

ADNAN MENDERES UNIVERSITY

COMPUTER ENGINEERING

PROJECT REPORT

Lecture:

Cloud Computing and Virtualization

Subject:

Running a simple web interface on the cloud platform with use of web application framework (django etc.) on a cloud platform to perform simple word count job.

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1-) Distribution of Tasks

Coding : Atakan Üner-Onur Andıç

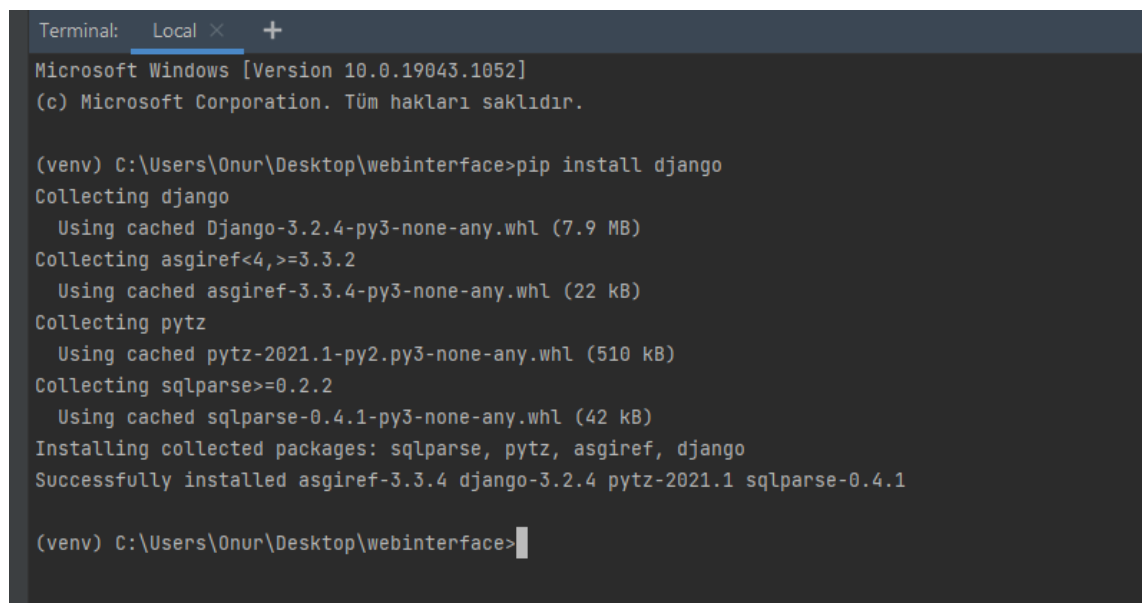
Report Preparation: Uygar Utku Öztürk

Presentation and Resource Research: Ersu Karpuz

2-) Downloading Django^[1]

To download django, the code in figure 1 must be written to the terminal.

-pip install django



```
Terminal: Local X +
Microsoft Windows [Version 10.0.19043.1052]
(c) Microsoft Corporation. Tüm hakları saklıdır.

(venv) C:\Users\Onur\Desktop\webinterface>pip install django
Collecting django
  Using cached Django-3.2.4-py3-none-any.whl (7.9 MB)
Collecting asgiref<4,>=3.3.2
  Using cached asgiref-3.3.4-py3-none-any.whl (22 kB)
Collecting pytz
  Using cached pytz-2021.1-py2.py3-none-any.whl (510 kB)
Collecting sqlparse>=0.2.2
  Using cached sqlparse-0.4.1-py3-none-any.whl (42 kB)
Installing collected packages: sqlparse, pytz, asgiref, django
Successfully installed asgiref-3.3.4 django-3.2.4 pytz-2021.1 sqlparse-0.4.1

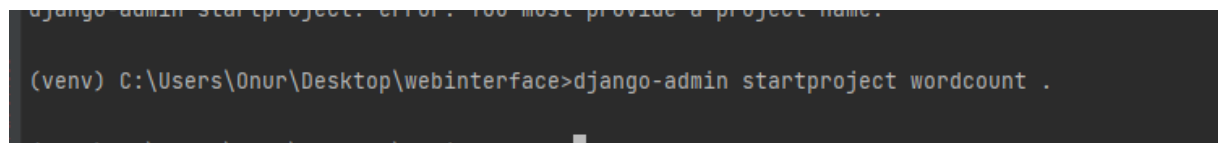
(venv) C:\Users\Onur\Desktop\webinterface>
```

(figure 1)

3-) Creating Django Project^[2]

To create a project in django, the command in figure 2 should be written to the terminal

-django-admin startproject wordcount .

A terminal window with a dark background. The top line shows a red error message: "django-admin startproject: error: too many arguments to provide a project name:". The bottom line shows a command being entered: "(venv) C:\Users\Onur\Desktop\webinterface>django-admin startproject wordcount .".

