SCR Project (Product Rating)

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1. Lösungsidee

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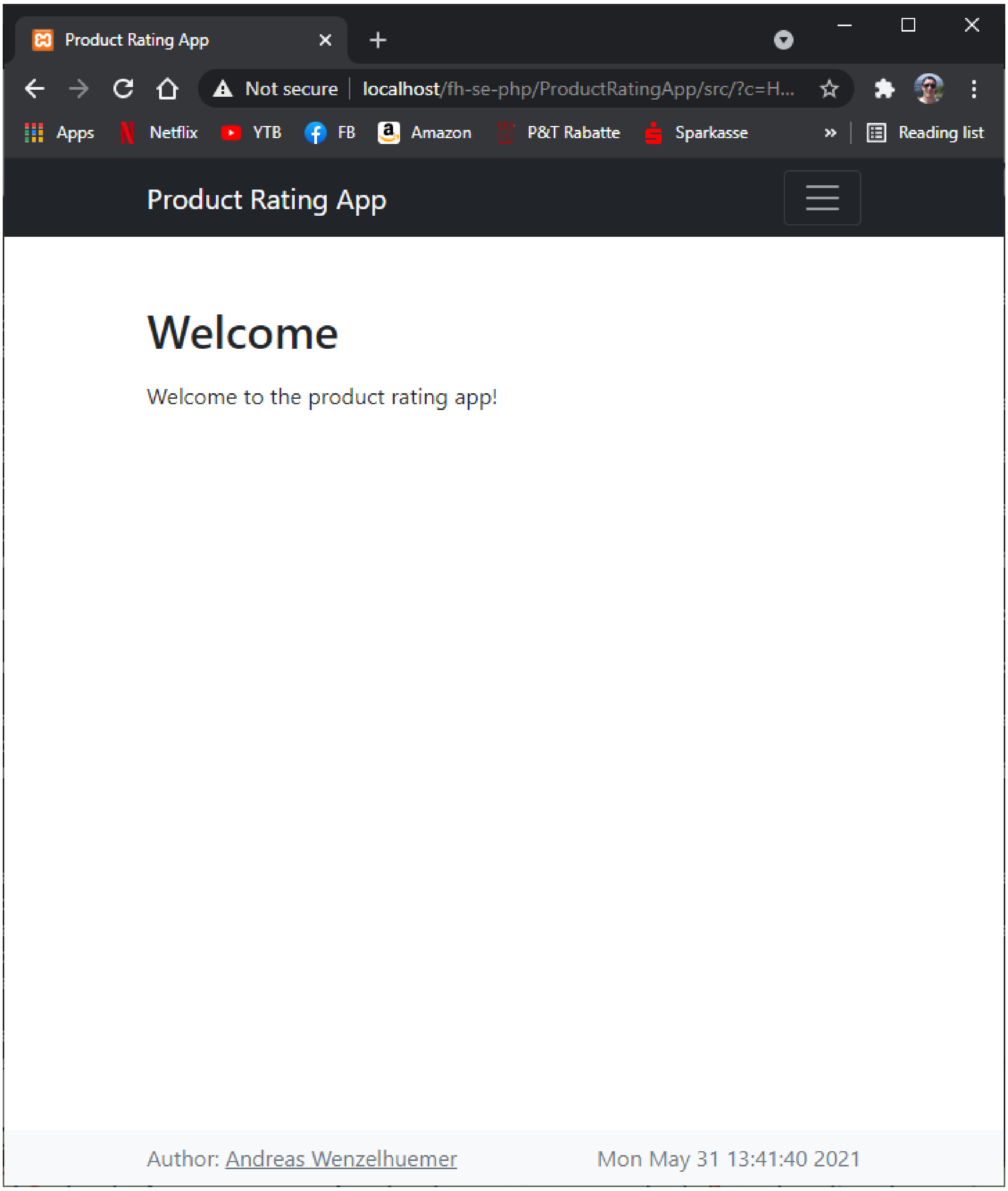
2.1. Testfall: Allgemein

Website lässt sich ausführen und liefert keine Fehler.



Product Rating App

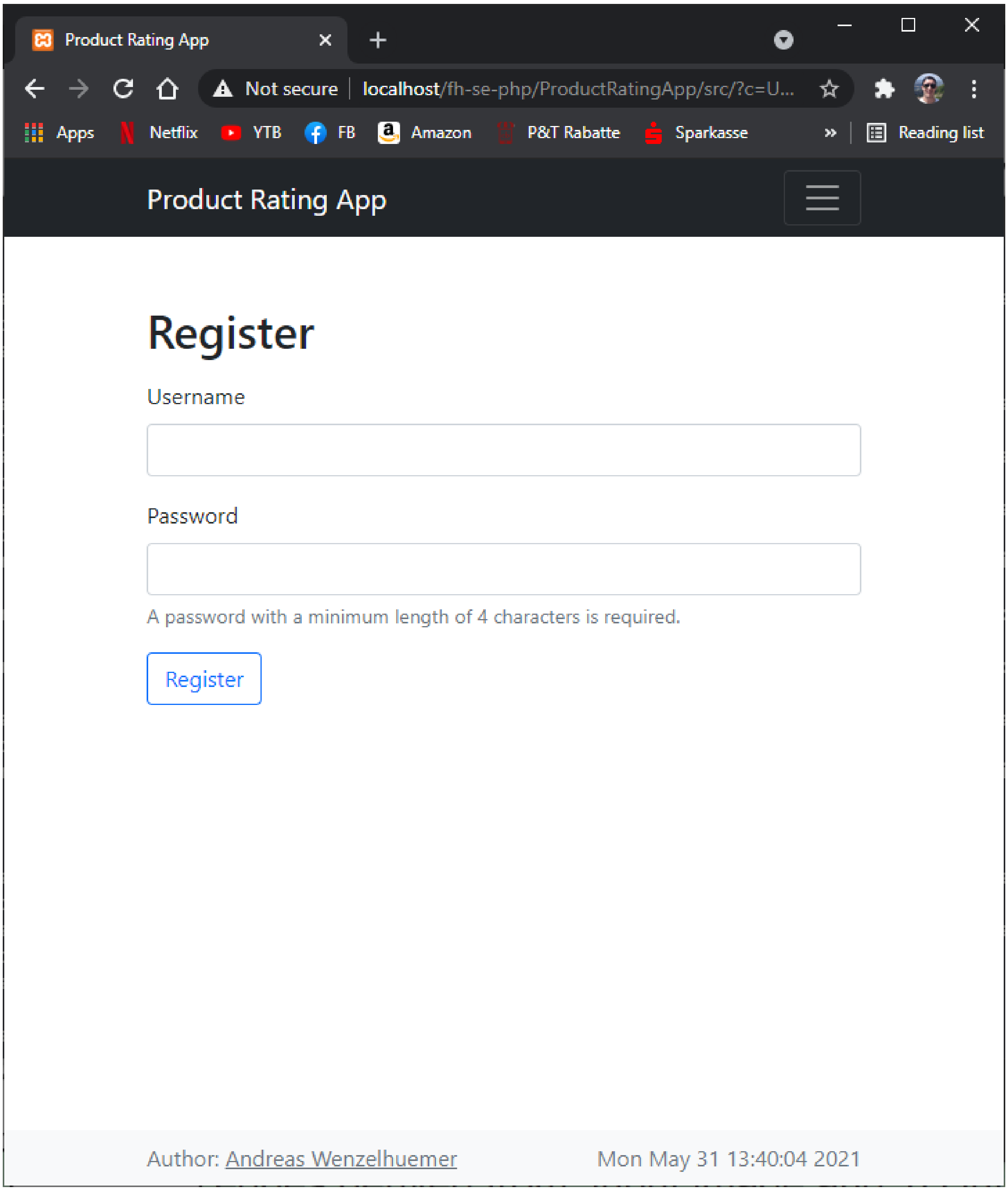
Welcome

Welcome to the product rating app!

Author: Andreas Wenzelhuemer Mon May 31 13:41:40 2021

2.2. Testfall: Registrierung

Neuer Benutzer kann sich registrieren und wird angemeldet.



Register

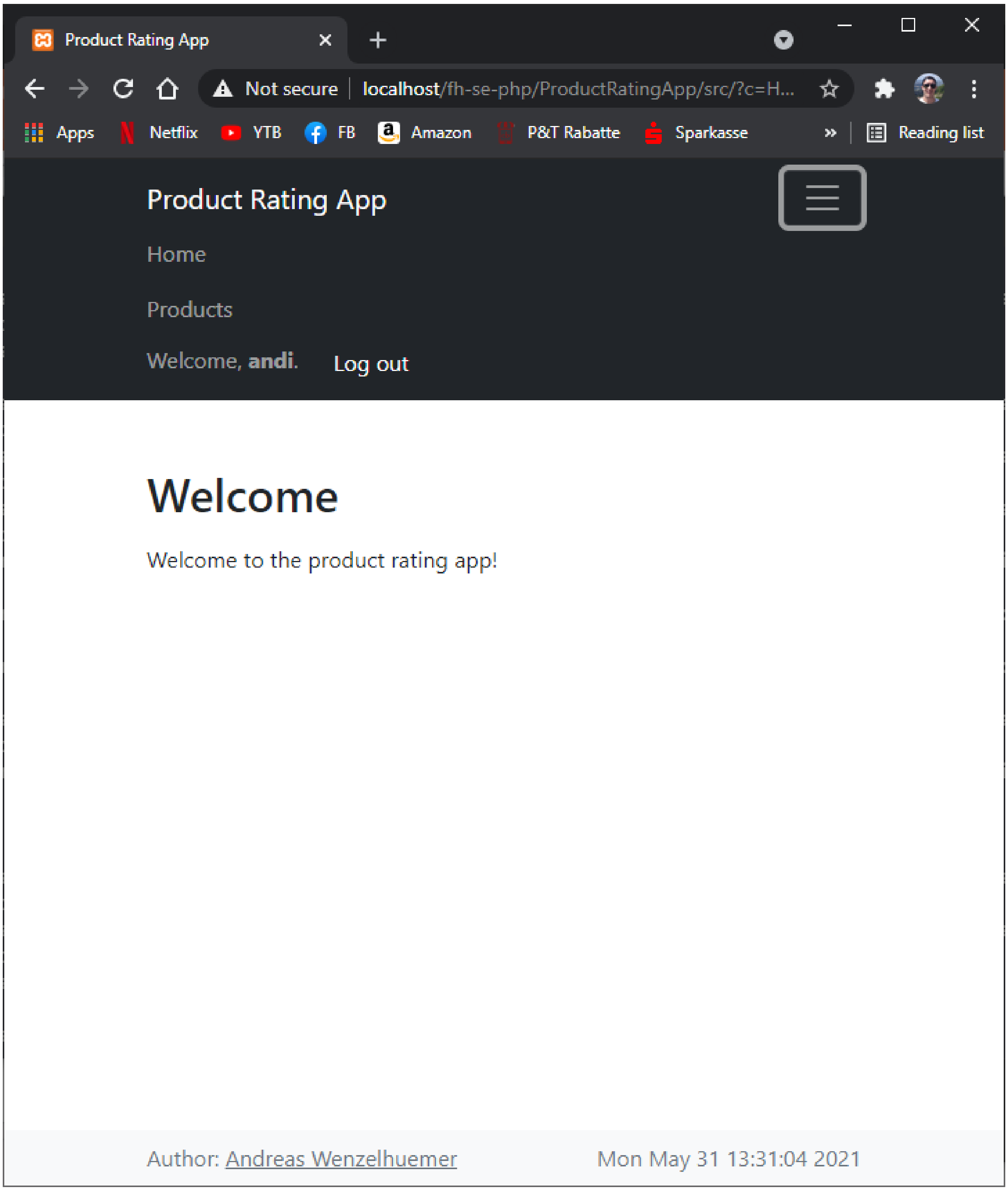
Username

Password

A password with a minimum length of 4 characters is required.

Register

Author: Andreas Wenzelhuemer Mon May 31 13:40:04 2021



Product Rating App

Home

Products

Welcome, **andi**. Log out

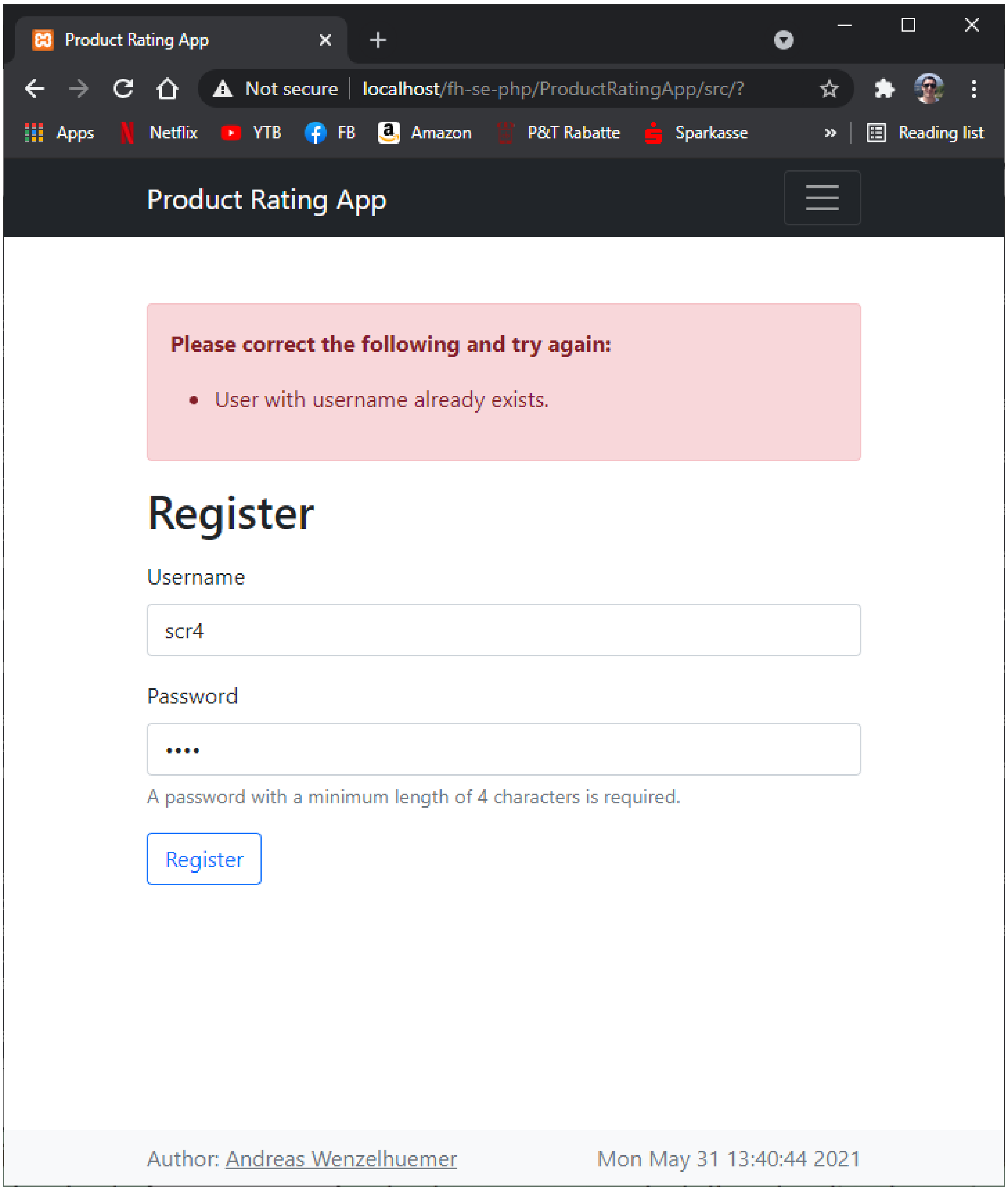
Welcome

Welcome to the product rating app!

Author: Andreas Wenzelhuemer Mon May 31 13:31:04 2021

2.3. Testfall: Registrierung

Registrierung mit bereits im System vorhandenem Benutzernamen.liefert Valideriungsfehler



Product Rating App

Please correct the following and try again:

- User with username already exists.

