sqlparse-0.4.3 tzdata-2022.5
[notice] A new release of pip available: 22.2.2 -> 22.3
[notice] To update, run: python.exe -m pip install --upgrade pip
```

6. Din directorul care contine directorul cu virtual environmental creat, initiem un proiect Django cu ajutorul comenzii **Django-admin startproject project**

```
(venv_django) D:\ASO\tuto_django\venv_django>cd ..  
  
(venv_django) D:\ASO\tuto_django>django-admin startproject project
```

7. Folosind mediul de dezvoltare **PyCharm**, deschidem directorul tuto_django/project. Configuram din setari interpretorul de python (mediul virtual creat mai devreme)



8. Invocam pornirea serverului utilizand comanda **python manage.py runserver** din terminalul PyCharm. Se va crea o aplicatie web Django, insa fara o baza de date.

```
PS D:\ASO\tuto_django\project> python manage.py runserver  
Watching for file changes with StatReloader  
Performing system checks...  
  
System check identified no issues (0 silenced).  
  
You have 18 unapplied migration(s). Your project may not work properly until you apply t  
he migrations for app(s): admin, auth, contenttypes, sessions.  
Run 'python manage.py migrate' to apply them.  
October 24, 2022 - 18:57:03  
Django version 3.2, using settings 'project.settings'  
Starting development server at http://127.0.0.1:8000/  
Quit the server with CTRL-BREAK.
```

9. Cream aplicatia scumboard prin comanda **python manage.py startapp scumboard**.
Dupa ce s-a creat, in sectiunea **INSTALLED_APPS** din **setting.py** vom adauga si
'scumboard'.

```
PS D:\ASO\tuto_django\project> python.exe .\manage.py startapp scumboard
PS D:\ASO\tuto_django\project> python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...
```

Quick access	Name	Date modified	Type
Desktop	.idea	24 oct. 2022 19:02	File folder
Downloads	project	24 oct. 2022 18:58	File folder
	scumboard	24 oct. 2022 19:02	File folder

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

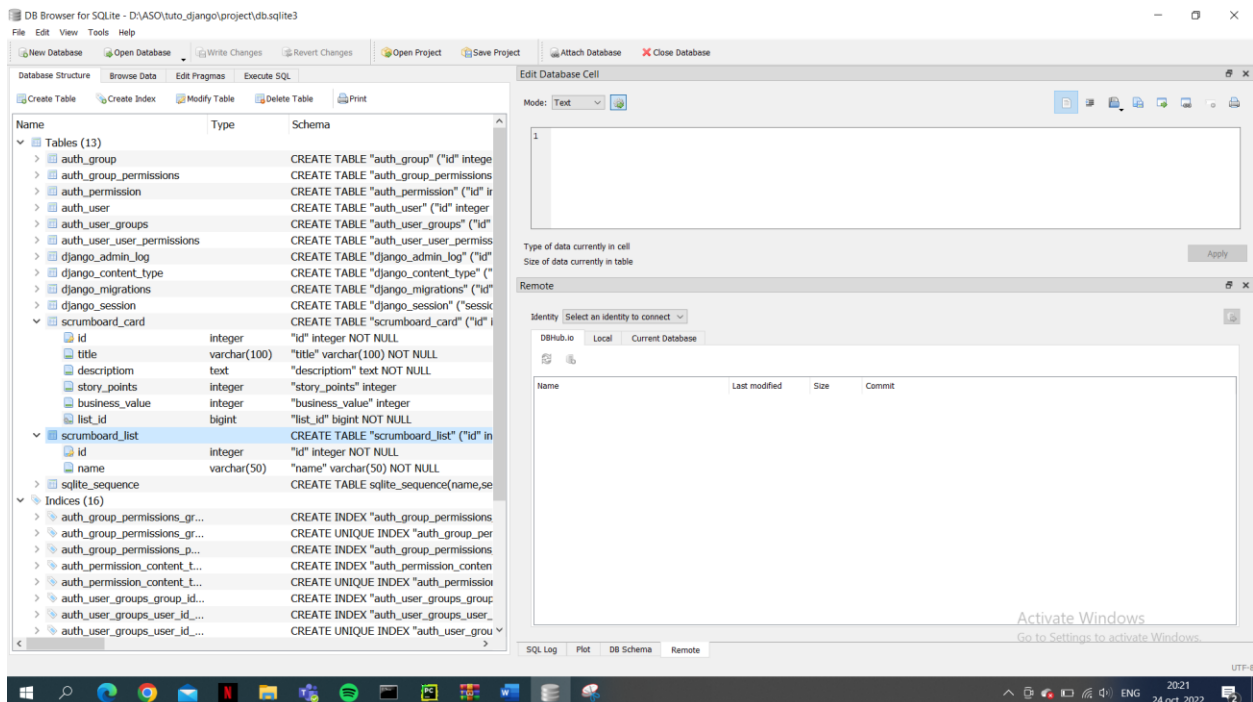
10. Definim modelele aplicatiei, **List** si **Card** in **models.py** din directorul **scumboard**.

