AUTHENTICATION IMPLEMENTATION GUIDE

Amélie-Dzovinar Haladjian

Authentication System

The authentication system for Todo&Co's to-do list application was implemented using Symfony's Guard Authenticator.

1. User Entity

First of all, the **Entity/User** needs to implement the **Symfony/Component/Security/Core/User/UserInterface**. This interface contains the methods as **getRoles**, **getUsername**, **getPassword**, **getSalt**, and **eraseCredentials** that must be defined in our **Entity/User** class in order to make sure our authentication system works.

```php
namespace App\Entity\User;

use App\Entity\Security\Roles;
use Doctrine\ORM\Mapping as ORM;
use Symfony\Bridge\Doctrine\Validator\Constraints\UniqueEntity;
use Symfony\Component\Security\Core\User\UserInterface;
use Symfony\Component\Validator\Constraints as Assert;

/**
 * @ORM\Table("user")
 * @ORM\Entity(repositoryClass="App\Repository\User\UserRepository")
 * @UniqueEntity("email")
 * @UniqueEntity("username")
 */
class User implements UserInterface
{
```

2. Authenticator

The **AppAuthenticator** class was generated using the command `bin/console make:auth` . This class extends Symfony's **AbstractFormLoginAuthenticator** and implements the following methods:

```php
public function supports(Request $request)
{
    return 'login' === $request->attributes->get( key: '_route')
        && $request->isMethod( method: 'POST');
}
```

The **supports** method is used to determine whether the authenticator should handle the given request. In this case, the authenticator will be executed if the method POST is used on our login route.

```php
public function getCredentials(Request $request)
{
    $credentials = [
        self::USERNAME => $request->request->get( key: self::USERNAME),
        self::PASSWORD => $request->request->get( key: self::PASSWORD),
        'csrf_token'   => $request->request->get( key: '_csrf_token'),
    ];
    $request->getSession()->set(
        Security::LAST_USERNAME,
        $credentials[self::USERNAME]
    );

    return $credentials;
}
```

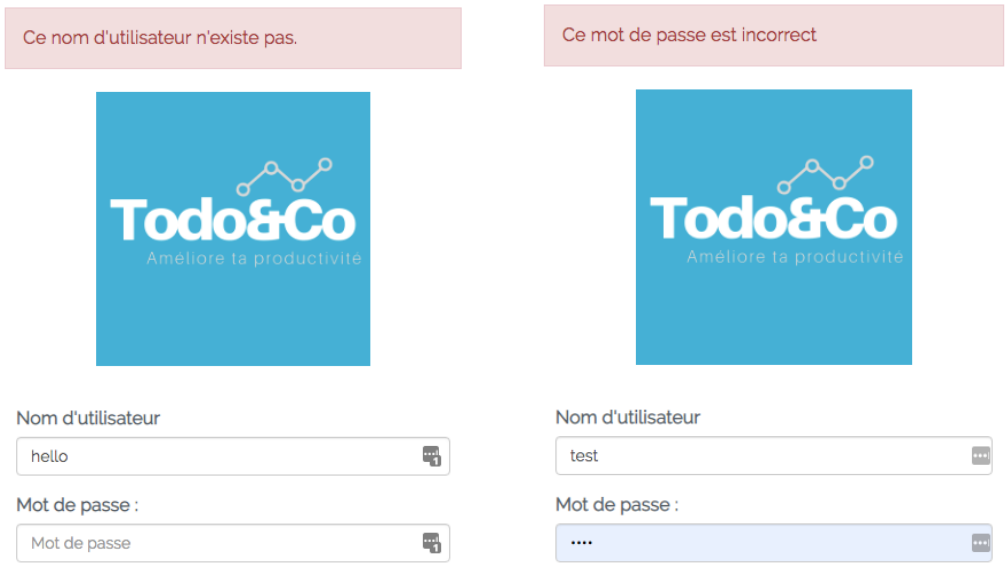
The method **getCredentials** returns the credentials submitted by the user through the login form. They will then be used to check whether the credentials are valid and retrieve the corresponding user from the database.

```php
public function getUser($credentials, UserProviderInterface $userProvider)
{
    $token = new CsrfToken( id: 'authenticate', $credentials['csrf_token']);
    if (!$this->csrfTokenManager->isTokenValid($token)) {
        throw new InvalidCsrfTokenException();
    }

    $user = $this->entityManager->getRepository( className: User::class)->findOneBy(
        [self::USERNAME => $credentials[self::USERNAME]]
    );

    if (!$user) {
        throw new CustomUserMessageAuthenticationException( message: 'Ce nom d\'utilisateur n\'existe pas');
    }

    return $user;
}
```

If the username retrieved from the **getCredentials** method matches a user from the database, the method **getUser** will return it. Otherwise, it will throw an exception that will then be displayed on the login form.

```php
public function checkCredentials($credentials, UserInterface $user)
{
    return $this->passwordEncoder->isPasswordValid($user, $credentials[self::PASSWORD]);
}
```

If the **getUser** method returns a **User** object, **checkCredentials** is called to check whether the user's password matches the password from the request.



```php
public function onAuthenticationSuccess(Request $request, TokenInterface $token, $providerKey)
{
    $targetPath = $this->getTargetPath($request->getSession(), $providerKey);

    if ($targetPath) {
        return new RedirectResponse($targetPath);
    }

    return new RedirectResponse($this->urlGenerator->generate( name: 'dashboard'));
}
```

The method **onAuthenticationSuccess** defines the app's behavior once the user has successfully logged in. In this case, we redirect the user to their dashboard or to the page they tried to access before being invited to log in.

```php
protected function getLoginUrl()
{
    return $this->urlGenerator->generate( name: 'login');
}
```

The method **getLoginUrl** is used in **AbstractFormLoginAuthenticator**'s **start** and **onAuthenticationFailure** methods to define which route the user should be redirected to if the user is not authenticated or if the authentication fails.

3. Security configuration

The app security is configured inside **config/packages/security.yml**.

```
security:
    encoders:
        App\Entity\User\User: bcrypt
```

Encoders are used to indicate which algorithm should be used to encode user passwords. The authenticator will use this encoder when checking whether the password from the request matches that of the user retrieved from the database.

```
    providers:
        doctrine:
            entity:
                class: App\Entity\User\User
                property: username
```

Providers are used to determine how users are loaded during authentication. In this case, we are loading users from the database.

```
    firewalls:
        dev:
            pattern: ^/(_(profiler|wdt)|css|images|js)/
            security: false
        main:
            anonymous: true
            logout: ~
            guard:
                authenticators:
                    - App\Security\AppAuthenticator
```

Firewalls are used to determine how users will authenticate.

The **dev** firewall is used to prevent debugging tools in dev environment from being blocked by the security system.

The **main** firewall is used to configure our app's main authentication system. In this case, we are using our own guard **AppAuthenticator**.

```
access_control:
    - { path: ^/login, roles: IS_AUTHENTICATED_ANONYMOUSLY }
    - { path: ^/register, roles: IS_AUTHENTICATED_ANONYMOUSLY }
    - { path: ^/admin, roles: ROLE_ADMIN }
    - { path: ^/, roles: ROLE_USER }
```

The last section is used to control user access to different parts of our app. In this case, users need to be authenticated to access any part of our app aside from the login page, and authenticated users need to have the role **ROLE_ADMIN** in order to access the admin panel.