Register

Username

scr4

Password

••••

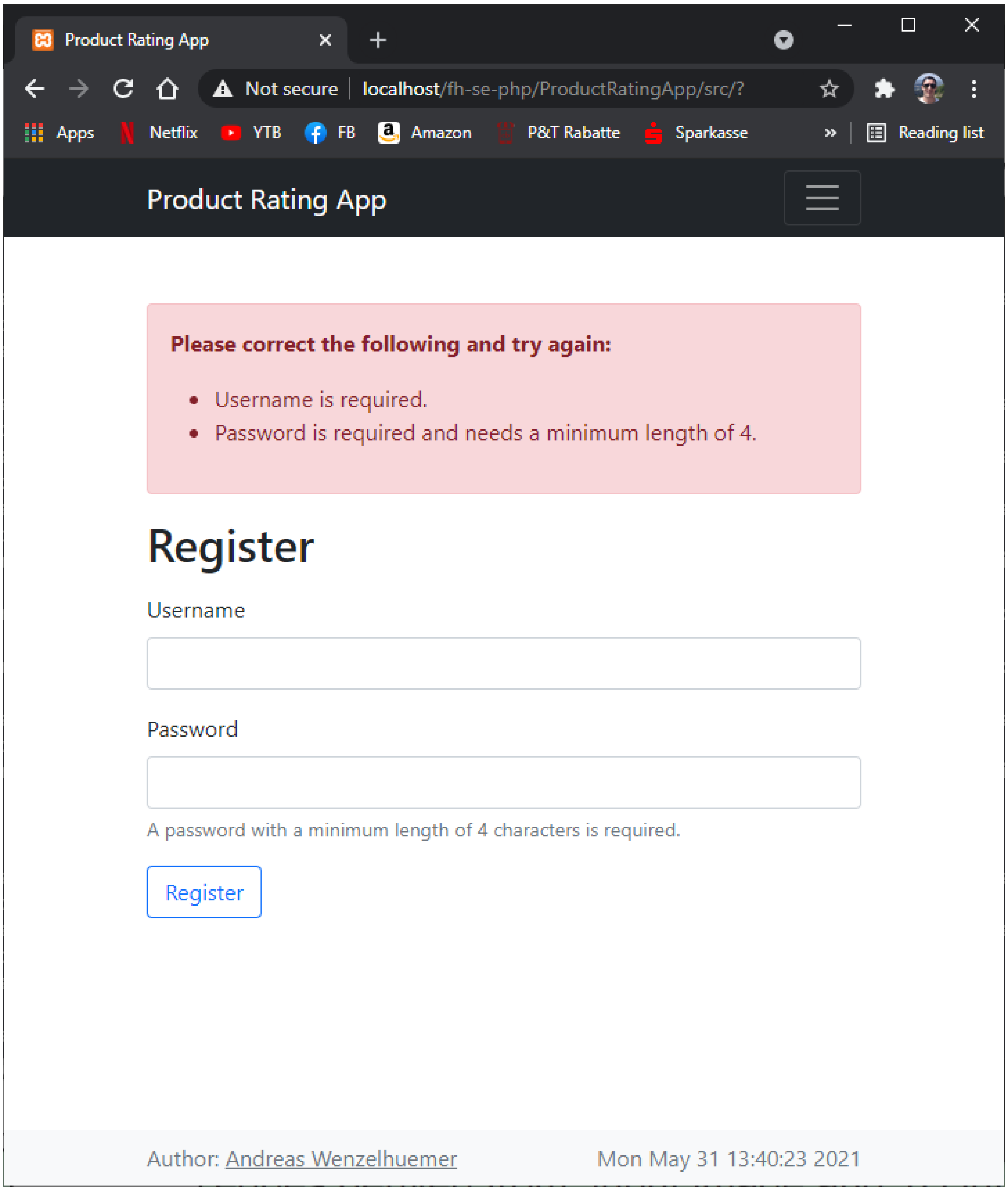
A password with a minimum length of 4 characters is required.

Register

Author: Andreas Wenzelhuemer Mon May 31 13:40:44 2021

2.4. Testfall: Registrierung

Registrierung mit invaliden Eingaben liefert Validierungsfehler.



Please correct the following and try again:

- Username is required.
- Password is required and needs a minimum length of 4.

Register

Username

Password

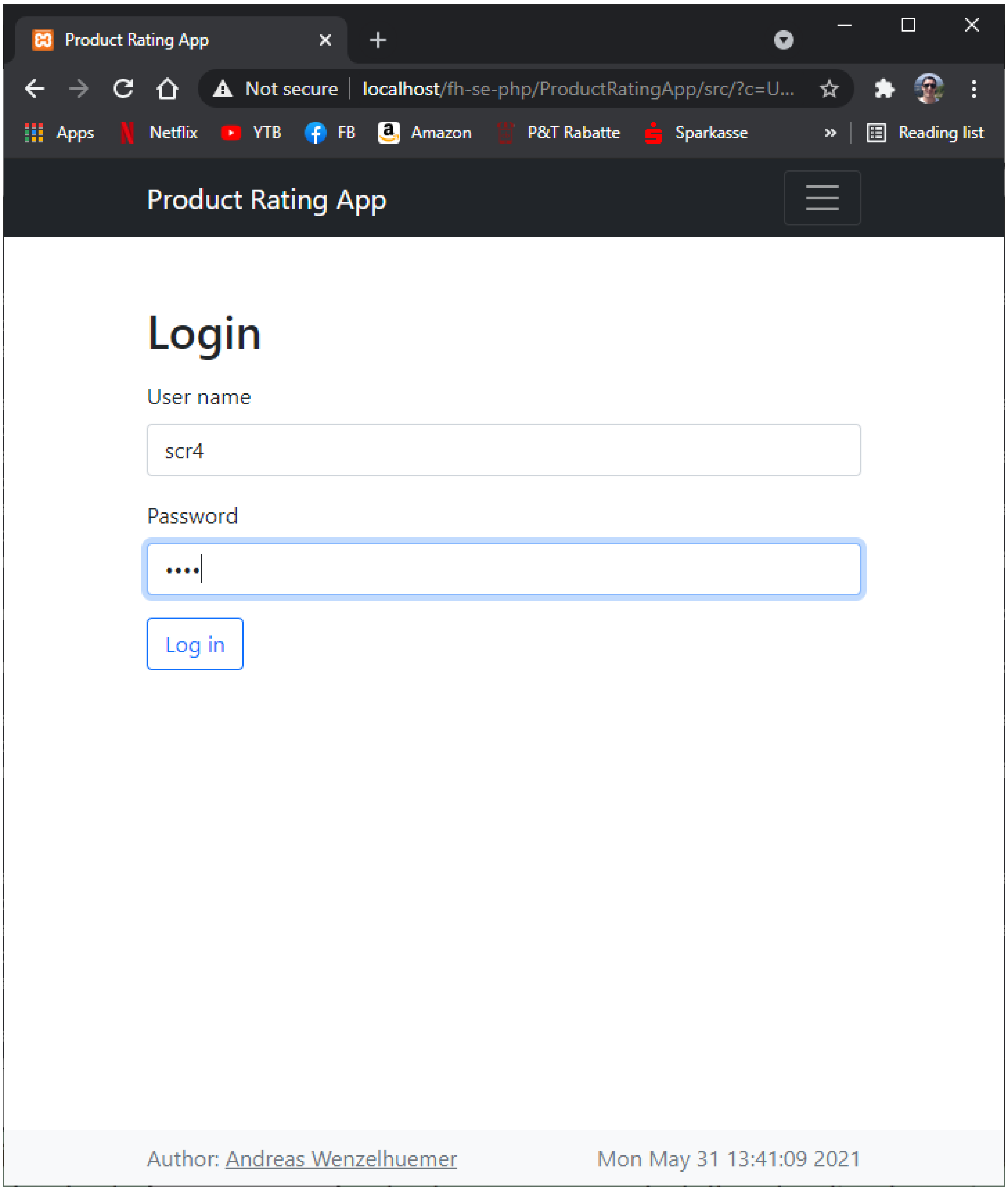
A password with a minimum length of 4 characters is required.

Register

Author: Andreas Wenzelhuemer Mon May 31 13:40:23 2021

2.5. Testfall: Anmeldung

Anmeldung mit validen Eingaben führt zu Anmeldung.



Login

User name

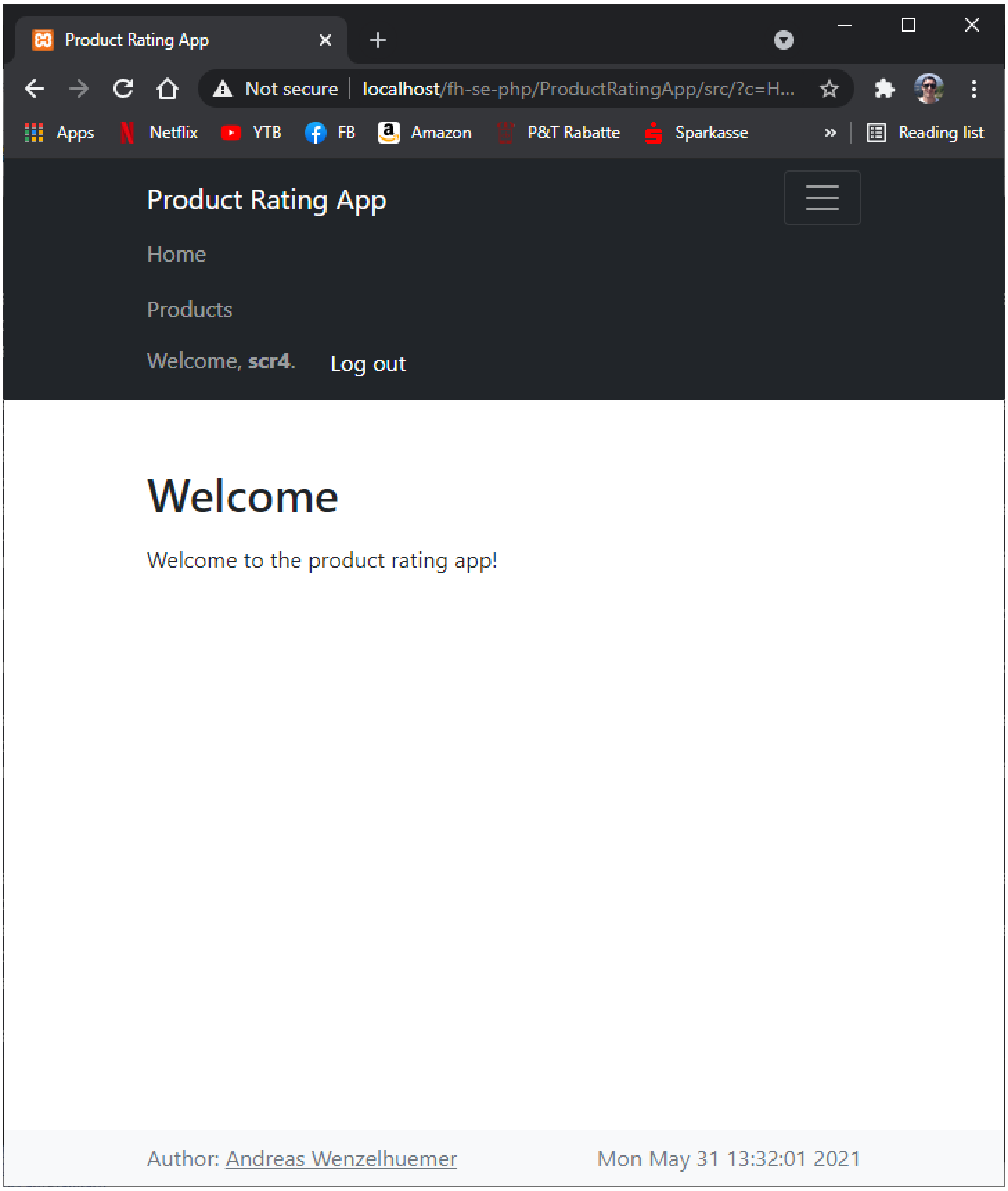
scr4

Password

••••

Log in

Author: Andreas Wenzelhuemer Mon May 31 13:41:09 2021


Product Rating App

Not secure | localhost/fh-se-php/ProductRatingApp/src/?c=H...

Apps Netflix YTB FB Amazon P&T Rabatte Sparkasse Reading list

Product Rating App

Home

Products

Welcome, **scr4**. Log out

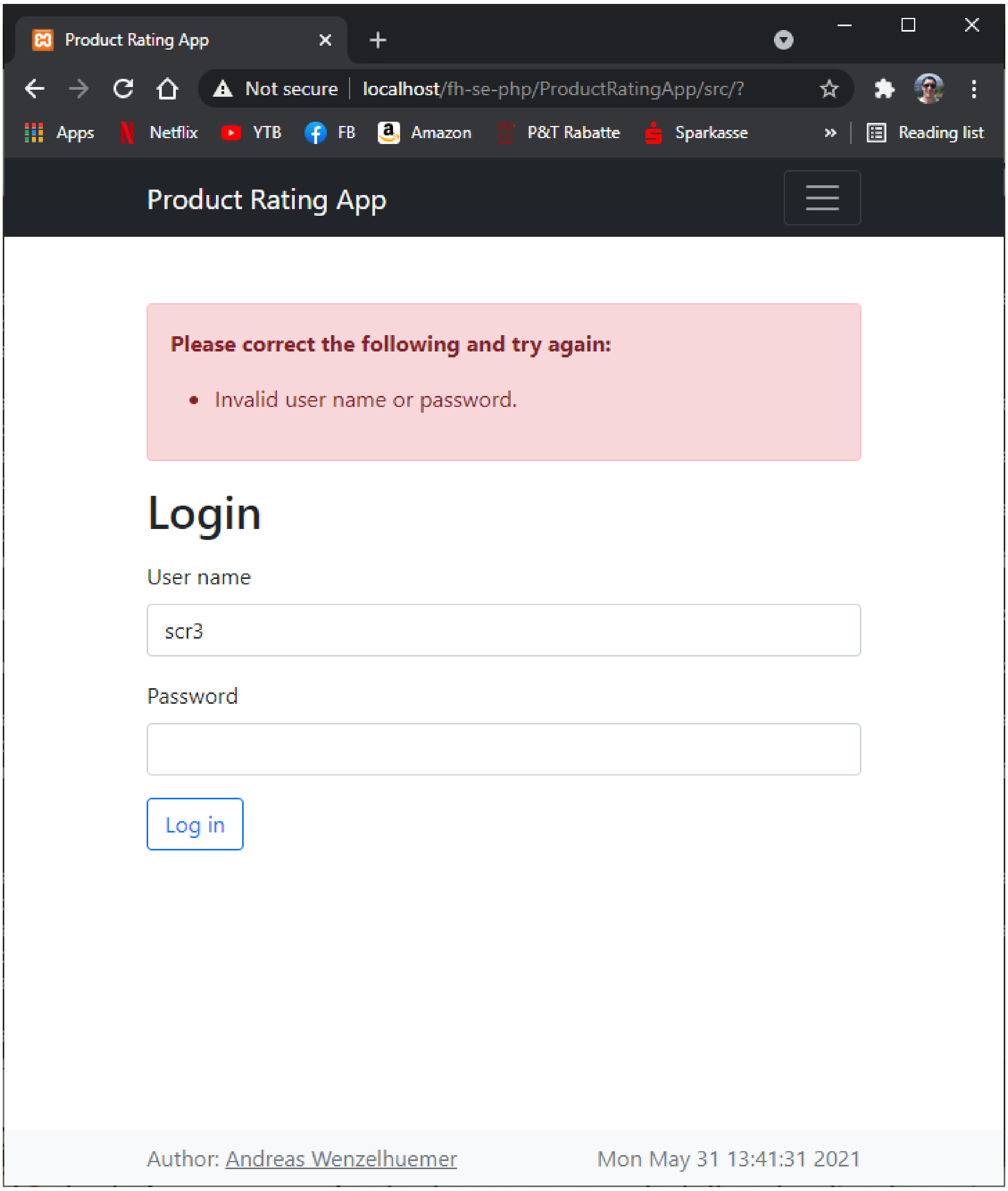
Welcome

Welcome to the product rating app!

Author: Andreas Wenzelhuemer Mon May 31 13:32:01 2021

2.6. Testfall: Anmeldung

Anmeldung mit invaliden Eingaben führt zu Fehlermeldungen.



Please correct the following and try again:

- Invalid user name or password.

Login

User name

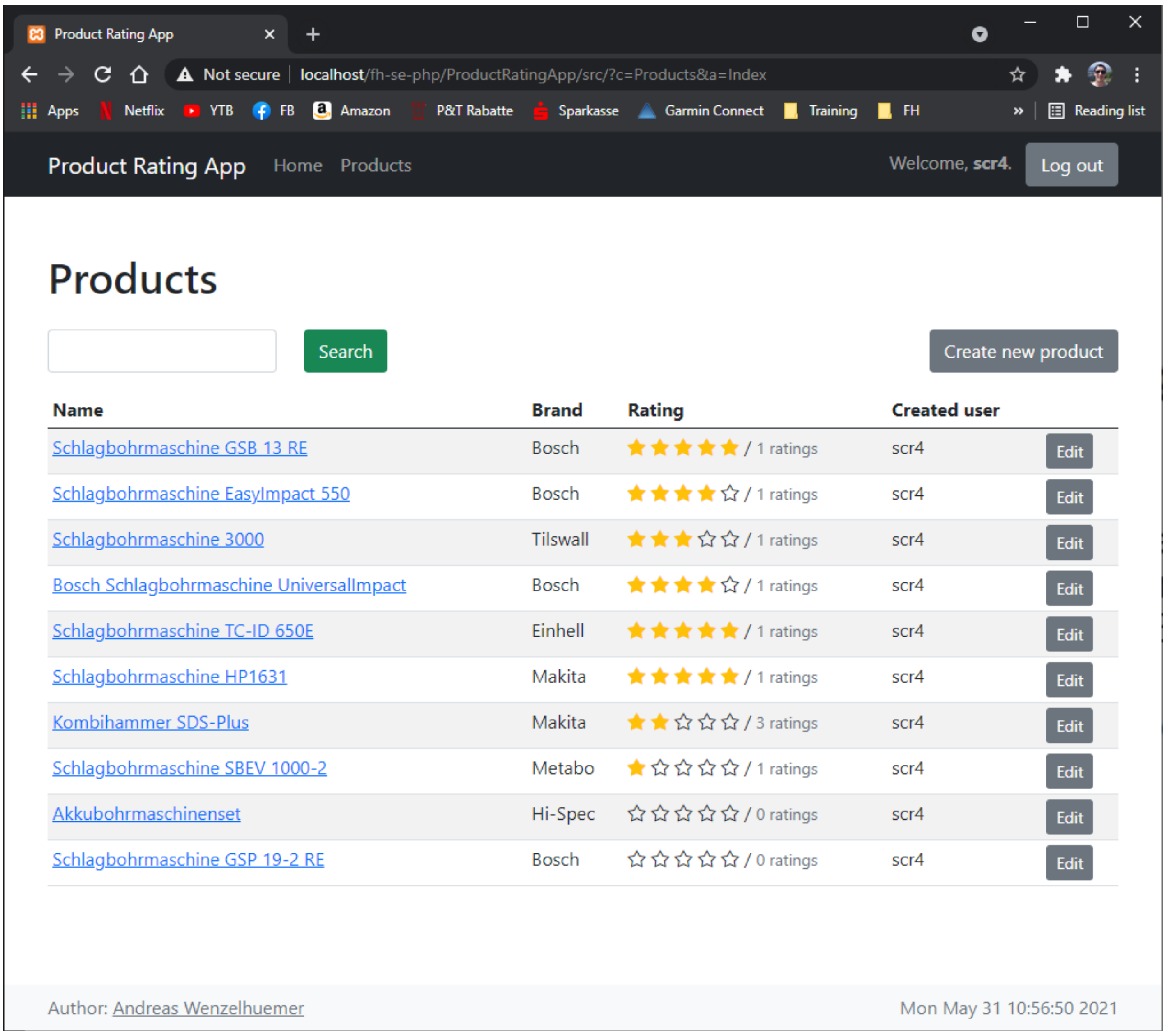
scr3

Password

Author: Andreas Wenzelhuemer Mon May 31 13:41:31 2021

2.7. Testfall: Produktübersicht

Produkte aus der Datenbank werden entsprechend angezeigt.



