

# Secure Programming

## Lab 4

### Path Traversal Attack

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#### Performing the Attack

We are going to try to gain unauthorised access to the config.env folder because it contains all the username/ passwords for the site. Realistically, such a file should not exist, but if it did, it should have strict access controls set. The config.env file is located in the secrets folder (outside the vagrant folder on your host): `\django-coffeeshop\coffeeshop\secrets`

When you accessed the secrets.txt file, the application fetched the file from: \coffeeshop\vagrant\coffeeshopsite\coffeeshop\files. The objective is to now traverse out of the folder and up to the config.env file. We do this using the dot-dot-slash notation (`../`).

1. What happens when you try to access the `config.env` file using this URL?

When to try to access the config.env file using the `../` traversal, the application downloads the config.env file (username and password).

```
export DBOWNER=coffeeshopowner
export DBOWNERPWD=Arabic123
export DBOWNEREMAIL=admin@coffeeshop.com
export DBADMIN=admin
export DBADMINPWD=Robust0123
export DBADMINEMAIL=admin@coffeeshop.com
export DBUSER1=bb
export DBUSER1PWD=bbPass123
export DBUSER1EMAIL=bb@bb.com
export DBUSER1FIRSTNAME=bb
export DBUSER1LASTNAME=Smith
export DBUSER2=Alice
export DBUSER2PWD=AlicePass123
export DBUSER2EMAIL=Alice@alice.com
export DBUSER2FIRSTNAME=Alice
export DBUSER2LASTNAME=Adams
export SECRET_KEY=1s10sawb6qht1_s7r4yyab)apccu8(ut15pj-vx59vek*u
export GRAYLOG_ROOT_PASSWORD=grayPass123
```

2. What was the final URL that successfully carried out the dot-dot-slash attack?

Used 4 dot-dot-slash notation (`../../../../`) to get to the `secrets/config.env`:

[http://localhost:8080/download\\_file/?file=../../../../secrets/config.env](http://localhost:8080/download_file/?file=../../../../secrets/config.env)

## Fixing the Path Traversal Vulnerability

To fix this vulnerability, we need to fix the code so that a user cannot force browse out of the location using the `../` notation. The first security fix we will apply involves normalising the path to the `secrets.txt` file. We do this first by replacing the line of code:

```
file_path = os.path.join(base_directory, file_name)
```

with:

```
file_path = os.path.normpath(os.path.join(base_directory, file_name))
```

After normalisation, the line:

```
if not file_path.startswith(base_directory):  
    return HttpResponse("Access denied")
```

### 3. What is the result?

After the fix, when attempting the same dot-dot-slash attack (e.g. `?file=../../../../secrets/config.env`), the application returns “Access denied” instead of exposing the sensitive file.

The normalization ensures that any traversal attempts using `../` are resolved, keeping the path restricted to the `/files/` directory.



## Fixing the Vulnerability (link to the commit)

[DanyilT/django-coffeeshop](#) repo forked from [stephen-oshaughnessy/django-coffeeshop](#)

Prepare the vulnerability in code for Path Traversal Attack (download\_file):

[DanyilT/django-coffeeshop/commit/e0e318dbc928365c8f614c49b7a15614198eb07d](#)

Fixing Path Traversal Attack vulnerability (download\_file):

[DanyilT/django-coffeeshop/commit/1d0a1614c56b6c41e949737e8a0ffc4bd54e20317](#)