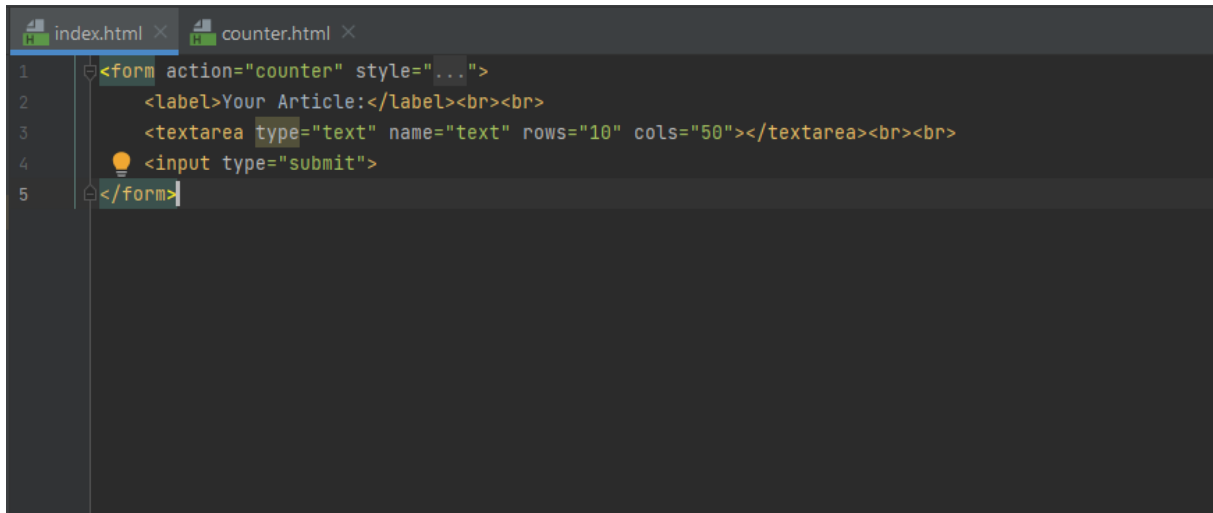
```
django-admin startproject: error: too many arguments to provide a project name.  
  
(venv) C:\Users\Onur\Desktop\webinterface>django-admin startproject wordcount .
```

(figure 2)

4-) Create Word Count Application[2]

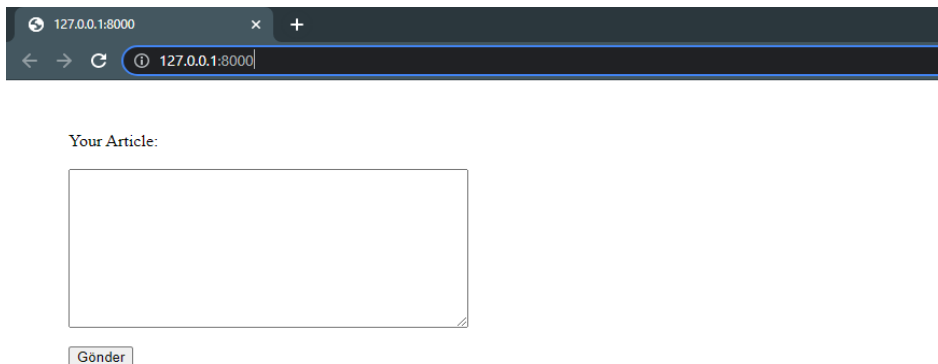
4.1 Creating Templates

After running Figure 3 (Index.html), the output is as in figure 4.



```
1 <form action="counter" style="...">
2   <label>Your Article:</label><br><br>
3   <textarea type="text" name="text" rows="10" cols="50"></textarea><br><br>
4   <input type="submit">
5 </form>
```

(figure 3)



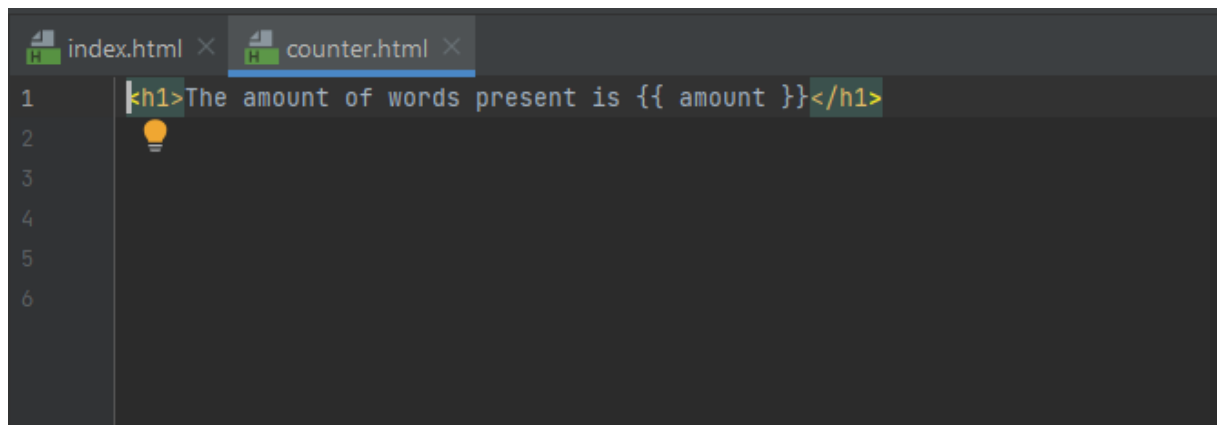
127.0.0.1:8000

Your Article:

Gonder

(figure 4)

After running figure 5 (counter.html), the output is as in figure 6.