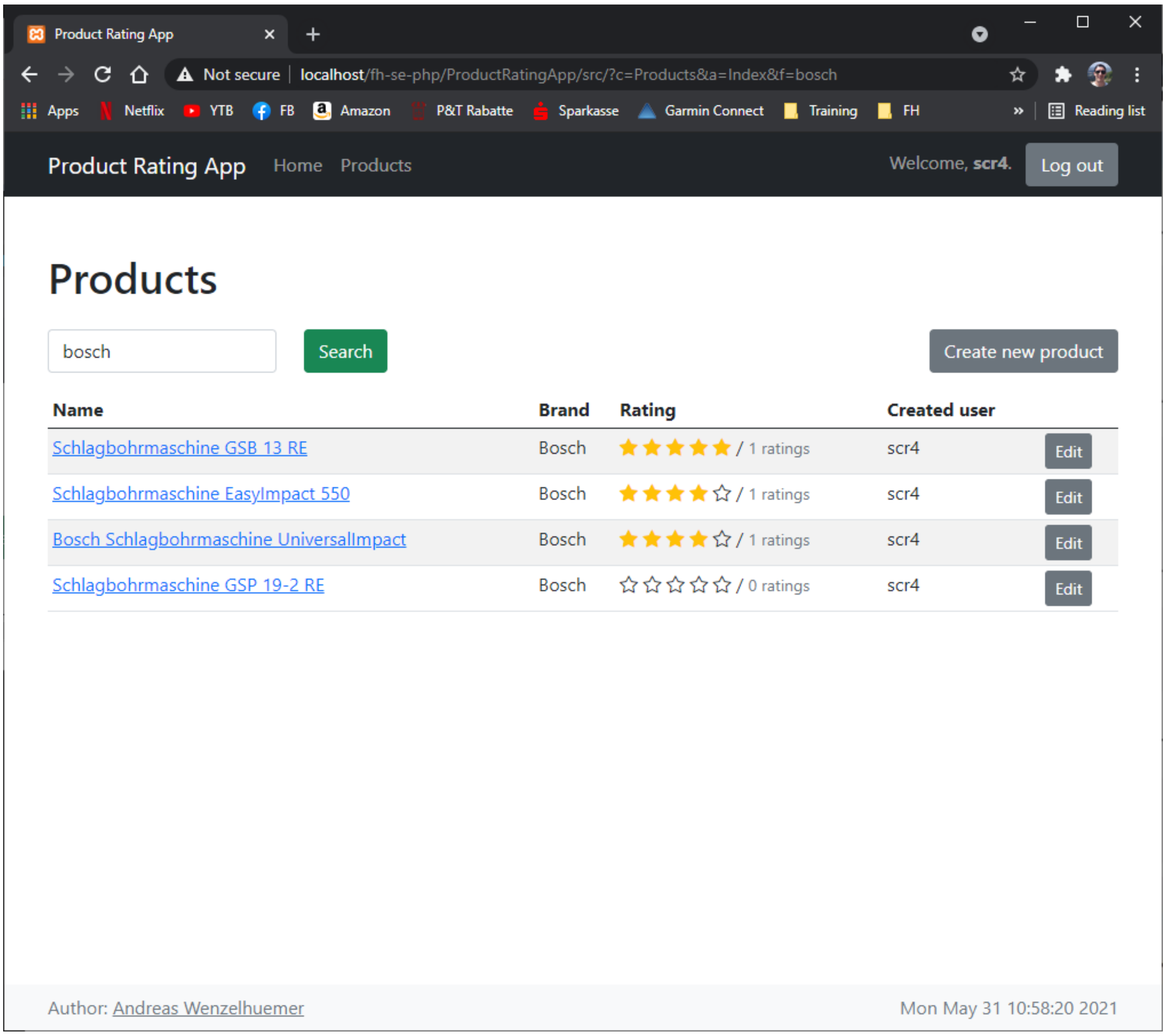
Products

Name	Brand	Rating	Created user	
Schlagbohrmaschine GSB 13 RE	Bosch	★★★★★ / 1 ratings	scr4	Edit
Schlagbohrmaschine EasyImpact 550	Bosch	★★★★☆ / 1 ratings	scr4	Edit
Schlagbohrmaschine 3000	Tilswall	★★★☆☆ / 1 ratings	scr4	Edit
Bosch Schlagbohrmaschine UniversalImpact	Bosch	★★★★☆ / 1 ratings	scr4	Edit
Schlagbohrmaschine TC-ID 650E	Einhell	★★★★★ / 1 ratings	scr4	Edit
Schlagbohrmaschine HP1631	Makita	★★★★★ / 1 ratings	scr4	Edit
Kombihammer SDS-Plus	Makita	★★☆☆☆ / 3 ratings	scr4	Edit
Schlagbohrmaschine SBEV 1000-2	Metabo	★☆☆☆☆ / 1 ratings	scr4	Edit
Akkubohrmaschinenset	Hi-Spec	☆☆☆☆☆ / 0 ratings	scr4	Edit
Schlagbohrmaschine GSP 19-2 RE	Bosch	☆☆☆☆☆ / 0 ratings	scr4	Edit

Author: Andreas Wenzelhuemer   Mon May 31 10:56:50 2021

2.8. Testfall: Produktübersicht

Produkte werden entsprechend anhand des Namens bzw. Hersteller gefiltert.



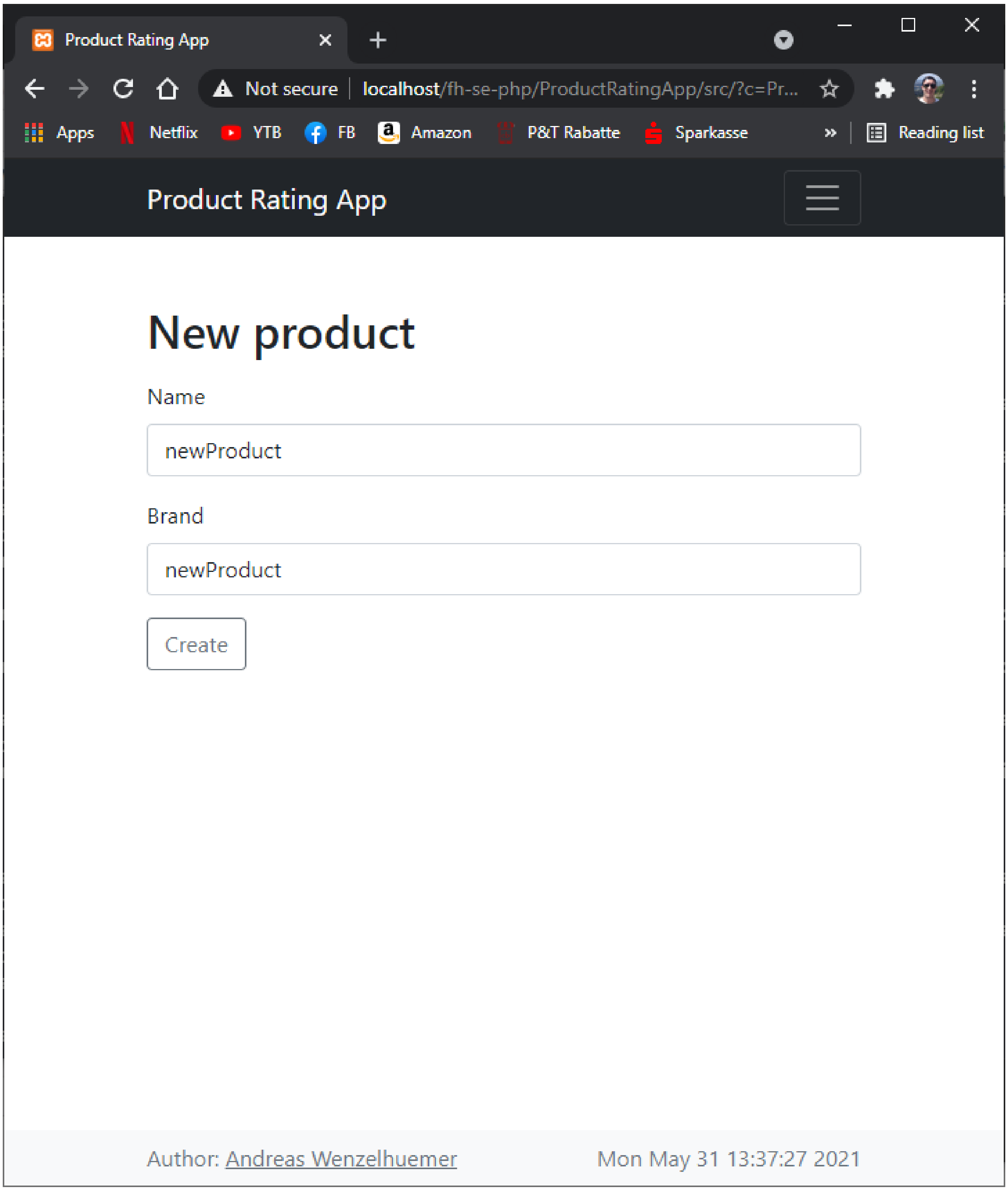
Products

Name	Brand	Rating	Created user	
Schlagbohrmaschine GSB 13 RE	Bosch	★★★★★ / 1 ratings	scr4	Edit
Schlagbohrmaschine EasyImpact 550	Bosch	★★★★☆ / 1 ratings	scr4	Edit
Bosch Schlagbohrmaschine UniversalImpact	Bosch	★★★★☆ / 1 ratings	scr4	Edit
Schlagbohrmaschine GSP 19-2 RE	Bosch	☆☆☆☆☆ / 0 ratings	scr4	Edit

Author: Andreas Wenzelhuemer Mon May 31 10:58:20 2021

2.9. Testfall: Erstellen eines Produktes

Produkt mit entsprechender Eingabe wird erstellt.



Product Rating App

New product

Name

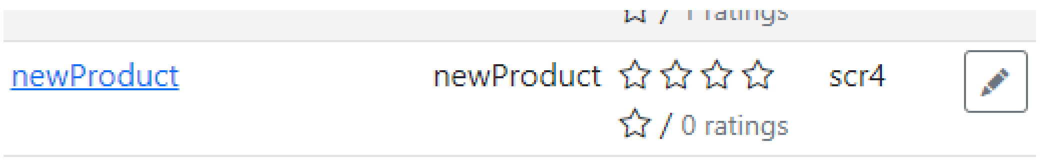
newProduct

Brand

newProduct

Create

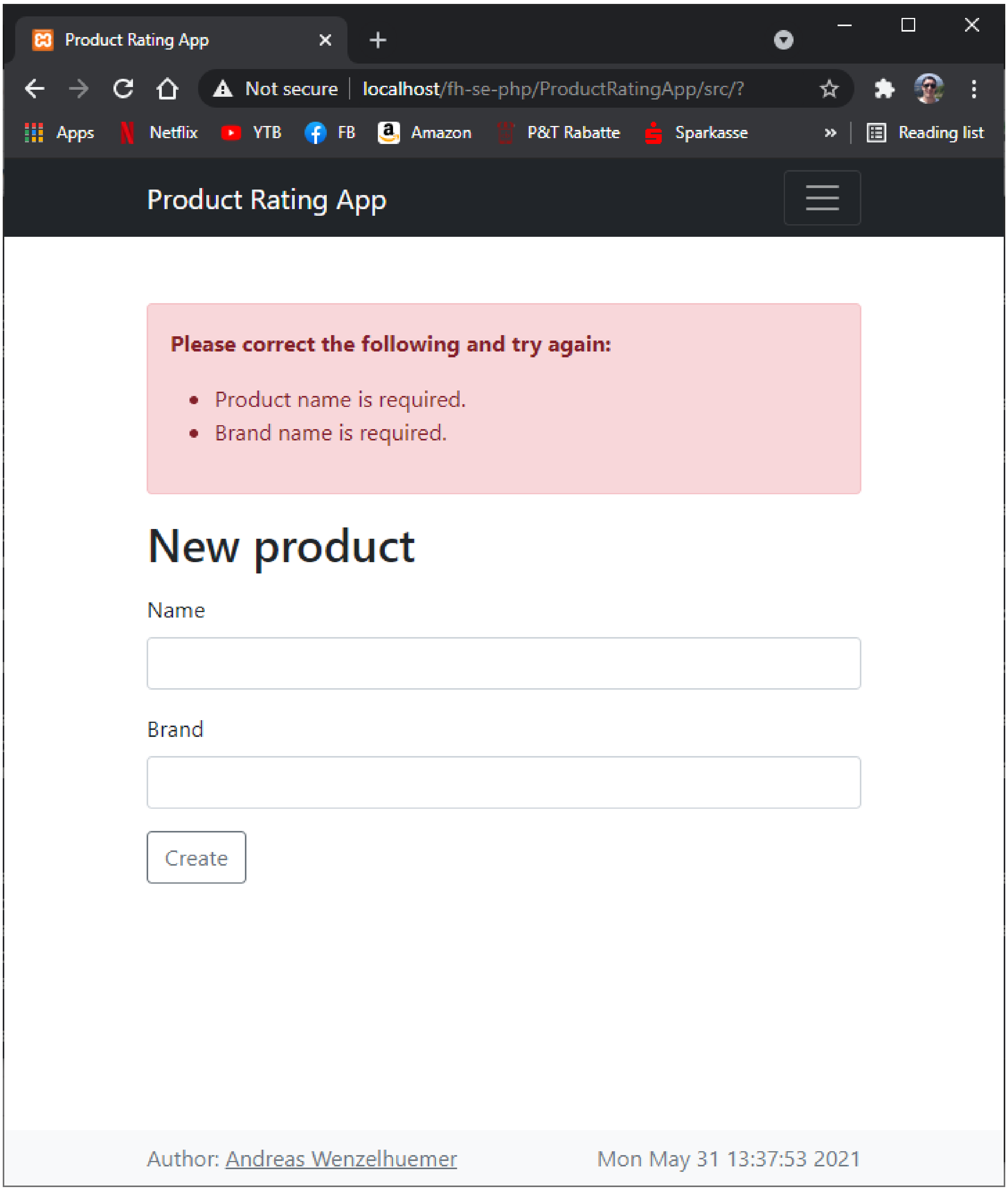
Author: Andreas Wenzelhuemer Mon May 31 13:37:27 2021



newProduct	newProduct	☆☆☆☆ ☆ / 0 ratings	scr4	✎

2.10. Testfall: Erstellen eines Produktes

Produkt mit ungültigen Eingaben liefert Validierungsfehler.



Please correct the following and try again:

- Product name is required.
- Brand name is required.