```
settings.py x models.py x
1 from django.db import models
2
3 # Create your models here.
4 class List(models.Model):
5     name=models.CharField(max_length=50)
6
7 class Card(models.Model):
8     title = models.CharField(max_length=100)
9     description=models.TextField(blank=True)
10
11     # relation with foreign key below
12     # Each Card must belong to a list
13     list=models.ForeignKey(List, related_name="cards", on_delete=models.CASCADE)
14     story_points = models.IntegerField(null=True, blank=True)
15     business_value=models.IntegerField(null=True, blank=True)
```

11. Apelam comanda **python manage.py makemigrations**, urmata de **python manage.py migrate**. Makemigrations doar pregateste baza de date pentru manipulare, migrate o modifica efectiv.

```
You have 18 unapplied migration(s). Your project may not work properly until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.
Applying auth.0006_require_contenttypes_0002... OK
Applying auth.0007_alter_validators_add_error_messages... OK
Applying auth.0008_alter_user_username_max_length... OK
Applying auth.0009_alter_user_last_name_max_length... OK
Applying auth.0010_alter_group_name_max_length... OK
Applying auth.0011_update_proxy_permissions... OK
Applying auth.0012_alter_user_first_name_max_length... OK
Applying scrumboard.0001_initial... OK
Applying sessions.0001_initial... OK
PS D:\ASO\tuto_django\project>
```

12. Daca ne uitam in SQLite, vom putea vedea tabelele scrumboard_card si scrumboard_list unde vom putea vedea campurile definite in clasele List si Card din models.py



The screenshot shows the DB Browser for SQLite application. The main window displays the database structure for a project located at D:\ASO\tuto_django\project\db.sqlite3. The 'Tables (13)' section is expanded, showing the following tables and their columns:

- auth_group: id (integer), name (varchar(150) NOT NULL)
- auth_group_permissions: auth_group (integer), permission (integer)
- auth_permission: id (integer), content_type (integer), codename (varchar(255) NOT NULL)
- auth_user: id (integer), username (varchar(150) NOT NULL), password (varchar(128) NOT NULL), email (varchar(254) NOT NULL), is_staff (boolean), is_superuser (boolean)
- auth_user_groups: auth_user (integer), group (integer)
- auth_user_user_permissions: auth_user (integer), permission (integer)
- django_admin_log: id (integer), user (integer), action_time (datetime), action_object (integer), action_object_repr (varchar(255) NOT NULL), action_object_id (integer)
- django_content_type: id (integer), label (varchar(255) NOT NULL), model (varchar(255) NOT NULL)
- django_migrations: id (integer), app (varchar(255) NOT NULL), name (varchar(255) NOT NULL), applied (boolean)
- django_session: id (integer), session_data (text), expire_date (datetime)
- scrumboard_card: id (integer), title (varchar(100) NOT NULL), description (text), story_points (integer), business_value (integer), list_id (bigint NOT NULL)
- scrumboard_list: id (integer), name (varchar(50) NOT NULL)
- sqlite_sequence: name (varchar(255) NOT NULL), seq_id (integer), seq_value (integer)

The 'Indices (16)' section is also expanded, showing the following indices:

- auth_group_permissions_gr...: CREATE INDEX "auth_group_permissions_gr..." ON "auth_group_permissions" ("auth_group", "permission")
- auth_group_permissions_gr...: CREATE UNIQUE INDEX "auth_group_per..." ON "auth_group_permissions" ("auth_group", "permission")
- auth_group_permissions_p...: CREATE INDEX "auth_group_permissions_p..." ON "auth_group_permissions" ("permission")
- auth_permission_content_t...: CREATE INDEX "auth_permission_content_t..." ON "auth_permission" ("content_type", "codename")
- auth_permission_content_t...: CREATE UNIQUE INDEX "auth_permission..." ON "auth_permission" ("content_type", "codename")
- auth_user_groups_group_id...: CREATE INDEX "auth_user_groups_group_id..." ON "auth_user_groups" ("group")
- auth_user_groups_user_id...: CREATE INDEX "auth_user_groups_user_id..." ON "auth_user_groups" ("user")
- auth_user_groups_user_id...: CREATE UNIQUE INDEX "auth_user_grou..." ON "auth_user_groups" ("user", "group")

The 'Edit Database Cell' window is open on the right, showing the 'scrumboard_list' table structure. The 'Identity' section shows the 'Current Database' selected. The 'SQL Log' section at the bottom shows the SQL commands executed.