The screenshot shows a code editor with two tabs: 'index.html' and 'counter.html'. The 'counter.html' tab is active, displaying the following HTML code:

```
1 <h1>The amount of words present is {{ amount }}</h1>
2
3
4
5
6
```

A lightbulb icon is visible below the first line of code, indicating a suggestion or error.

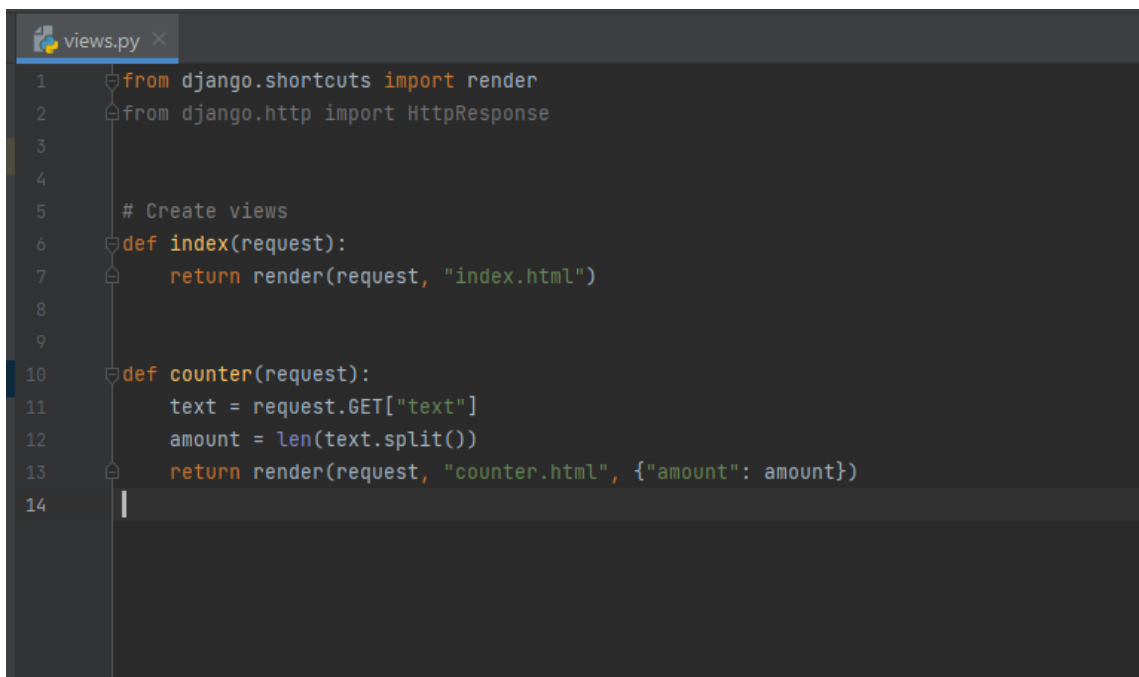
(figure 5)



(figure 6)

4.2 Creating views.py

Functions required for Django to get and post to html have been created. Word counting was performed in the counter function using the input entered on the index.html page. (figure 7)

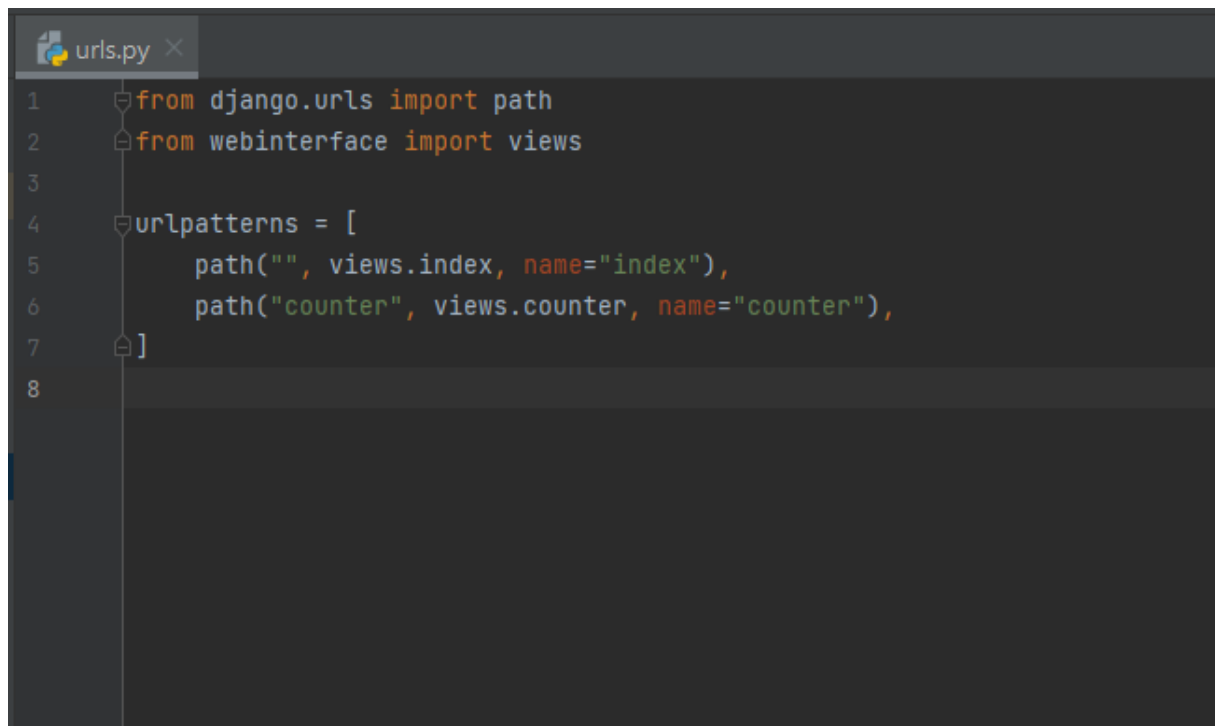


```
1 from django.shortcuts import render
2 from django.http import HttpResponse
3
4
5 # Create views
6 def index(request):
7     return render(request, "index.html")
8
9
10 def counter(request):
11     text = request.GET["text"]
12     amount = len(text.split())
13     return render(request, "counter.html", {"amount": amount})
14
```