New product

Name

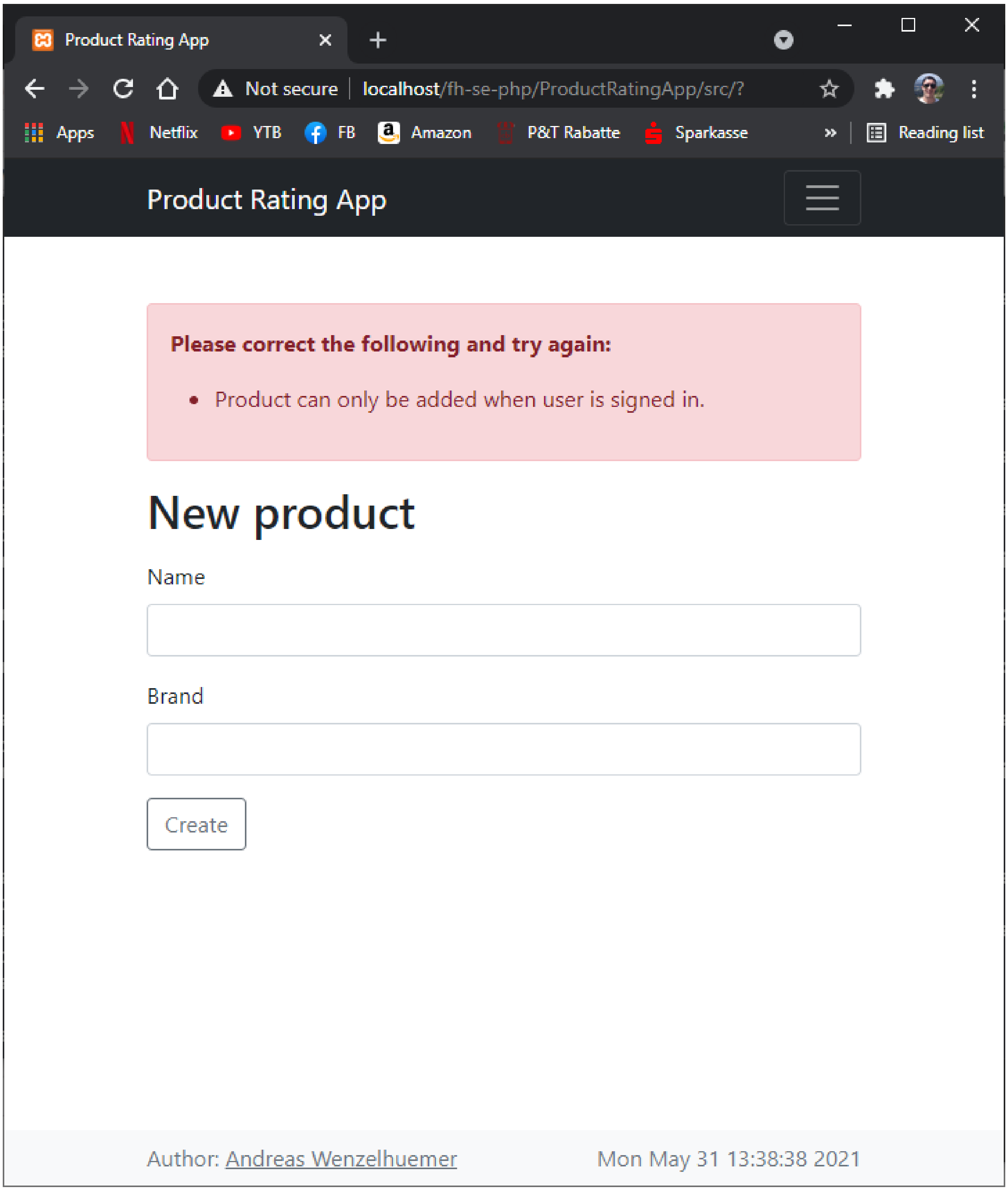
Brand

Create

Author: Andreas Wenzelhuemer Mon May 31 13:37:53 2021

2.11. Testfall: Erstellen eines Produktes

Produkterstellung ohne Anmeldung ist nicht möglich.



Please correct the following and try again:

- Product can only be added when user is signed in.

New product

Name

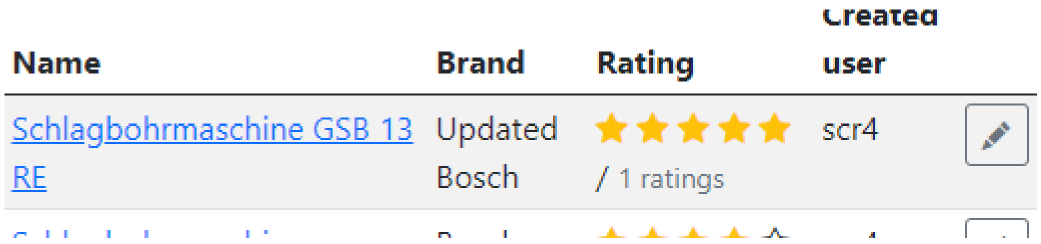
Brand

Create

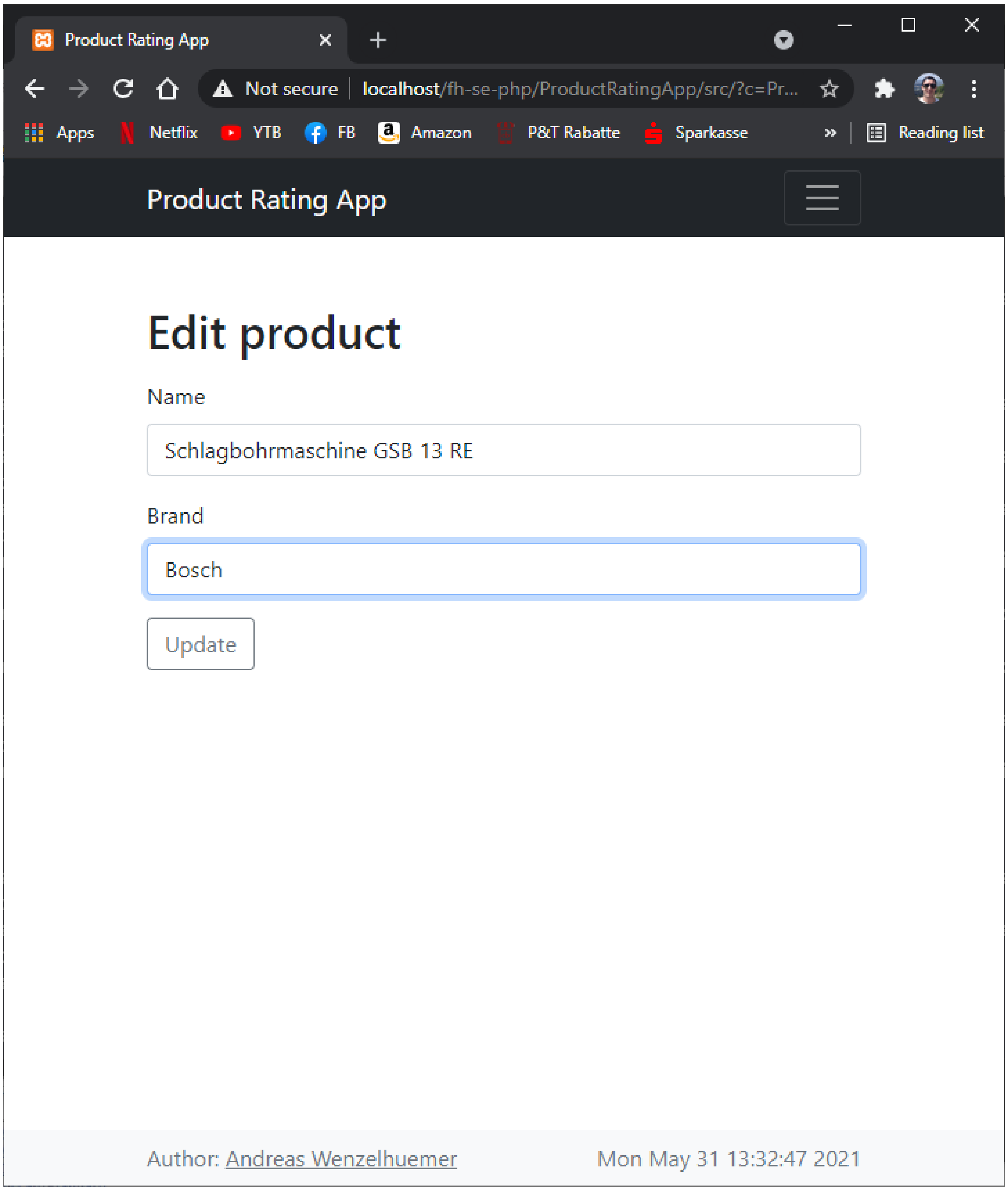
Author: Andreas Wenzelhuemer Mon May 31 13:38:38 2021

2.12. Testfall: Bearbeiten eines Produktes

Produkt wird entsprechend bearbeitet



Name	Brand	Rating	Created user	
Schlagbohrmaschine GSB 13 RE	Updated Bosch	★★★★★ / 1 ratings	scr4	✎



Edit product

Name

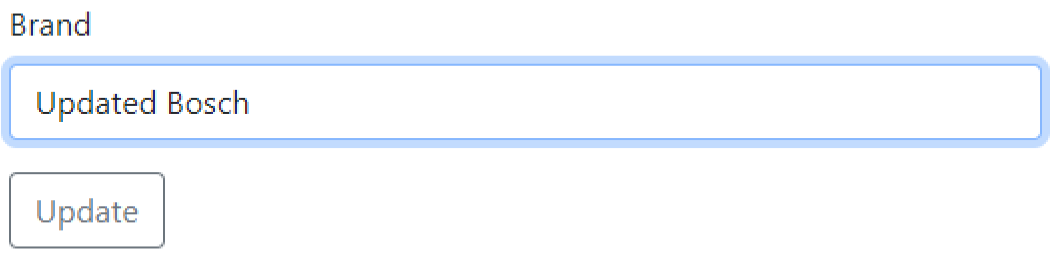
Schlagbohrmaschine GSB 13 RE

Brand

Bosch

Update

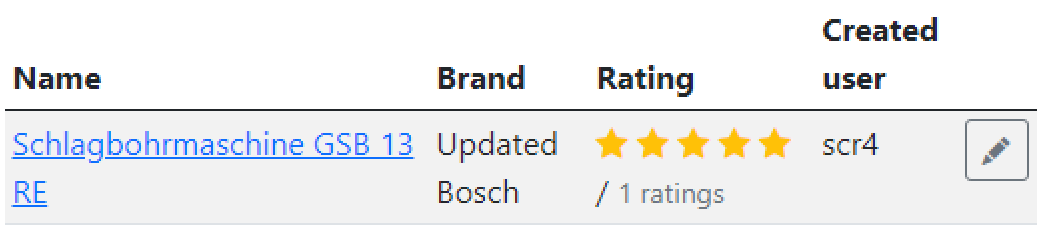
Author: Andreas Wenzelhuemer Mon May 31 13:32:47 2021



Brand

Updated Bosch

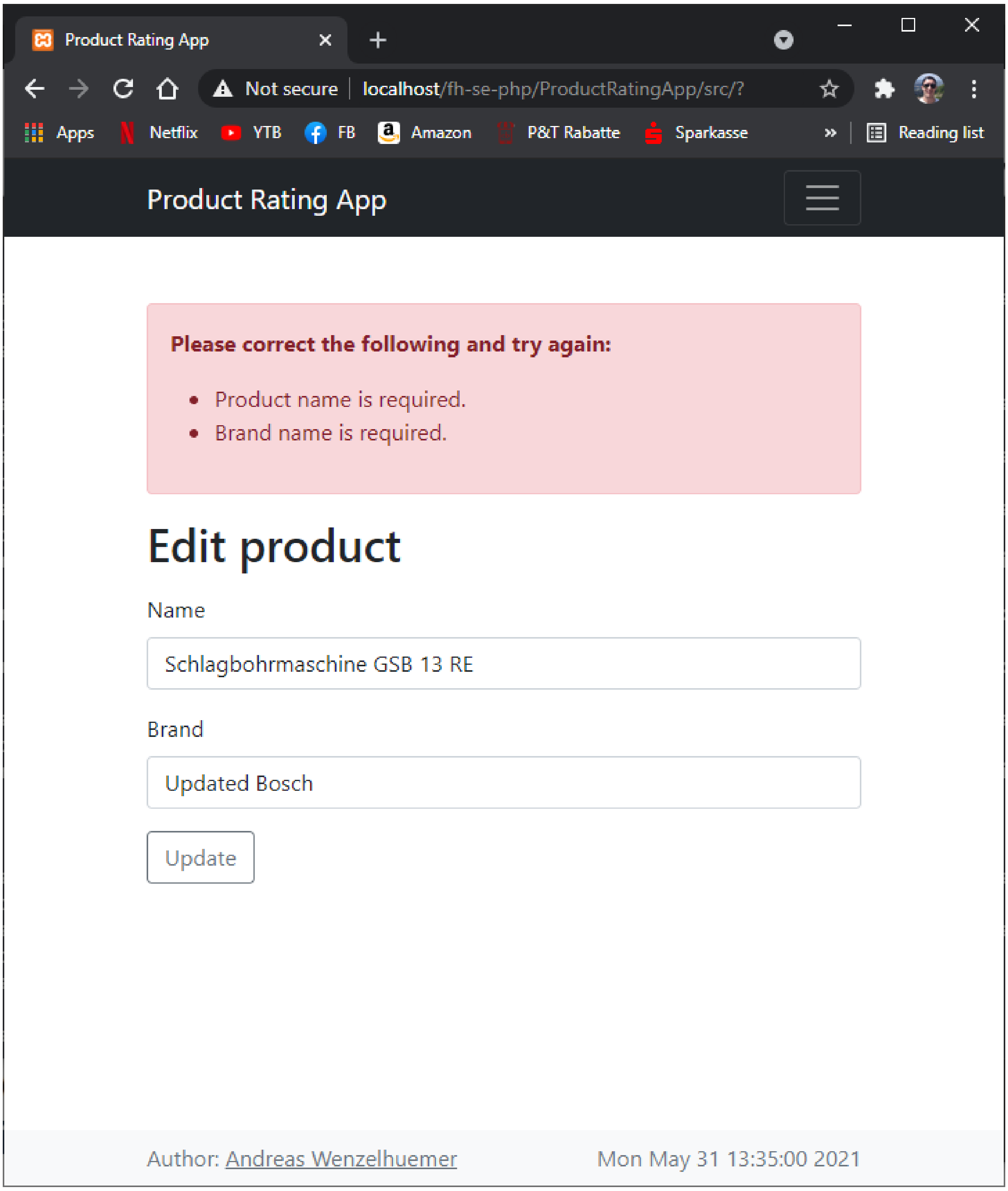
Update



Name	Brand	Rating	Created user	
Schlagbohrmaschine GSB 13 RE	Updated Bosch	★★★★★ / 1 ratings	scr4	✎

2.13. Testfall: Bearbeiten eines Produktes

Produkt mit ungültigen Eingaben liefert Validierungsfehler.



Please correct the following and try again:

- Product name is required.
- Brand name is required.

Edit product

Name: Schlagbohrmaschine GSB 13 RE

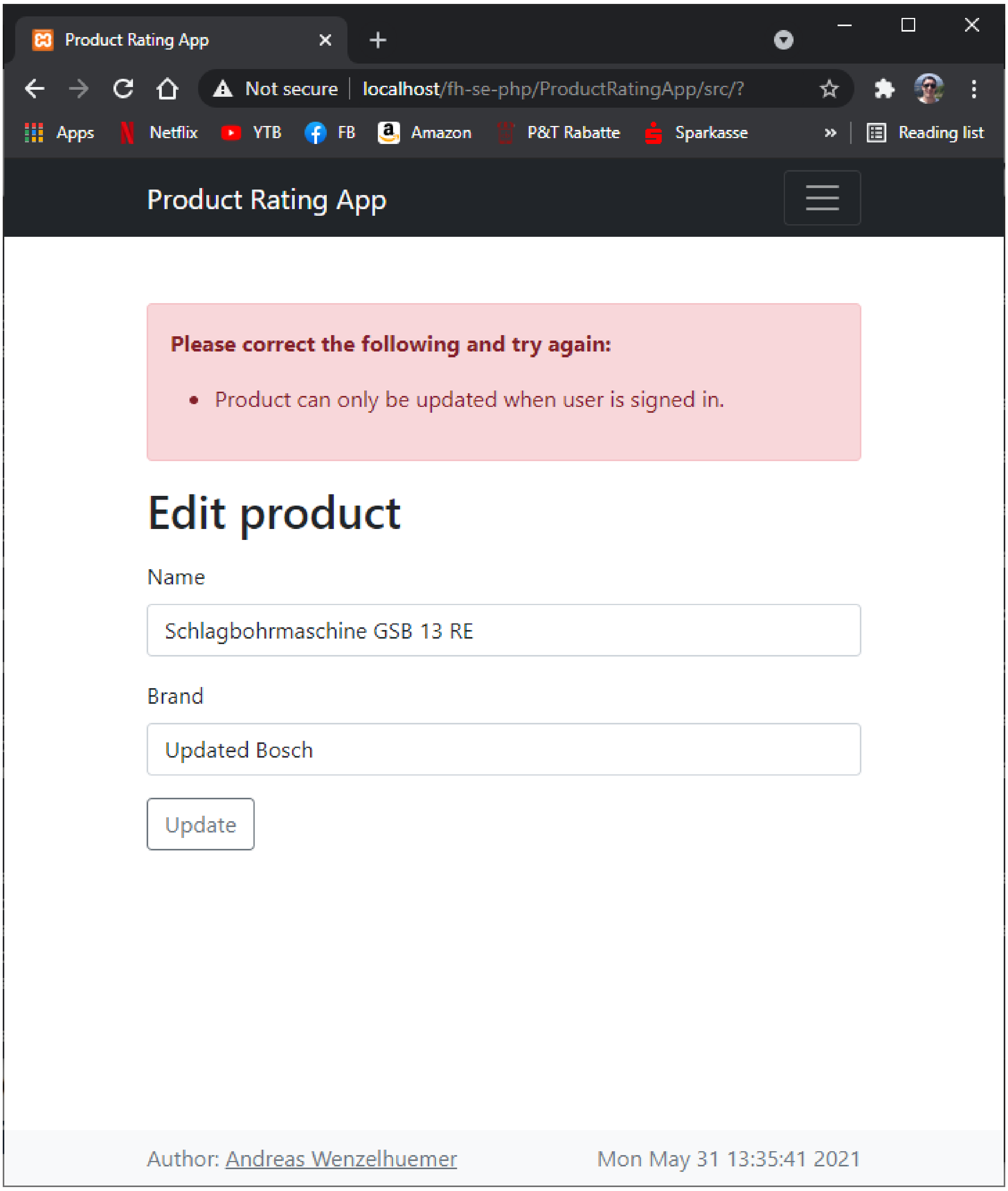
Brand: Updated Bosch

Update

Author: Andreas Wenzelhuemer Mon May 31 13:35:00 2021

2.14. Testfall: Bearbeiten eines Produktes

Bearbeitung mit Nutzer != Ersteller ist nicht möglich.



Please correct the following and try again:

- Product can only be updated when user is signed in.

Edit product

Name

Schlagbohrmaschine GSB 13 RE

Brand

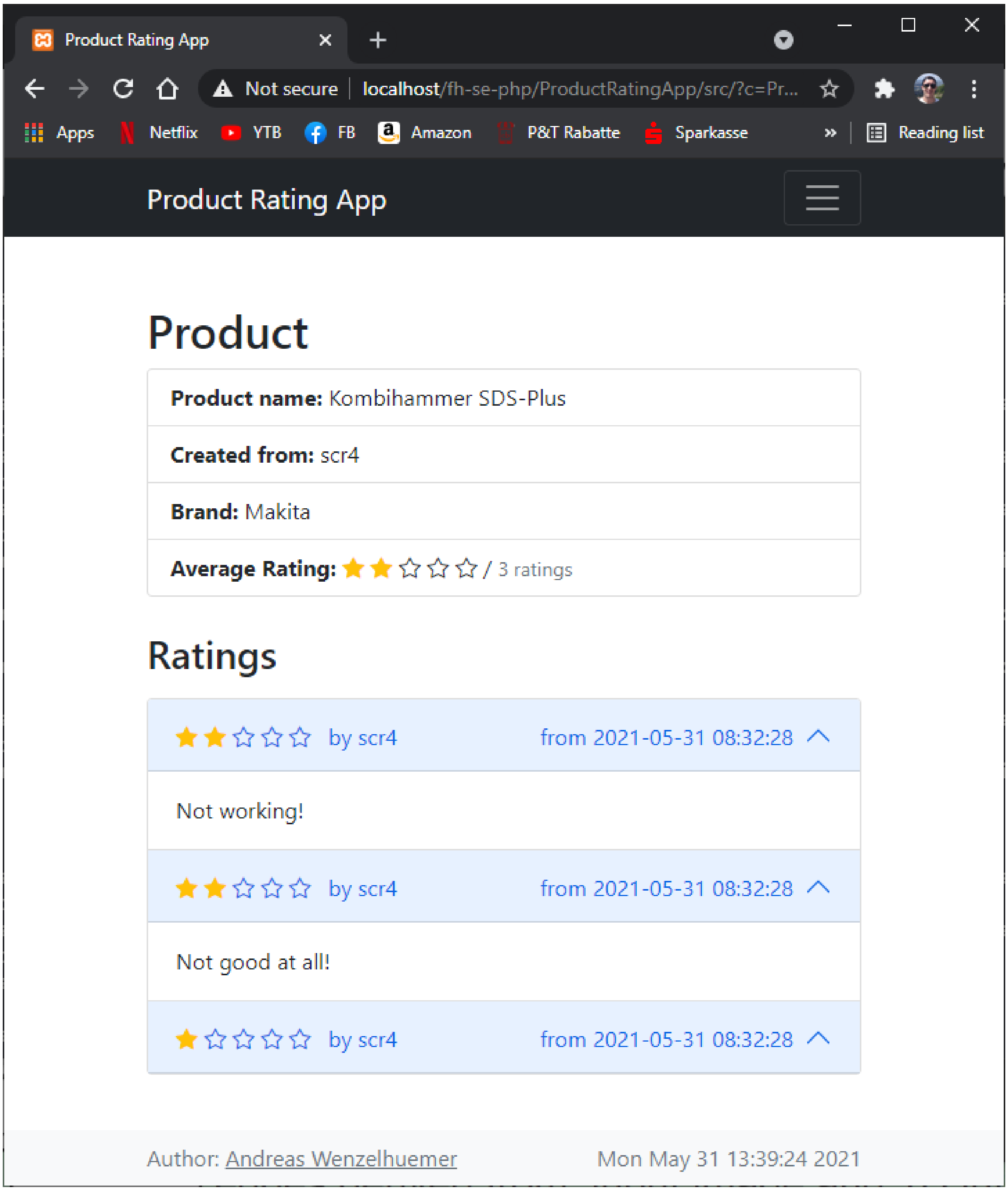
Updated Bosch

Update

Author: Andreas Wenzelhuemer Mon May 31 13:35:41 2021

2.15. Testfall: Produktdetails

Anzeige der Produktdetails inklusive Bewertungen



Product Rating App

Product

Product name: Kombihammer SDS-Plus

Created from: scr4

Brand: Makita

Average Rating: ★★☆☆☆ / 3 ratings

Ratings

★★☆☆☆ by scr4 from 2021-05-31 08:32:28

Not working!

★★☆☆☆ by scr4 from 2021-05-31 08:32:28

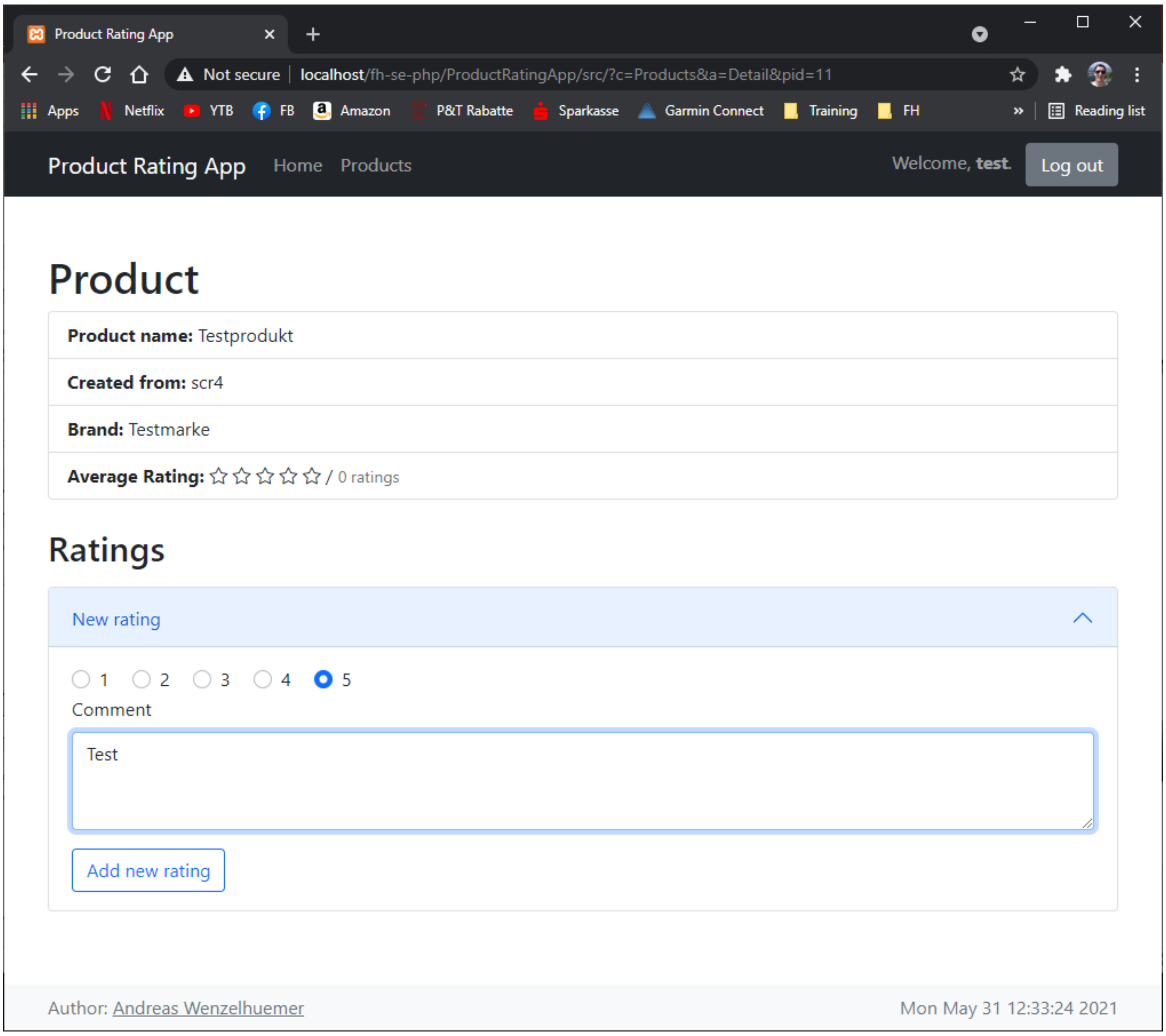
Not good at all!

★☆☆☆☆ by scr4 from 2021-05-31 08:32:28

Author: Andreas Wenzelhuemer Mon May 31 13:39:24 2021

2.16. Testfall: Bewertungen

Bewertung hinzufügen



Product

Product name: Testprodukt

Created from: scr4

Brand: Testmarke

Average Rating: ☆ ☆ ☆ ☆ ☆ / 0 ratings

Ratings

New rating

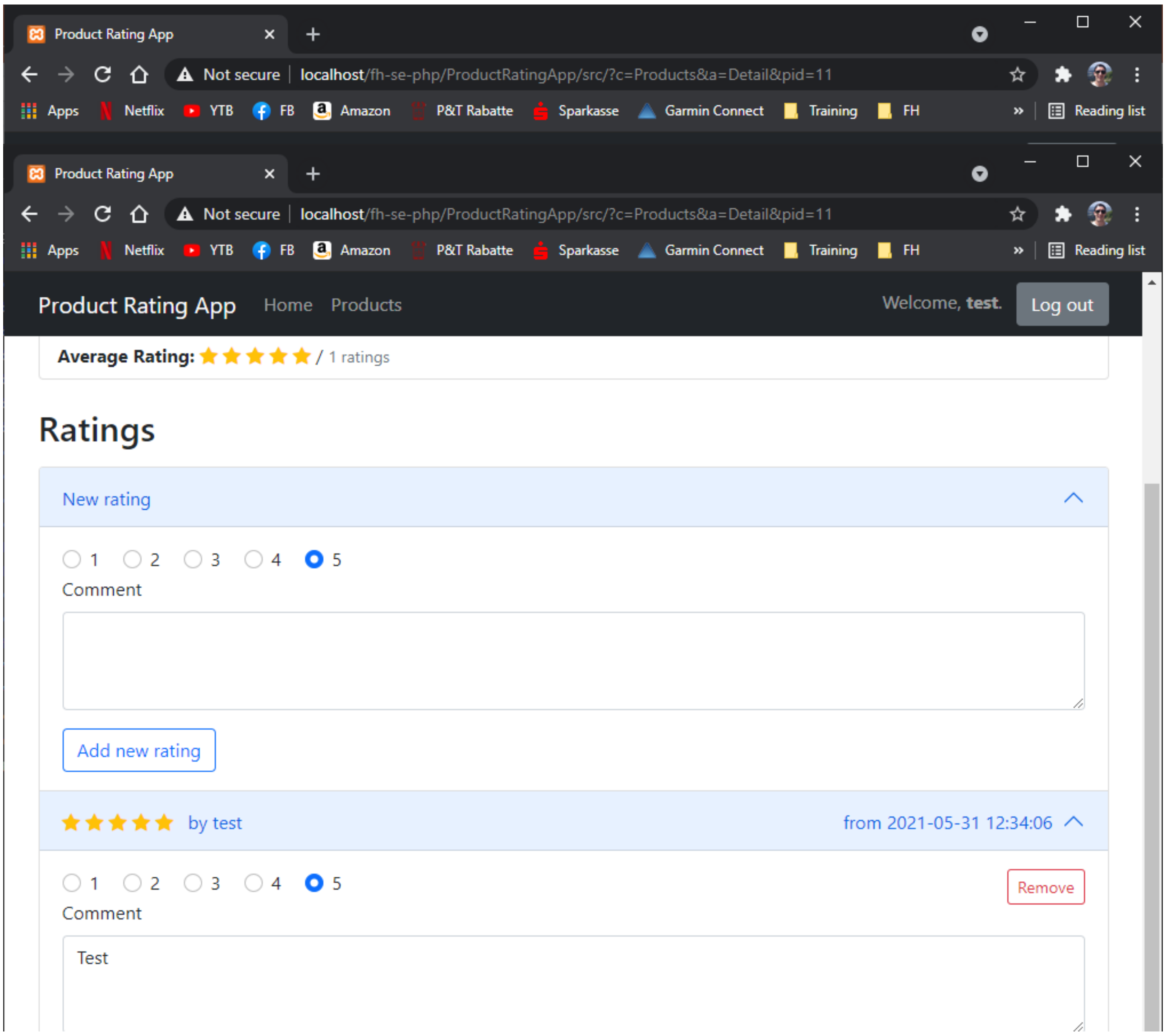
○ 1 ○ 2 ○ 3 ○ 4 [✓ 5]

Comment

Test

Add new rating

Author: Andreas Wenzelhuemer Mon May 31 12:33:24 2021



Average Rating: ★★★★★ / 1 ratings

Ratings

New rating

1 2 3 4 [✓ 5]

Comment

★★★★★ by test from 2021-05-31 12:34:06

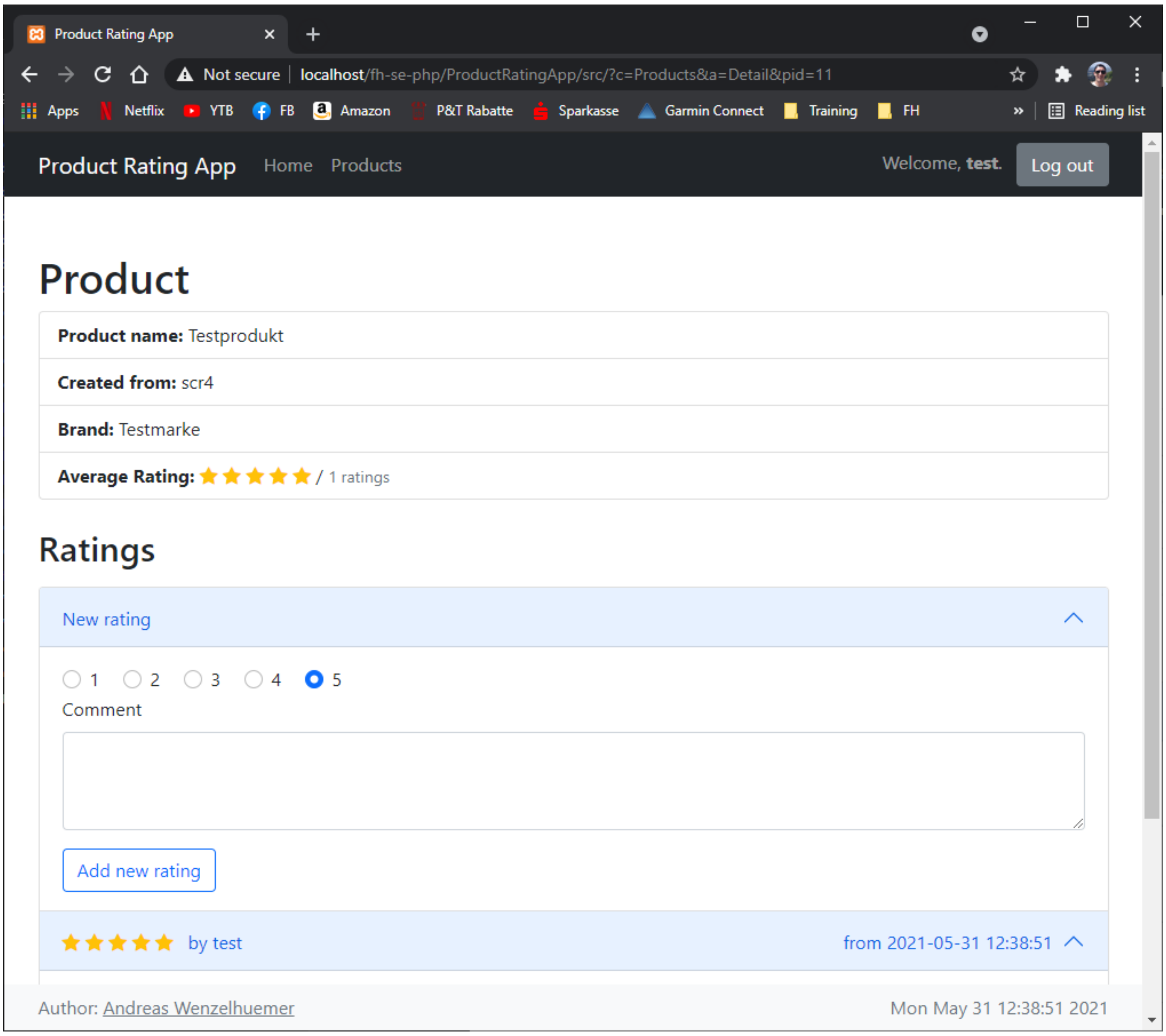
1 2 3 4 [✓ 5]