(figure 7)

4.3 Creating urls.py

Url models created (figure 8)

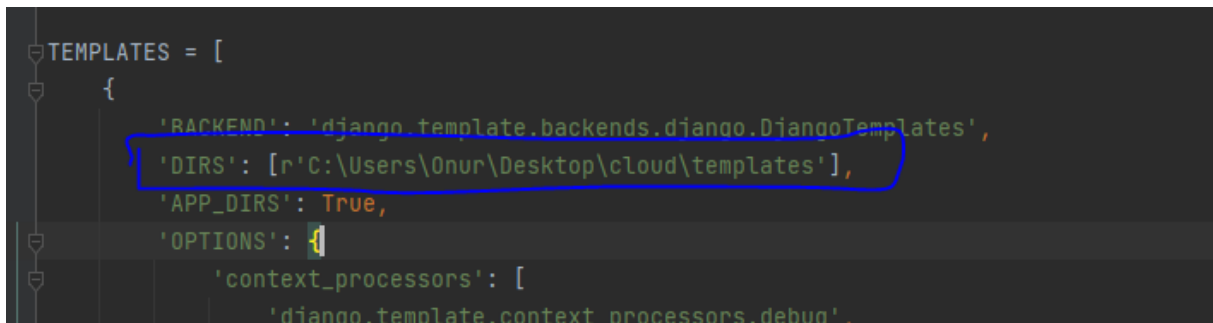
A screenshot of a code editor window titled 'urls.py'. The code is written in Python and defines URL patterns for a Django application. It imports the 'path' function from 'django.urls' and the 'views' module from 'webinterface'. A list named 'urlpatterns' is defined, containing two path entries: one for the root URL ('') pointing to 'views.index' with the name 'index', and another for the URL 'counter' pointing to 'views.counter' with the name 'counter'. The code is as follows:

```
1 from django.urls import path
2 from webinterface import views
3
4 urlpatterns = [
5     path("", views.index, name="index"),
6     path("counter", views.counter, name="counter"),
7 ]
8
```

(figure 8)

4.4 Edited Django's settings.py

Made django recognize html files using the blue marked location in figure 9



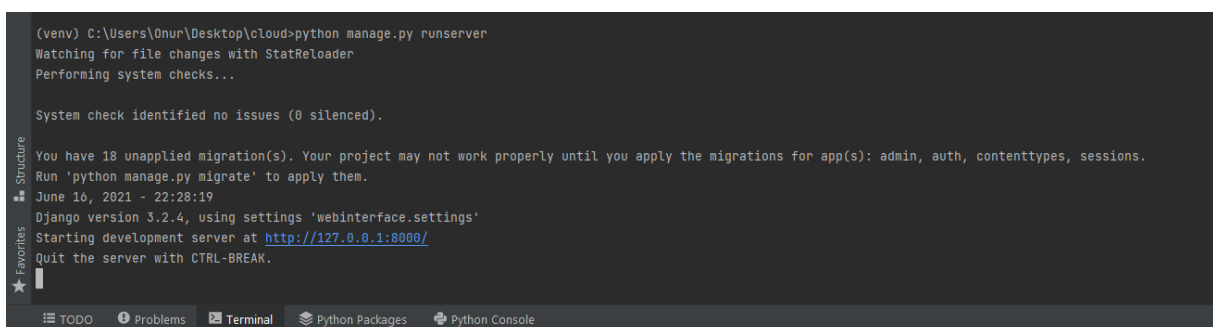
```
TEMPLATES = [
    {
        'BACKEND': 'django.template.backends.django.DjangoTemplates',
        'DIRS': [r'C:\Users\Onur\Desktop\cloud\templates'],
        'APP_DIRS': True,
        'OPTIONS': {
            'context_processors': [
                'django.template.context_processors.debug',
```

(figure 9)

4.5 Running Application

A temporary server connection has been created to run the project.