Comment

Test

2.17. Testfall: Bewertungen

Bewertung entfernen



Product

Product name: Testprodukt

Created from: scr4

Brand: Testmarke

Average Rating: ★★★★★ / 1 ratings

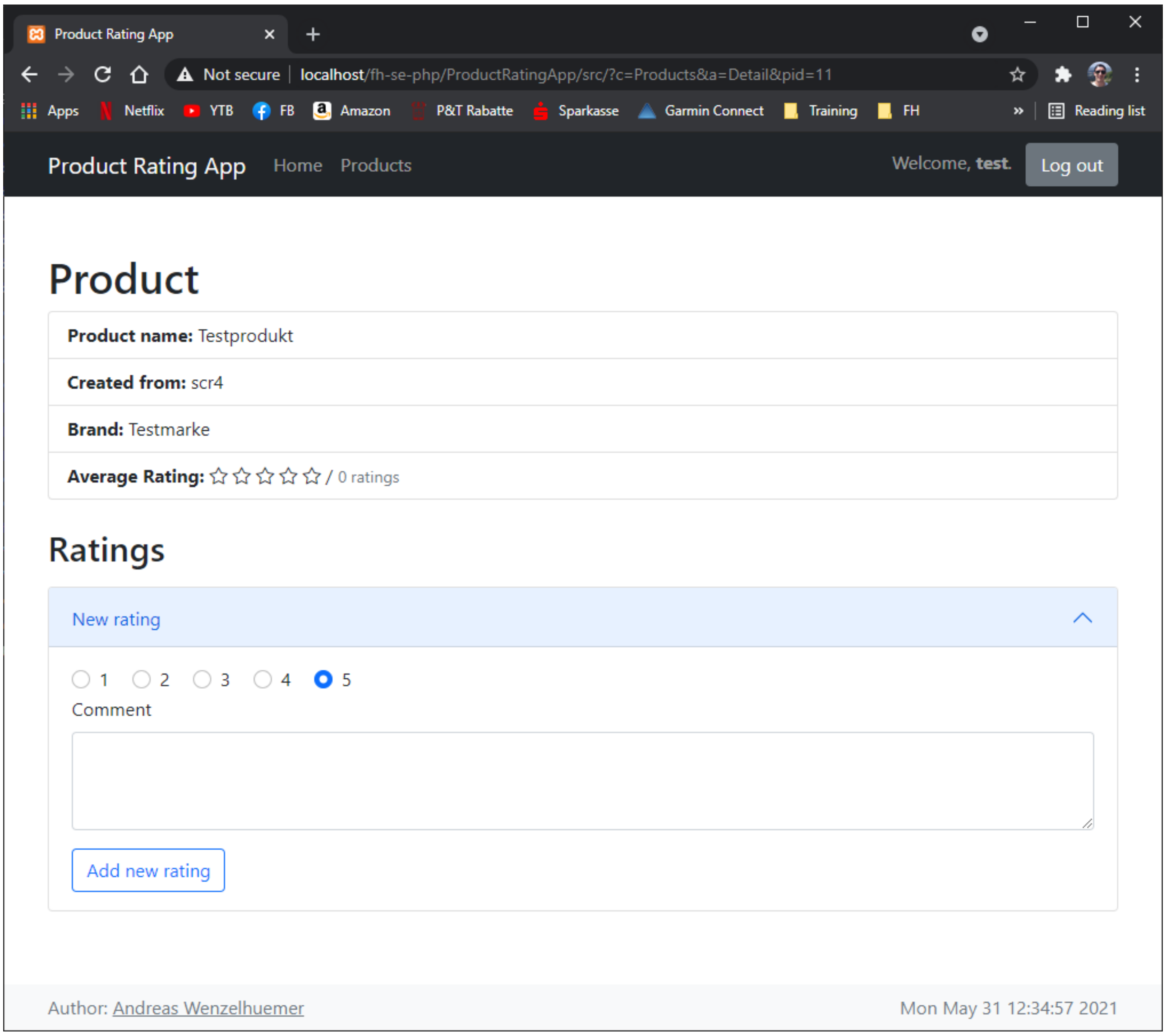
Ratings

1 2 3 4 [✓ 5]

Comment

★★★★★ by test from 2021-05-31 12:38:51

Author: Andreas Wenzelhuemer Mon May 31 12:38:51 2021


Product Rating App
Not secure | localhost/fh-se-php/ProductRatingApp/src/?c=Products&a=Detail&pid=11
Apps Netflix YTB FB Amazon P&T Rabatte Sparkasse Garmin Connect Training FH Reading list
Product Rating App Home Products
Welcome, test.
Log out

Product

Product name: Testprodukt

Created from: scr4

Brand: Testmarke

Average Rating: ☆☆☆☆☆ / 0 ratings

Ratings

New rating

1 2 3 4 [✓ 5]

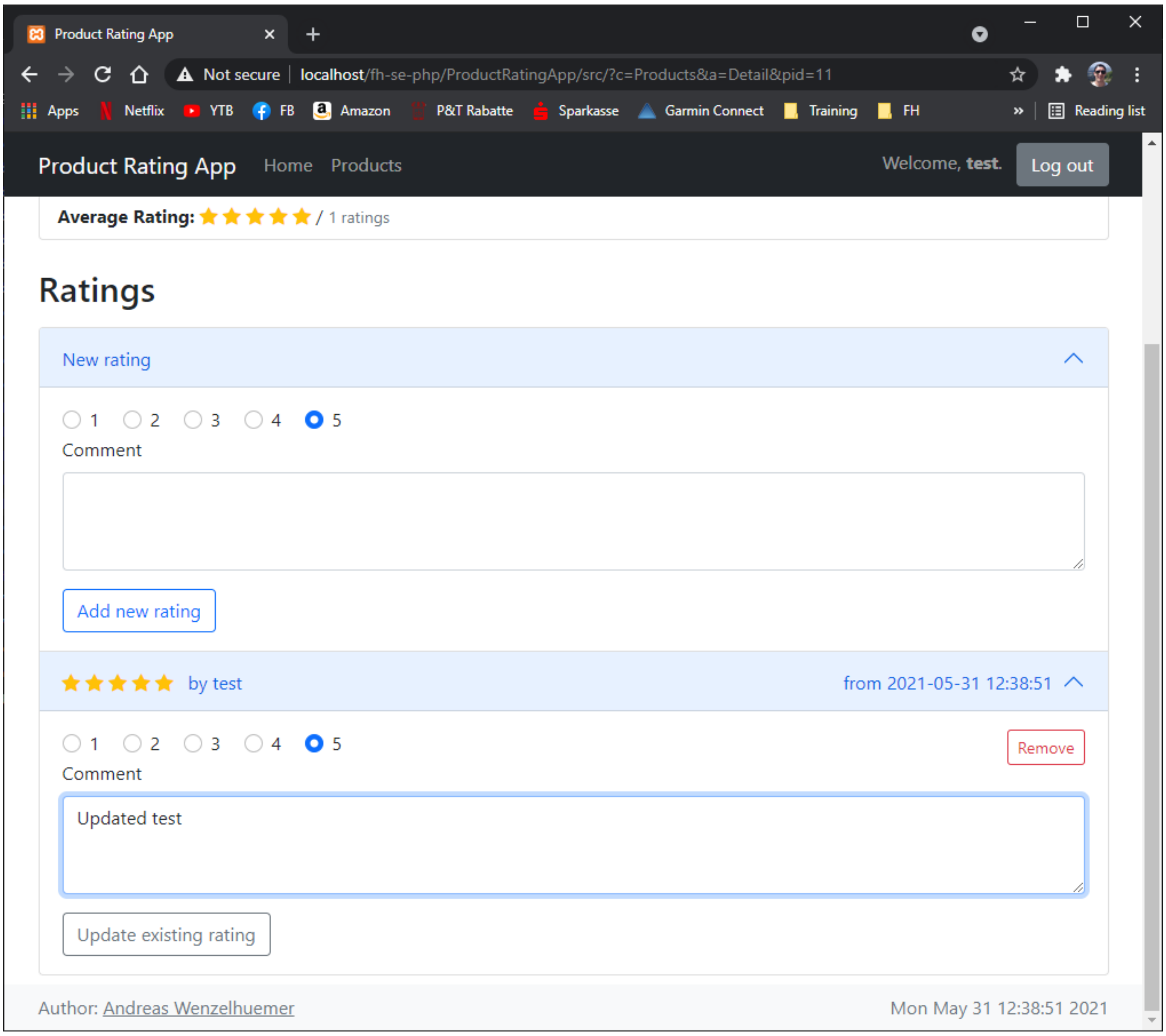
Comment

Add new rating

Author: Andreas Wenzelhuemer Mon May 31 12:34:57 2021

2.18. Testfall: Bewertungen

Bewertung aktualisieren



Average Rating: ★★★★★ / 1 ratings

Ratings

New rating

○ 1 ○ 2 ○ 3 ○ 4 ● 5

Comment

Add new rating

★★★★★ by test from 2021-05-31 12:38:51

○ 1 ○ 2 ○ 3 ○ 4 ● 5

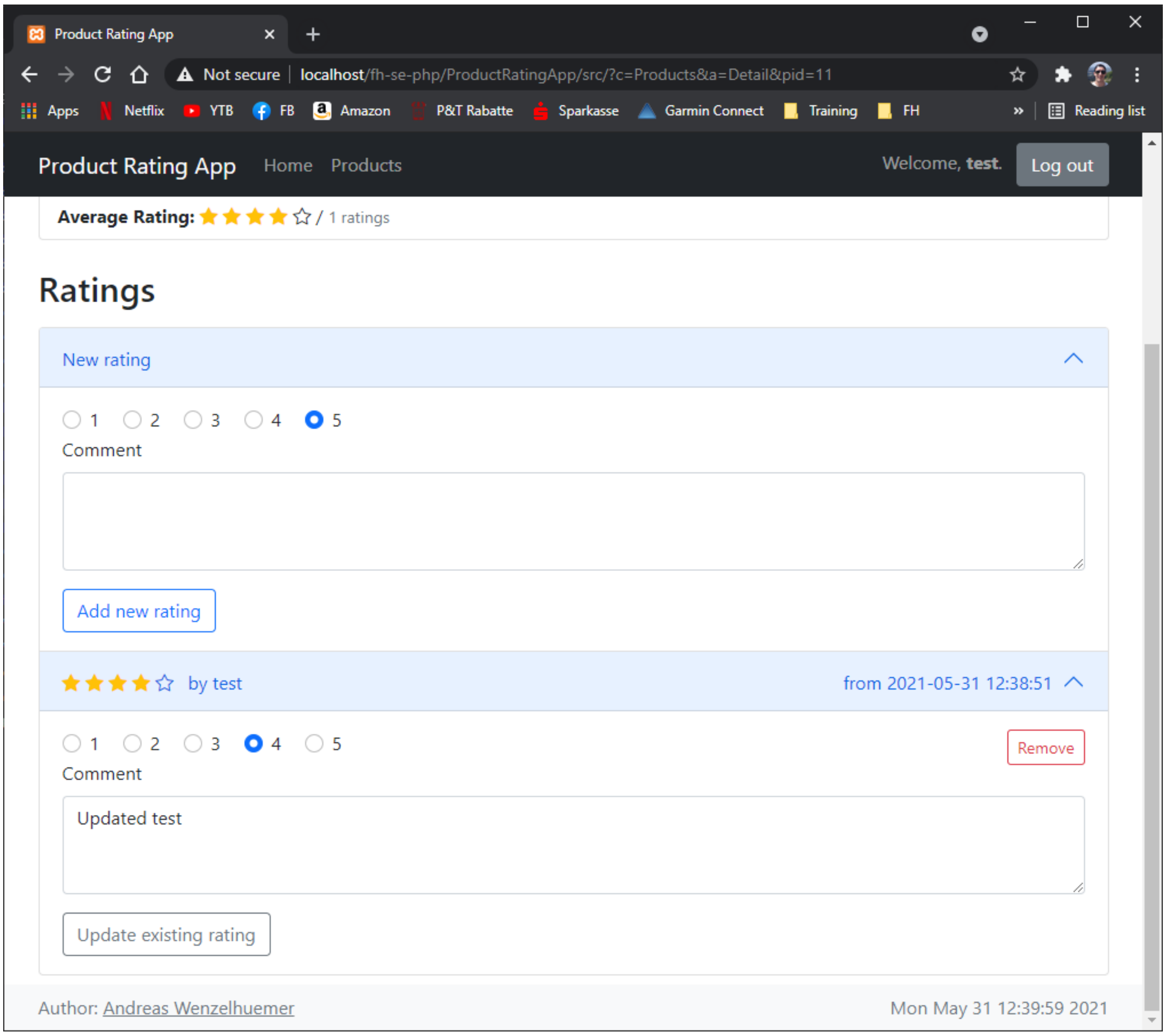
Remove

Comment

Updated test

Update existing rating

Author: Andreas Wenzelhuemer Mon May 31 12:38:51 2021


Product Rating App
Not secure | localhost/fh-se-php/ProductRatingApp/src/?c=Products&a=Detail&pid=11
Apps Netflix YTB FB Amazon P&T Rabatte Sparkasse Garmin Connect Training FH Reading list
Product Rating App Home Products
Welcome, test.
Log out

Average Rating: ★★★★☆ / 1 ratings

Ratings

New rating

( ) 1 ( ) 2 ( ) 3 ( ) 4 [✓ 5]

Comment

Add new rating

★★★★☆ by test from 2021-05-31 12:38:51

( ) 1 ( ) 2 ( ) 3 [✓ 4] ( ) 5

Remove

Comment

Updated test

Update existing rating

Author: Andreas Wenzelhuemer Mon May 31 12:39:59 2021

3. Quellcode

Listing 1. Index.php

```php
<?php

spl_autoload_register(function ($class) {
    $file = __DIR__ . '/src/' . str_replace('\\', '/', $class) .
'.php';
    if (file_exists($file)) {
        require_once($file);
    }
});

function registerCommandsAndQueries(\ServiceProvider $sp): void {
      // queries
      $sp->register(\Application\Queries\SignedInUserQuery::class);
      $sp->register(\Application\Queries\ProductsQuery::class);
      $sp->register(\Application\Queries\ProductQuery::class);
      $sp->register(\Application\Queries\ProductDetailQuery::class);

      // commands
      $sp->register(\Application\Commands\AddProductCommand::class);
      $sp->register(\Application\Commands\EditProductCommand::class);
      $sp->register(\Application\Commands\SignInCommand::class);
      $sp->register(\Application\Commands\SignOutCommand::class);
      $sp->register(\Application\Commands\RegisterCommand::class);
      $sp->register(\Application\Commands\AddRatingCommand::class);
      $sp->register(\Application\Commands\RemoveRatingCommand::class);
      $sp->register(\Application\Commands\EditRatingCommand::class);
}

function registerServices(\ServiceProvider $sp): void {
    $sp->register(\Application\Services\AuthenticationService::class);
}

function registerRepositories(\ServiceProvider $sp): void {
    $sp->register(\Infrastructure\FakeRepository::class, isSingleton:
true);
    $sp->register(\Infrastructure\Repository::class, function() {
return new \Infrastructure\Repository("localhost", "root", "",
"productrating");});
    $sp->register(\Application\Interfaces\UserRepository::class,
\Infrastructure\Repository::class, isSingleton: true);
```

```
    $sp->register(\Application\Interfaces\ProductRepository::class,
\Infrastructure\Repository::class, isSingleton: true);
    $sp->register(\Application\Interfaces\RatingRepository::class,
\Infrastructure\Repository::class, isSingleton: true);
}

function registerControllers(\ServiceProvider $sp): void {
    $sp->register(\Presentation\MVC\MVC::class, function () {
        return new \Presentation\MVC\MVC();
    }, isSingleton: true);

    $sp->register(\Presentation\Controllers\Error404::class);
    $sp->register(\Presentation\Controllers\Home::class);
    $sp->register(\Presentation\Controllers\User::class);
    $sp->register(\Presentation\Controllers\Products::class);
    $sp->register(\Presentation\Controllers\Ratings::class);
}

// === register services
$sp = new \ServiceProvider();

// --- Application
registerCommandsAndQueries($sp);

// --- Services
registerServices($sp);

// --- Infrastructure
  $sp->register(\Infrastructure\Session::class, isSingleton: true);
  $sp->register(\Application\Interfaces\Session::class,
\Infrastructure\Session::class);
registerRepositories($sp);

// --- Presentation
registerControllers($sp);

// === handle requests
$sp->resolve(\Presentation\MVC\MVC::class)->handleRequest($sp);
```

3.1. Application

3.1.1. Commands

Listing 2. AddProductCommand.php

```php
<?php

namespace Application\Commands;

class AddProductCommand
{
    const Error_NotAuthenticated = 0x01; // 1
    const Error_InvalidName = 0x02; // 2
    const Error_InvalidProducer = 0x04; // 4
    const Error_CreateProductFailed = 0x08; // 8

    public function __construct(
        private \Application\Services\AuthenticationService
$authenticationService,
        private \Application\Interfaces\ProductRepository
$productRepository
    ) {

    }

    public function execute(string $producer, string $name): int
    {
        $errors = 0;
        $name = trim($name);
        $producer = trim($producer);

        $userId = $this->authenticationService->getUserId();

        // check for authenticated user
        if($userId === null) {
            $errors |= self::Error_NotAuthenticated;
        }

        if(strlen($name) == 0) {
            $errors |= self::Error_InvalidName;
        }

        if(strlen($producer) == 0) {
            $errors |= self::Error_InvalidProducer;
        }
        if(!$errors) {
            $productId = $this->productRepository->addProduct(
$producer, $userId, $name);

            if($productId === null) {
                $errors |= self::Error_CreateProductFailed;
            }
        }

        return $errors;
    }
}
```

Listing 3. AddRatingCommand.php

```
<?php

namespace Application\Commands;

use Application\Interfaces\RatingRepository;
use Application\Services\AuthenticationService;

class AddRatingCommand {

    const Error_NotAuthenticated = 0x01; // 1
    const Error_CreateRatingFailed = 0x2; // 2

    public function __construct(
        private AuthenticationService $authenticationService,
        private RatingRepository $ratingRepository
    ) { }

    public function execute(int $productId, int $rating, ?string
$comment): int
    {
        $userId = $this->authenticationService->getUserId();
        $errors = 0;

        $comment = trim($comment);
        $comment = $comment === "" ? null : $comment;

        // check for authenticated user
        if($userId === null) {
            $errors |= self::Error_NotAuthenticated;
        }

        if(!$errors) {
            // try to create new rating
            $ratingId = $this->ratingRepository->addRating(
                $userId,
                $productId,
                $rating,
                $comment
            );

            if($ratingId === null) {
                $errors |= self::Error_CreateRatingFailed;
            }
        }

        return $errors;
    }
}
```

Listing 4. EditProductCommand.php

```
<?php

namespace Application\Commands;

class EditProductCommand
{
    const Error_NotAuthenticated = 0x01; // 1
    const Error_InvalidName = 0x02; // 2
    const Error_InvalidProducer = 0x04; // 4

    public function __construct(
        private \Application\Services\AuthenticationService
$authenticationService,
        private \Application\Interfaces\ProductRepository
$productRepository
    ) {

    }

    public function execute(int $id, string $producer, string $name):
int
```

```
    {
        $errors = 0;
        $name = trim($name);
        $producer = trim($producer);

        $userId = $this->authenticationService->getUserId();

        // check for authenticated user
        if($userId === null  || $this->productRepository-
>canEditProduct($id, $userId) == 0) {
            $errors |= self::Error_NotAuthenticated;
        }

        if(strlen($name) == 0) {
            $errors |= self::Error_InvalidName;
        }

        if(strlen($producer) == 0) {
            $errors |= self::Error_InvalidProducer;
        }

        if(!$errors) {
            $this->productRepository->editProduct($id, $producer,
$name);
        }

        return $errors;
    }
}
```

Listing 5. EditRatingCommand.php

```
<?php

namespace Application\Commands;

use Application\Interfaces\RatingRepository;
use Application\Services\AuthenticationService;

class EditRatingCommand {

    const Error_NotAuthenticated = 0x01; // 1

    public function __construct(
        private AuthenticationService $authenticationService,
        private RatingRepository $ratingRepository
    ) { }

    public function execute(int $ratingId, int $productId, int $rating,
?string $comment): int
    {
        $userId = $this->authenticationService->getUserId();
        $errors = 0;

        $comment = trim($comment);
        $comment = $comment === "" ? null : $comment;

        // check for authenticated user
        if($userId === null || $this->ratingRepository->canEditRating
($ratingId, $userId) == 0) {
            $errors |= self::Error_NotAuthenticated;
        }

        if(!$errors) {
            // try to edit rating
            $this->ratingRepository->editRating(
                $ratingId,
                $productId,
                $rating,
                $comment
            );
        }

        return $errors;
    }
}
```

Listing 6. RegisterCommand.php

```
<?php

namespace Application\Commands;

use Application\Interfaces\UserRepository;

class RegisterCommand
{
    const Error_UsernameAlreadyExists = 0x01; // 1
    const Error_CreateUserFailed = 0x02; // 2
    const Error_InvalidUsername = 0x04; // 4
    const Error_InvalidPassword = 0x08; // 8

    public function __construct(
        private UserRepository $userRepository
    ) { }

    public function execute(string $username, string $password): int
    {
        $errors = 0;
        $username = trim($username);

        if($this->userRepository->getUserForUserName($username) !==
null) {
            $errors |= self::Error_UsernameAlreadyExists;
        } else {

            if(strlen($username) == 0) {
                $errors |= self::Error_InvalidUsername;
            }

            if(strlen($password) < 4) {
                $errors |= self::Error_InvalidPassword;
            }

            if(!$errors) {
                $userId = $this->userRepository->createUser($username,
$password);
                if($userId === null) {
                    $errors |= self::Error_CreateUserFailed;
                }
            }
        }

        return $errors;
    }
}
```

Listing 7. RemoveRatingCommand.php

```
<?php

namespace Application\Commands;

use Application\Interfaces\RatingRepository;
use Application\Services\AuthenticationService;

class RemoveRatingCommand
{
    const Error_NotAuthenticated = 0x01; // 1

    public function __construct(
        private AuthenticationService $authenticationService,
        private RatingRepository $ratingRepository
    ) { }

    public function execute(int $ratingId): int
    {
        $userId = $this->authenticationService->getUserId();
        $errors = 0;

        // check for authenticated user
        if($userId === null || !$this->ratingRepository->canEditRating
($ratingId, $userId)) {
            $errors |= self::Error_NotAuthenticated;
        }

        if(!$errors) {
            // try to remove rating
            $this->ratingRepository->removeRating($ratingId);
        }

        return $errors;
    }
}
```

Listing 8. SignInCommand.php

```php
<?php

namespace Application\Commands;

use Application\Interfaces\UserRepository;
use Application\Services\AuthenticationService;

class SignInCommand
{
    public function __construct(
        private AuthenticationService $authenticationService,
        private UserRepository $userRepository
        ) {
    }

    public function execute(string $username, string $password): bool
    {
        $this->authenticationService->signOut();
        $user = $this->userRepository->getUserForUserNameAndPassword
($username, $password);
        if($user != null) {
            $this->authenticationService->signIn($user->getId());
            return true;
        }

        return false;
    }
}
```

Listing 9. SignOutCommand.php

```php
<?php

namespace Application\Commands;

use Application\Services\AuthenticationService;

class SignOutCommand
{
    public function __construct(
        private AuthenticationService $authenticationService
    ) {
    }

    public function execute(): void
    {
        $this->authenticationService->signOut();
    }
}
```

3.1.2. Entities

Listing 10. Product.php

```php
<?php

namespace Application\Entities;

class Product {

    /**
     * Product constructor.
     * @param int $id
     * @param string $producer
     * @param string $userId
     * @param string $name
     */
    public function __construct(
        private int $id,
        private string $producer,
        private string $userId,
        private string $name)
    { }

    /**
     * @return int
     */
    public function getId(): int
    {
        return $this->id;
    }

    /**
     * @return string
     */
    public function getProducer(): string
    {
        return $this->producer;
    }

    /**
     * @return string
     */
    public function getUserId(): string
    {
        return $this->userId;
    }

    /**
     * @return string
     */
    public function getName(): string
    {
        return $this->name;
    }
}
```

Listing 11. Rating.php

```
<?php

namespace Application\Entities;

class Rating {

    /**
     * Rating constructor.
     */
    public function __construct(
        private int $id,
        private int $userId,
        private int $productId,
        private int $rating,
        private ?string $comment,
        private string $createdDate
    ) { }

    /**
     * @return int
     */
    public function getId(): int
    {
        return $this->id;
    }

    /**
     * @return int
     */
    public function getUserId(): int
    {
        return $this->userId;
    }

    /**
     * @return int
     */
    public function getProductId(): int
    {
        return $this->productId;
    }

    /**
     * @return int
     */
    public function getRating(): int
    {
        return $this->rating;
    }

    /**
     * @return string
     */
    public function getComment(): ?string
    {
        return $this->comment;
    }

    /**
     * @return string
     */
    public function getCreatedDate(): string
    {
        return $this->createdDate;
    }
}
```

Listing 12. User.php

```php
<?php

namespace Application\Entities;

class User {
    public function __construct(
        private int $id,
        private string $userName
    )
    { }

    public function getId(): int {
        return $this->id;
    }

    public function getUserName(): string {
        return $this->userName;
    }
}
```

3.1.3. Interfaces

Listing 13. ProductRepository.php

```php
<?php

namespace Application\Interfaces;

use Application\Entities\Product;

interface ProductRepository
{
    public function getProduct(int $id): ?Product;
    public function getProducts(): array;
    public function getProductsForFilter(string $filter): array;
    public function addProduct(string $producer, int $userId, string
$name): ?int;
    public function canEditProduct(int $id, int $userId): bool;
    public function editProduct(int $id, string $producer, string
$name);
}
```

Listing 14. RatingRepository.php

```php
<?php

namespace Application\Interfaces;

interface RatingRepository {

    public function getRatingAverageForProduct(int $productId): float;
    public function getRatingCountForProduct(int $productId): int;
    public function getRatingsFromProduct(int $productId): array;
    public function addRating(int $userId, int $productId, int $rating,
?string $comment): ?int;
    public function editRating(int $id, int $productId, int $rating,
?string $comment): void;
    public function removeRating(int $id);
    public function canEditRating(int $id, int $userId): bool;
}
```

Listing 15. Session.php

```
<?php

namespace Application\Interfaces;

interface Session {
    public function get(string $key): mixed;
    public function put(string $key, mixed $value): void;
    public function delete(string $key): void;
}
```

Listing 16. UserRepository.php

```
<?php

namespace Application\Interfaces;

interface UserRepository {
    public function getUserForUserName(string $userName) : ?
\Application\Entities\User;
    public function getUserForUserNameAndPassword(string $userName,
string $password) : ?\Application\Entities\User;
    public function getUser(int $id): ?\Application\Entities\User;
    public function createUser(string $userName, string $password) :
int;
}
```

3.1.4. Models

Listing 17. ProductData.php

```php
<?php

namespace Application\Models;

class ProductData {

    public function __construct(
        private int $id,
        private string $producer,
        private UserData $user,
        private string $name,
        private float $rating,
        private int $ratingCount
    ) { }

    /**
     * @return int
     */
    public function getId(): int
    {
        return $this->id;
    }

    /**
     * @return string
     */
    public function getProducer(): string
    {
        return $this->producer;
    }

    /**
     * @return string
     */
    public function getUserName(): ?string
    {
        if($this->user) {
            return $this->user->getUserName();
        } else {
            return null;
        }
    }

    /**
     * @return int
     */
    public function getUserId(): ?int
    {
        if($this->user) {
            return $this->user->getId();
        } else {
            return null;
        }
    }

    /**
     * @return string
     */
    public function getName(): string
    {
        return $this->name;
    }

    /**
     * @return int
     */
    public function getRating(): float
    {
        return $this->rating;
    }

    /**
     * @return int
     */
    public function getRatingCount(): int
    {
        return $this->ratingCount;
    }


}
```

Listing 18. ProductDetailData.php

```php
<?php

namespace Application\Models;

class ProductDetailData extends ProductData
{

    /**
     * ProductDetailData constructor.
     */
    public function __construct(
        int $id,
        string $producer,
        UserData $user,
        string $name,
        private array $ratings
    ) {

        $ratingSum = 0;
        $ratingCount = 0;
        if(sizeof($this->ratings) > 0) {
            foreach ($this->ratings as $rating) {
                $ratingCount++;
                $ratingSum += $rating->getRating();
            }
        }

        $ratingAverage = $ratingCount > 0 ? round($ratingSum /
$ratingCount, 2) : 0;

        parent::__construct($id, $producer, $user, $name,
$ratingAverage, $ratingCount);
    }

    /**
     * @return array
     */
    public function getRatings(): array
    {
        return $this->ratings;
    }


}
```

Listing 19. RatingData.php

```php
<?php

namespace Application\Models;

class RatingData {
    public function __construct(
        private int $id,
        private UserData $user,
        private int $rating,
        private ?string $comment,
        private String $createdDate
    ) { }

    /**
     * @return int
     */
    public function getId(): int
    {
        return $this->id;
    }

    /**
     * @return UserData
     */
    public function getUser(): UserData
    {
        return $this->user;
    }

    /**
     * @return int
     */
    public function getRating(): int
    {
        return $this->rating;
    }

    /**
     * @return string
     */
    public function getComment(): ?string
    {
        return $this->comment;
    }

    /**
     * @return String
     */
    public function getCreatedDate(): String
    {
        return $this->createdDate;
    }


}
```

Listing 20. UserData.php

```php
<?php

namespace Application\Models;

class UserData
{
    public function __construct(
        private int $id,
        private string $userName
    ) {
    }

    public function getId(): int
    {
        return $this->id;
    }

    public function getUserName(): string
    {
        return $this->userName;
    }
}
```

3.1.5. Queries

Listing 21. ProductDetailQuery.php

```php
<?php

namespace Application\Queries;

use Application\Interfaces\ProductRepository;
use Application\Interfaces\RatingRepository;
use Application\Interfaces\UserRepository;
use Application\Models\ProductDetailData;
use Application\Models\RatingData;
use Application\Models\UserData;

class ProductDetailQuery {

    public function __construct(
        private ProductRepository $productRepository,
        private RatingRepository $ratingRepository,
        private UserRepository $userRepository,
    )
    {
    }

    public function execute(int $id): ?ProductDetailData {
        $product = $this->productRepository->getProduct($id);

        if($product === null) {
            return null;
        }

        $ratingResult = $this->ratingRepository->getRatingsFromProduct
($id);
        $userResult = $this->userRepository->getUser($product-
>getUserId());

        $ratings = [];

        foreach ($ratingResult as $rating) {

            // Load user if necessary
            $ratingUser = $rating->getUserId() != $userResult->getId()
? $this->userRepository->getUser($rating->getUserId()) : $userResult;
```

```
            $ratings[] = new RatingData(
                $rating->getId(),
                new UserData($ratingUser->getId(), $ratingUser-
>getUserName()),
                $rating->getRating(),
                $rating->getComment(),
                $rating->getCreatedDate()
            );
        }

        return new ProductDetailData(
            $product->getId(),
            $product->getProducer(),
            new UserData($userResult->getId(), $userResult->
getUserName()),
            $product->getName(),
            $ratings
        );
    }
}
```

Listing 22. ProductQuery.php

```
<?php

namespace Application\Queries;

use Application\Interfaces\ProductRepository;
use Application\Interfaces\RatingRepository;
use Application\Interfaces\UserRepository;
use Application\Models\ProductData;
use Application\Models\ProductDetailData;
use Application\Models\RatingData;
use Application\Models\UserData;

class ProductQuery {

    public function __construct(
        private ProductRepository $productRepository,
        private UserRepository $userRepository,
        private RatingRepository $ratingRepository
    )
    {
    }

    public function execute(int $id): ?ProductData {
        $product = $this->productRepository->getProduct($id);

        if($product === null) {
            return null;
        }

        $userResult = $this->userRepository->getUser($product-
>getUserId());

        return new ProductData(
            $product->getId(),
            $product->getProducer(),
            new UserData($userResult->getId(), $userResult->
getUserName()),
            $product->getName(),
            $this->ratingRepository->getRatingAverageForProduct
($product->getId()),
            $this->ratingRepository->getRatingCountForProduct($product
->getId())
        );
    }
}
```

Listing 23. ProductsQuery.php

```
<?php

namespace Application\Queries;

use Application\Interfaces\ProductRepository;
use Application\Interfaces\RatingRepository;
use Application\Interfaces\UserRepository;
use Application\Models\ProductData;
use Application\Models\UserData;

class ProductsQuery
{
    public function __construct(
        private ProductRepository $productRepository,
        private UserRepository $userRepository,
        private RatingRepository $ratingRepository
    ) {
    }

    public function execute(?string $filter): array{
        $results = [];

        $products = $filter === null || $filter == "" ? $this-
>productRepository->getProducts() : $this->productRepository-
>getProductsForFilter($filter);

        foreach($products as $product) {

            $user = $this->userRepository->getUser($product->
getUserId());
            $averageRating = $this->ratingRepository-
>getRatingAverageForProduct($product->getId());
            $totalCount = $this->ratingRepository-
>getRatingCountForProduct($product->getId());

            $results[] = new ProductData(
                $product->getId(),
                $product->getProducer(),
                new UserData($user->getId(), $user->getUserName()),
                $product->getName(),
                $averageRating,
                $totalCount
                );
        }

        return $results;
    }
}
```

Listing 24. SignedInUserQuery.php

```php
<?php

namespace Application\Queries;

use Application\Interfaces\UserRepository;
use Application\Services\AuthenticationService;
use Application\Models\UserData;

class SignedInUserQuery
{
    public function __construct(
        private AuthenticationService $authenticationService,
        private UserRepository $userRepository
    ) {
    }

    public function execute(): ?UserData
    {
        $id = $this->authenticationService->getUserId();
        if ($id === null) {
          return null;
        }
        $user = $this->userRepository->getUser($id);
        if ($user === null) {
            return null;
        }
        return new UserData($user->getId(), $user->getUserName());
    }
}
```

3.1.6. Services

Listing 25. AuthenticationService.php

```php
<?php

namespace Application\Services;

class AuthenticationService {

    const SESSION_USER_ID = "userId";

    public function __construct(
        private \Application\Interfaces\Session $session
    ) { }

    public function signIn(int $userId) {
        $this->session->put(self::SESSION_USER_ID, $userId);
    }

    public function signOut() : void {
        $this->session->delete(self::SESSION_USER_ID);
    }

    public function getUserId(): ?int {
        return $this->session->get(self::SESSION_USER_ID);
    }
}
```