-python manage.py runserver



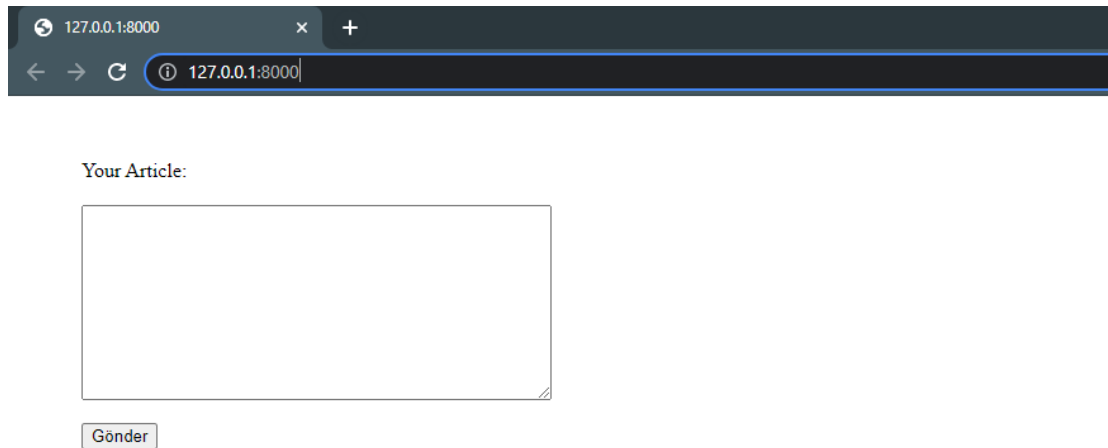
```
(venv) C:\Users\Onur\Desktop\cloud>python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).

You have 18 unapplied migration(s). Your project may not work properly until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.
June 16, 2021 - 22:28:19
Django version 3.2.4, using settings 'webinterface.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```

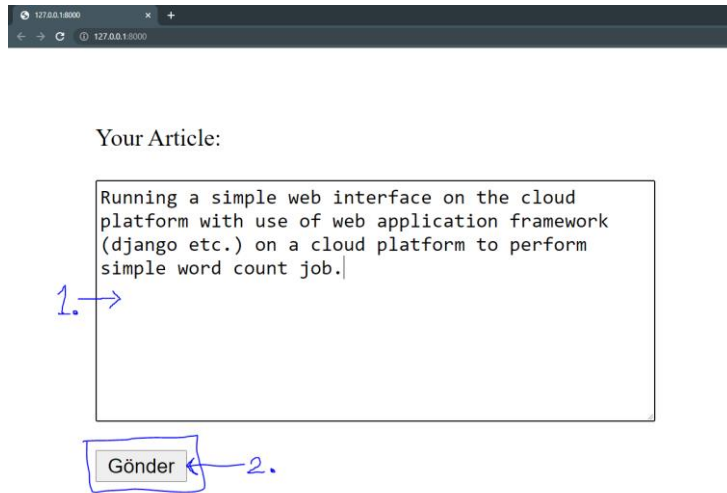
(figure 10)

Went to <http://127.0.0.1:8000/> from the browser (figure 4)



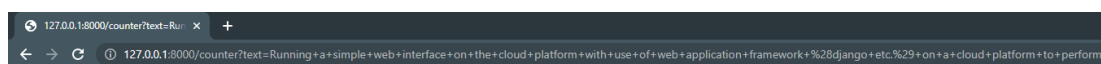
(figure 4)

The text to be learned the number of words is written in the field number 1 and the send button is pressed



(figure 11)

After following the steps in Figure 11, the result in Figure 12 is obtained.



The amount of words present is 27

(figure 12)

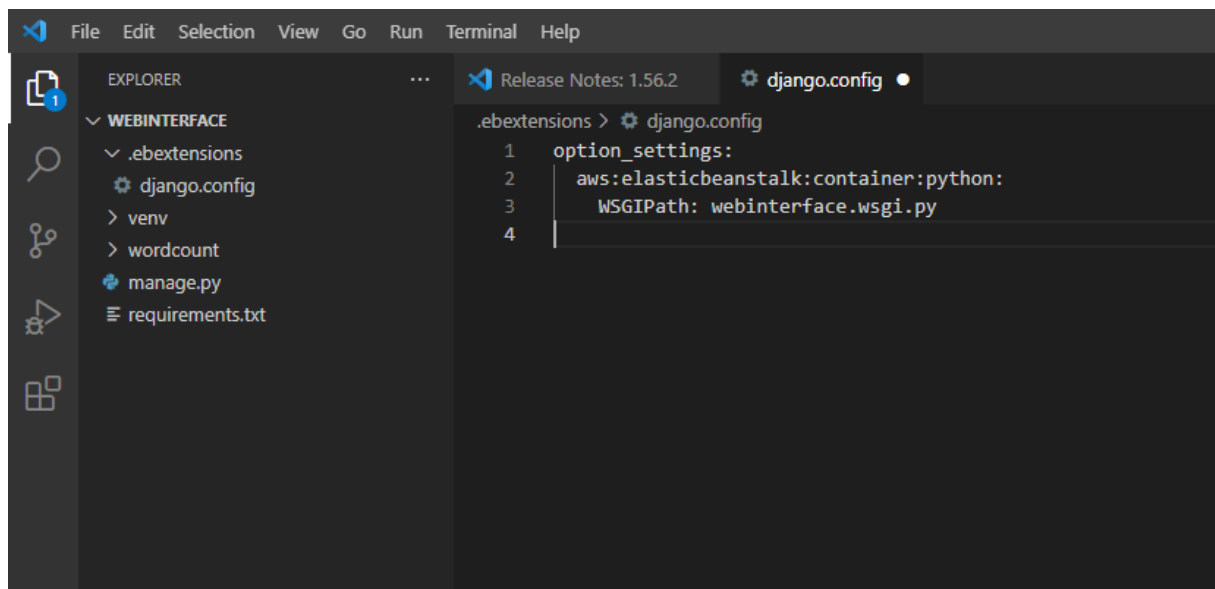
5-) Deploy Django Website to Amazon Web Services (Elastic Beanstalk) [3], [4]

5.1 Files that need to be uploaded to AWS Elastic Beanstalk Environment

We did the configurations required to use Elastic Beanstalk (figure 13-14) then we uploaded Project files to the environment using AWS ID and AWS Secret Key (figure 15-16)

```
(venv) C:\Users\Onur\Desktop\webinterface>pip freeze > requirements.txt  
(venv) C:\Users\Onur\Desktop\webinterface>mkdir .ebextensions
```

(figure 13)



(figure 14)

```
C:\Users\unera\Desktop\wordcount>eb init -p python-3.6 wordcount
You have not yet set up your credentials or your credentials are incorrect
You must provide your credentials.
(aws-access-id): AKIAYJ7JBW7LH85JBQMW
(aws-secret-key): mXf3rGuDok3/3qZvfTeljoK0NbTWxBJxHF4LmuhL
Application wordcount has been created.
```

(figure 15)

```
C:\Users\unera\Desktop\wordcount>eb create django-env
Creating application version archive "app-210618_011658".
Uploading: [#####] 100% Done...
Environment details for: django-env
  Application name: wordcount
  Region: us-west-2
  Deployed Version: app-210618_011658
  Environment ID: e-dewk27zpgt
  Platform: arn:aws:elasticbeanstalk:us-west-2::platform/Python 3.6 running on 64bit Amazon Linux/2.10.1
  Tier: WebServer-Standard-1.0
  CNAME: UNKNOWN
  Updated: 2021-06-17 22:18:18.187000+00:00
Printing Status:
2021-06-17 22:18:16 INFO createEnvironment is starting.
2021-06-17 22:18:18 INFO Using elasticbeanstalk-us-west-2-571182528470 as Amazon S3 storage bucket for environment data.
2021-06-17 22:19:04 INFO Created security group named: sg-0b00a997a046df67b
2021-06-17 22:19:19 INFO Created load balancer named: awseb-e-d-AWSEBLoa-1IOZ0HQNZO43R
2021-06-17 22:19:19 INFO Created security group named: awseb-e-dewk27zpgt-stack-AWSEBSecurityGroup-73H83UT6BT9M
2021-06-17 22:19:19 INFO Created Auto Scaling launch configuration named: awseb-e-dewk27zpgt-stack-AWSEBAutoScalingLaunchConfiguration-2D6UFCTOXZTY
-- Events -- (safe to Ctrl+C)
```

(figure 16)

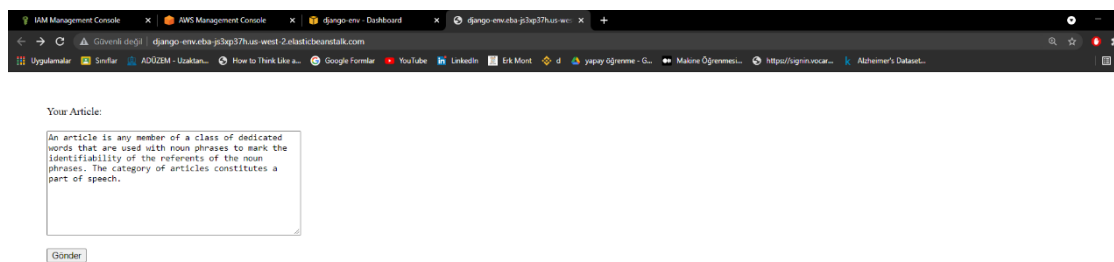
All environments Actions Create a new environment										
<input type="text" value="Filter results matching the display values"/> < 1 >										
Environment name	Health	Application name	Date created	Last modified	URL	Running versions	Platform	Platform state	Tier name	
django-env	OK	wordcount	2021-06-18 01:18:18 UTC+0300	2021-06-18 01:21:49 UTC+0300	django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com	app-210618_011658	Python 3.6 running on 64bit Amazon Linux	Supported	WebServer	

(figure 17)

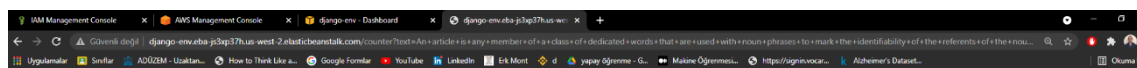
5.2 Running Project

<http://django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com/>

The screenshots of the running Project (figure 18-19)



(figure 18)

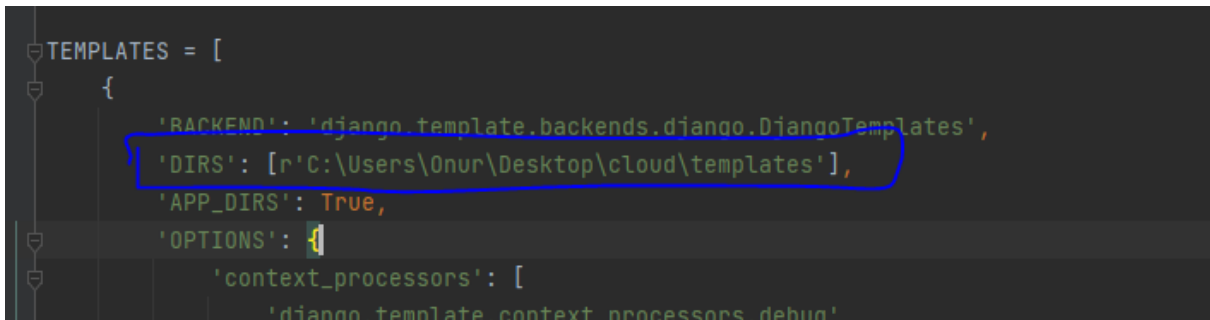


(figure 19)

6-) Errors and Solutions

Error 1 : Django was not detecting templates [5]

Solution 2 : The problem was solved by adding the blue marked command in figure 9

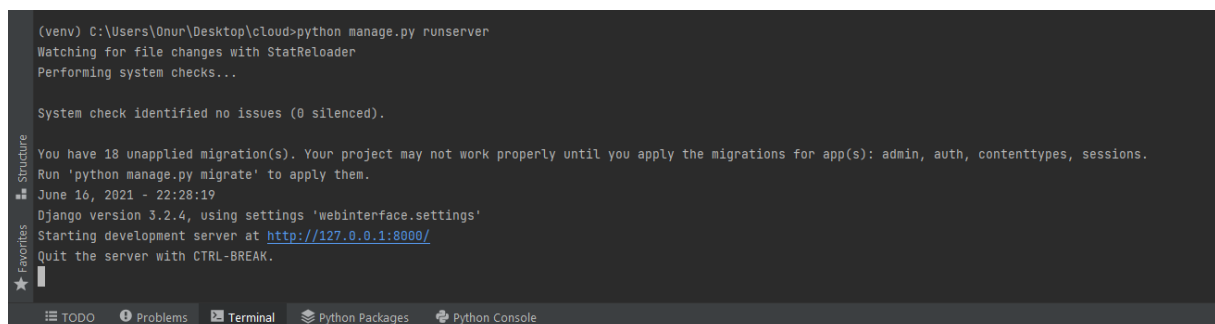


```
TEMPLATES = [
    {
        'BACKEND': 'django.template.backends.django.DjangoTemplates',
        'DIRS': [r'C:\Users\Onur\Desktop\cloud\templates'],
        'APP_DIRS': True,
        'OPTIONS': {
            'context_processors': [
                'django.template.context_processors.debug',
```

(figure 9)

Error 2 : Functions on the pages did not work because the html pages were not linked

Solution 2 : The problem was solved by running the "python manage.py runserver" code in figure 10 and creating a temporary server.



```
(venv) C:\Users\Onur\Desktop\cloud>python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

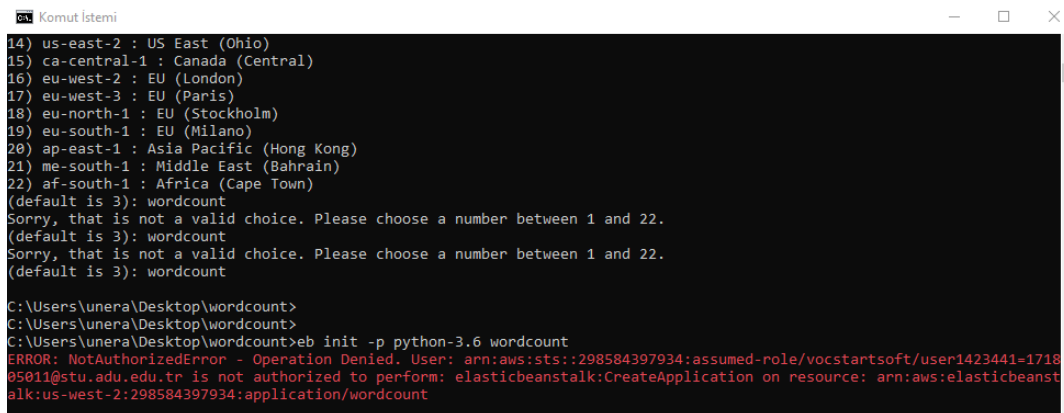
System check identified no issues (0 silenced).

You have 18 unapplied migration(s). Your project may not work properly until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.
June 16, 2021 - 22:28:19
Django version 3.2.4, using settings 'webinterface.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CTRL-BREAK.
```

(figure 10)

Error 3 : Authorization Error

Solution 3 : The problem occurred because our aws educate account has no permission to run elasticbeanstalk environment (figure 20 and figure 21). The problem was solved by creating new user account and doing the same steps (figure 22).



```
Komut İstemi
14) us-east-2 : US East (Ohio)
15) ca-central-1 : Canada (Central)
16) eu-west-2 : EU (London)
17) eu-west-3 : EU (Paris)
18) eu-north-1 : EU (Stockholm)
19) eu-south-1 : EU (Milano)
20) ap-east-1 : Asia Pacific (Hong Kong)
21) me-south-1 : Middle East (Bahrain)
22) af-south-1 : Africa (Cape Town)
(default is 3): wordcount
Sorry, that is not a valid choice. Please choose a number between 1 and 22.
(default is 3): wordcount
Sorry, that is not a valid choice. Please choose a number between 1 and 22.
(default is 3): wordcount

C:\Users\unera\Desktop\wordcount>
C:\Users\unera\Desktop\wordcount>
C:\Users\unera\Desktop\wordcount>eb init -p python-3.6 wordcount
ERROR: NotAuthorizedError - Operation Denied. User: arn:aws:sts::298584397934:assumed-role/vocstartsoft/user1423441=171805011@stu.edu.edu.tr is not authorized to perform: elasticbeanstalk:CreateApplication on resource: arn:aws:elasticbeanstalk:us-west-2:298584397934:application/wordcount
```

(figure 20)



Add user

1 2 3 4 5

Users created but with errors

You successfully created the following users, but some problems remain. Expand the following section for details. View and download user's security credentials as well as email users instructions to log into the AWS Management Console. This will be the last time these credentials will be available to download. However, you can manage and recreate these credentials at any time.

Users with AWS Management Console access may sign-in at: <https://298584397934.signin.aws.amazon.com/console>

Download .csv

User
admin

Created user admin

Attached policy AdministratorAccess to user admin

Attached policy AdministratorAccess-AWSElasticBeanstalk to user admin

Could not create access key for user admin:

User: arn:aws:sts::298584397934:assumed-role/vocstartsoft/user1423441=171805011@stu.edu.edu.tr is not authorized to perform: iam:CreateAccessKey on resource: user admin with an explicit deny

(figure 21)


```
C:\Users\unera\Desktop\wordcount>eb init -p python-3.6 wordcount
You have not yet set up your credentials or your credentials are incorrect
You must provide your credentials.
(aws-access-id): AKIAYJ7JBW7LHB5JBQMW
(aws-secret-key): mXf3rGuDok3/3qZvfTeljoK0NbTWxBJxHF4LmuhL
Application wordcount has been created.
```

(figure 22)

Error 4 : Disallowed Host

Solution 4 : We could not get the url link without deploying our project to aws so after we deployed and get the link we add url to `ALLOWED_HOSTS` in `settings.py`(figure 24). Then we deployed the project again(figure 25).

```
DisallowedHost at /
Invalid HTTP_HOST header: 'django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com'. You may need to add 'django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com' to ALLOWED_HOSTS.
Request Method: GET
Request URL: http://django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com/
Django Version: 2.1.1
Exception Type: DisallowedHost
Exception Value: Invalid HTTP_HOST header: 'django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com'. You may need to add 'django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com' to ALLOWED_HOSTS.
Exception Location: /opt/python/run/venv/local/lib/python3.6/site-packages/django/http/request.py in get_host, line 106
Python Executable: /opt/python/run/venv/bin/python3
Python Version: 3.6.12
Python Path: ['/opt/python/current/app',
              '/opt/python/run/venv/local/lib64/python3.6/site-packages',
              '/opt/python/run/venv/local/lib/python3.6/site-packages',
              '/opt/python/run/venv/lib64/python3.6',
              '/opt/python/run/venv/lib/python3.6',
              '/opt/python/run/venv/lib/python3.6/site-packages',
              '/opt/python/run/venv/lib/python3.6/site-packages',
              '/usr/lib64/python3.6',
              '/usr/lib/python3.6']
Server time: Thu, 17 Jun 2021 22:24:58 +0000
```

(figure 23)

```
ALLOWED_HOSTS = ['django-env.eba-js3xp37h.us-west-2.elasticbeanstalk.com']
```

(figure 24)

```
C:\Users\unera\Desktop\wordcount>eb deploy
Creating application version archive "app-210618_012802".
Uploading: [#####] 100% Done...
2021-06-17 22:29:11 INFO Environment update is starting.
2021-06-17 22:29:16 INFO Deploying new version to instance(s).
2021-06-17 22:29:42 INFO New application version was deployed to running EC2 instances.
2021-06-17 22:29:42 INFO Environment update completed successfully.
```

(figure 25)

7-) References

- [1] <https://www.djangoproject.com>
- [2] https://www.youtube.com/watch?v=8w_p9aXKPy8&t=391s
- [3] <https://docs.aws.amazon.com/elasticbeanstalk/latest/dg/create-deploy-python-django.html>
- [4] https://www.youtube.com/watch?v=51YwXvJ9LOE&ab_channel=BenjaminCarlson
- [5] <https://stackoverflow.com/questions/1926049/django-templatedoesnotexist>