3.2. Infrastructure

Listing 26. FakeRepository.php

```php
<?php

namespace Infrastructure;

use Application\Entities\Book;
use Application\Entities\Category;
use Application\Entities\Product;
use Application\Entities\Rating;
use Application\Entities\User;
use Application\Interfaces\BookRepository;
use Application\Interfaces\CategoryRepository;
use Application\Interfaces\OrderRepository;
use Application\Interfaces\ProductRepository;
use Application\Interfaces\RatingRepository;
use \Application\Interfaces\UserRepository;

class FakeRepository implements
UserRepository,
    ProductRepository,
    RatingRepository
{
    private $mockUsers;
    private $mockProducts;
    private $mockRatings;

    public function __construct()
    {
        // create mock data
        $this->mockUsers = array(
            array(1, 'scr4', 'scr4')
        );

        $this->mockProducts = array(
            array(1, 'Hilti', 1, 'Schlagbohrmaschine'),
            array(2, 'Bosch', 1, 'Schlagbohrmaschine'),
            array(3, 'Makita', 1, 'Schlagbohrmaschine')
        );

        $this->mockRatings = array(
          array(1, 1, 1, 5, "Hilti quality!", date_format(new \
DateTime(),"Y-m-d H:i:s"))
        );
    }

    public function getUser(int $id): ?User {
        foreach($this->mockUsers as $u) {
            if($u[0] === $id) {
                return new User($u[0], $u[1]);
            }
        }
        return null;
    }

    public function getUserForUserNameAndPassword(string $userName,
string $password): ?User
    {
        foreach($this->mockUsers as $u) {
            if($u[1] === $userName && $u[2] === $password) {
                return new User($u[0], $u[1]);
            }
        }
        return null;
    }

    public function getUserForUserName(string $userName): ?
\Application\Entities\User
    {
        foreach($this->mockUsers as $u) {
            if($u[1] === $userName) {
                return new User($u[0], $u[1]);
            }
        }
        return null;
    }

    public function createUser(string $userName, string $password) :
int
    {
        $count = sizeof($this->mockUsers);
        $newId = 0;
        if($count > 0) {
            $user = $this->mockUsers[$count - 1];
            $newId = $user[0];
            $newId++;
        }

        array_push($this->mockUsers,
            array($newId, $userName, $password)
        );

        return $newId;
    }

    public function getProducts(): array
    {
        $result = [];
        foreach($this->mockProducts as $product) {
            $result[] = new Product($product[0], $product[1], $product
[2], $product[3]);
        }

        return $result;
    }

    public function getRatingAverageForProduct(int $productId): float
    {
        $ratingSum = 0;
        $ratingCount = 0;
        foreach ($this->mockRatings as $rating) {
            if($rating[3] === $productId) {
                $ratingCount++;
                $ratingSum += $rating[2];
            }
        }
        return $ratingSum > 0 ? $ratingCount / $ratingSum : 0;
    }

    public function getRatingCountForProduct(int $productId): int
    {
        $ratingCount = 0;
        foreach ($this->mockRatings as $rating) {
            if($rating[2] === $productId) {
                $ratingCount++;
            }
        }
        return $ratingCount;
    }
    public function getProduct(int $id) : ?Product
    {
        foreach ($this->mockProducts as $product) {
            if($product[0] === $id) {
                return new Product($product[0], $product[1], $product[
2], $product[3]);
            }
        }
        return null;
    }

    public function getRatingsFromProduct(int $productId): array
    {
        $result = [];
        foreach($this->mockRatings as $rating) {
            if($rating[2] === $productId) {
                $result[] = new Rating($rating[0], $rating[1], $rating
[2], $rating[3], $rating[4], $rating[5]);
            }
        }

        return $result;
    }

    public function addRating(int $userId, int $productId, int $rating,
?string $comment): ?int
    {
        $count = sizeof($this->mockUsers);
        $newId = 0;
        if($count > 0) {
            $newId = $this->mockUsers[$count - 1][0];
            $newId++;
        }

        $this->mockRatings[] = new Rating(
            $newId,
            $userId,
            $productId,
            $rating,
            $comment,
            date_format(new \DateTime(),"Y-m-d H:i:s")
        );

        return $newId;
    }

    public function editRating(int $id, int $productId, int $rating,
?string $comment): void
    {
        for ($i = 0; $i < sizeof($this->mockRatings); $i++) {
            if ($this->mockRatings[$i][0] === $id) {
                $this->mockRatings[$i] = new Rating($id, $this-
>mockRatings[$i][1],$productId, $comment, $rating, $this->mockRatings
[$i][5]);
            }
        }
    }

    public function canEditRating(int $id, int $userId): bool
    {
        foreach($this->mockRatings as $rating) {
            if($rating[0] === $id && $rating[1] == $userId) {
                return true;
            }
        }
        return false;
    }

    public function removeRating(int $id): void
    {
        for ($i = 0; $i < sizeof($this->mockRatings); $i++) {
            if($this->mockRatings[$i][0] === $id) {
                unset($this->mockRatings[$i]);
            }
        }
    }

    public function addProduct(string $producer, int $userId, string
$name): ?int
    {
        $count = sizeof($this->mockUsers);
        $newId = 0;
        if($count > 0) {
            $newId = $this->mockUsers[$count - 1][0];
            $newId++;
        }

        $this->mockProducts[] = new Product(
            $newId,
            $producer,
            $userId,
            $name
        );

        return $newId;
    }

    public function canEditProduct(int $id, int $userId): bool
    {
        foreach($this->mockProducts as $product) {
            if($product[0] === $id && $product[2] == $userId) {
                return true;
            }
        }
        return false;
    }

    public function editProduct(int $id, string $producer, string
$name)
    {
        for ($i = 0; $i < sizeof($this->mockProducts); $i++) {
            if ($this->mockProducts[$i][0] === $id) {
                $this->mockProducts[$i] = new Product($id, $producer,
$this->mockProducts[$i][2], $name);
            }
        }
    }

    public function getProductsForFilter(string $filter): array
    {
        $products = [];
        foreach($this->mockProducts as $product) {
            if($filter == '' || stripos($product[1], $filter) !== false
|| stripos($product[3], $filter) !== false) {
                $products[] = new Product($product[0], $product[2],
$product[3], $product[4]);
            }
        }
        return $products;
    }
}
```

Listing 27. Repository.php

```
<?php

namespace Infrastructure;

use Application\Entities\Product;
use Application\Entities\Rating;

class Repository
    implements
    \Application\Interfaces\UserRepository,
    \Application\Interfaces\ProductRepository,
    \Application\Interfaces\RatingRepository
{

    private $server;
    private $userName;
    private $password;
    private $database;

    public function __construct(string $server, string $userName,
string $password, string $database)
    {
        $this->server = $server;
        $this->userName = $userName;
        $this->password = $password;
        $this->database = $database;
    }

    // === private helper methods ===

    private function getConnection()
    {
        $con = new \mysqli($this->server, $this->userName, $this-
>password, $this->database);
        if (!$con) {
            die('Unable to connect to database. Error: ' .
mysqli_connect_error());
        }
        return $con;
    }

    private function executeQuery($connection, $query)
    {
        $result = $connection->query($query);
        if (!$result) {
            die("Error in query '$query': " . $connection->error);
        }
        return $result;
    }

    private function executeStatement($connection, $query, $bindFunc)
    {
        $statement = $connection->prepare($query);
        if (!$statement) {
            die("Error in prepared statement '$query': " . $connection
->error);
        }
        $bindFunc($statement);
        if (!$statement->execute()) {
            die("Error executing prepared statement '$query': " .
$statement->error);
        }
        return $statement;
    }

    // === public methods ===

    public function getUserForUserName(string $userName): ?
\Application\Entities\User
    {
        $user = null;
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, passwordHash FROM users WHERE userName = ?',
            function ($s) use ($userName) {
                $s->bind_param('s', $userName);
            }
        );
        $stat->bind_result($id, $passwordHash);
        if ($stat->fetch()) {
            $user = new \Application\Entities\User($id, $userName,
$passwordHash);
        }
        $stat->close();
        $con->close();
        return $user;
    }

    public function getUserForUserNameAndPassword(string $userName,
string $password): ?\Application\Entities\User
    {
        $user = null;
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, passwordHash FROM users WHERE userName = ?',
            function ($s) use ($userName) {
                $s->bind_param('s', $userName);
            }
        );
        $stat->bind_result($id, $passwordHash);
        if ($stat->fetch() && password_verify($password,
$passwordHash)) {
            $user = new \Application\Entities\User($id, $userName);
        }
        $stat->close();
        $con->close();
        return $user;
    }

    public function getUser(int $id): ?\Application\Entities\User
    {
        $user = null;
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, userName FROM users WHERE id = ?',
            function ($s) use ($id) {
                $s->bind_param('i', $id);
            }
        );
        $stat->bind_result($id, $userName);
        if ($stat->fetch()) {
            $user = new \Application\Entities\User($id, $userName);
        }
        $stat->close();
        $con->close();
        return $user;
    }
    public function createUser(string $userName, string $password): int
    {
        $password = password_hash($password, PASSWORD_DEFAULT);
        $con = $this->getConnection();
        $con->autocommit(false);
        $stat = $this->executeStatement(
            $con,
            'INSERT INTO users (userName, passwordHash) VALUES (?, ?)',
            function ($s) use ($userName, $password) {
                $s->bind_param('ss', $userName, $password);
            }
        );
        $userId = $stat->insert_id;
        $stat->close();
        $con->commit();
        $con->close();
        return $userId;
    }

    public function getProducts(): array
    {
        $products = [];
        $con = $this->getConnection();
        $result = $this->executeQuery(
            $con,
            'SELECT id, producer, userId, name FROM products'
        );
        while ($product = $result->fetch_object()) {
            $products[] = new \Application\Entities\Product($product-
>id, $product->producer, $product->userId, $product->name);
        }
        $result->close();
        $con->close();
        return $products;
    }

    public function getRatingAverageForProduct(int $productId): float
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT AVG(rating) as averageRating FROM `ratings` WHERE
productId = ?',
            function($s) use ($productId) {
                $s->bind_param('i', $productId);
            }
        );

        $stat->bind_result($averageRating);
        $stat->fetch();

        $stat->close();
        $con->close();

        return round($averageRating, 2);
    }

    public function getRatingCountForProduct(int $productId): int
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT COUNT(ID) as count FROM `ratings` WHERE productId =
?',
            function($s) use ($productId) {
                $s->bind_param('i', $productId);
            }
        );

        $stat->bind_result($count);
        $stat->fetch();

        $stat->close();
        $con->close();

        return $count;
    }

    public function getProduct(int $id): ?Product
    {
        $product = null;
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, producer, userId, name FROM `products` WHERE id
= ?',
            function($s) use ($id) {
                $s->bind_param('i', $id);
            }
        );

        $stat->bind_result($id, $producer, $userId, $name);
        if ($stat->fetch()) {
            $product = new \Application\Entities\Product($id,
$producer, $userId, $name);
        }

        $stat->close();
        $con->close();

        return $product;
    }

    public function getRatingsFromProduct(int $productId): array
    {
        $ratings = [];
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, userId, productId, rating, comment, createdDate
FROM `ratings` WHERE productId = ? ORDER BY createdDate DESC',
            function($s) use ($productId) {
                $s->bind_param('i', $productId);
            }
        );

        $stat->bind_result($id, $userId, $productId, $rating, $comment,
$createdDate);
        while ($stat->fetch()) {
            $ratings[] = new Rating($id, $userId, $productId, $rating,
$comment, $createdDate);
        }

        $stat->close();
        $con->close();

        return $ratings;
    }

    public function addRating(int $userId, int $productId, int $rating,
?string $comment): ?int
```

```
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'INSERT INTO `ratings` (`userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES (?, ?, ?, ?, NOW())',
            function($s) use ($userId, $productId, $rating, $comment) {
                $s->bind_param('iiis', $userId, $productId, $rating,
$comment);
            }
        );

        $newRatingId = $stat->insert_id;
        $stat->close();
        $con->close();

        return $newRatingId;
    }

    public function editRating(int $id, int $productId, int $rating,
?string $comment): void
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'UPDATE ratings SET productId = ?, rating = ?, comment = ?
WHERE id = ?',
            function($s) use ($id, $productId, $rating, $comment) {
                $s->bind_param('iisi', $productId, $rating, $comment,
$id);
            }
        );
        $stat->close();
        $con->close();
    }

    public function canEditRating(int $id, int $userId): bool
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT COUNT(id) as count FROM `ratings` WHERE id = ? &&
userId = ?',
            function($s) use ($id, $userId) {
                $s->bind_param('ii', $id, $userId);
            }
        );

        $stat->bind_result($count);
        $stat->fetch();

        $stat->close();
        $con->close();

        return $count == 1;
    }

    public function removeRating(int $id)
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'DELETE FROM ratings WHERE id = ?',
            function($s) use ($id) {
                $s->bind_param('i', $id);
            }
        );
        $stat->close();
        $con->close();
    }

    public function addProduct(string $producer, int $userId, string
$name): ?int
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'INSERT INTO products (producer, userId, name) VALUES (?,
?, ?);',
            function($s) use ($producer, $userId, $name) {
                $s->bind_param('sis', $producer, $userId, $name);
            }
        );

        $newProductId = $stat->insert_id;
        $stat->close();
        $con->close();
        return $newProductId;
    }

    public function canEditProduct(int $id, int $userId): bool
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT COUNT(id) as count FROM products WHERE id = ? &&
userId = ?',
            function($s) use ($id, $userId) {
                $s->bind_param('ii', $id, $userId);
            }
        );

        $stat->bind_result($count);
        $stat->fetch();

        $stat->close();
        $con->close();

        return $count == 1;
    }

    public function editProduct(int $id, string $producer, string
$name)
    {
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'UPDATE products SET producer = ?, name = ? WHERE id = ?',
            function($s) use ($producer, $name, $id) {
                $s->bind_param('ssi', $producer, $name, $id);
            }
        );
        $stat->close();
        $con->close();
    }

    public function getProductsForFilter(string $filter): array
    {
        $filter = "%$filter%";
        $products = [];
        $con = $this->getConnection();
        $stat = $this->executeStatement(
            $con,
            'SELECT id, producer, userId, name FROM products WHERE
(name LIKE ? || producer LIKE ?)',
            function ($s) use ($filter) {
                $s->bind_param('ss', $filter, $filter);
            }
        );

        $stat->bind_result($id, $producer, $userId, $name);
        while ($stat->fetch()) {
            $products[] = new \Application\Entities\Product($id,
$producer, $userId, $name);
        }
        $stat->close();
        $con->close();

        return $products;
    }
}
```

Listing 28. Session.php

```php
<?php

namespace Infrastructure;

class Session implements \Application\Interfaces\Session {

    public function __construct() {
        session_start();
    }

    public function get(string $key): mixed {
        return $_SESSION[$key] ?? null;
    }

    public function put(string $key, mixed $value): void {
        $_SESSION[$key] = $value;
    }

    public function delete(string $key): void {
        unset($_SESSION[$key]);
    }
}
```

3.3. Presentation

3.3.1. Controllers

Listing 29. Error404.php

```php
<?php

namespace Presentation\Controllers;

use Application\Queries\SignedInUserQuery;
use Presentation\MVC\Controller;
use Presentation\MVC\ViewResult;

class Error404 extends Controller
{

    public function __construct(
        private SignedInUserQuery $signedInUserQuery
    )
    {
    }

    public function GET_Index(): ViewResult
    {
        return $this->view("404",
            [
                "user" => $this->signedInUserQuery->execute()
            ]
        );
    }
}
```

Listing 30. Home.php

```php
<?php

namespace Presentation\Controllers;

use Application\Queries\SignedInUserQuery;
use Presentation\MVC\Controller;
use Presentation\MVC\ViewResult;

class Home extends Controller {

    public function __construct(
        private SignedInUserQuery $signedInUserQuery
    ) { }

    public function GET_Index(): ViewResult {
        return $this->view("home"
         , [
             "user" => $this->signedInUserQuery->execute()
         ]
    );
    }
}
```

Listing 31. Products.php

```php
<?php

namespace Presentation\Controllers;

use Presentation\MVC\ActionResult;
use Presentation\MVC\Controller;
use Presentation\MVC\ViewResult;

class Products extends Controller {

    public function __construct(
        private \Application\Queries\ProductsQuery $productsQuery,
        private \Application\Queries\ProductQuery $productQuery,
        private \Application\Queries\ProductDetailQuery
$productDetailQuery,
        private \Application\Commands\AddProductCommand
$addProductCommand,
        private \Application\Commands\EditProductCommand
$editProductCommand,
        private \Application\Queries\SignedInUserQuery
$signedInUserQuery
    ) {
    }

    public function GET_Index(): ViewResult
    {
        $filter = $this->tryGetParam('f', $filter) ? trim($filter) :
null;

        return $this->view("productList",
            [
                "user" => $this->signedInUserQuery->execute(),
                "products" => $this->productsQuery->execute($filter),
                "filter" => $filter,
            ]);
    }

    public function GET_Detail(): ActionResult
    {
        $errors = [];
        $product = null;
        $idParam = "";
        if(!$this->tryGetParam("pid", $idParam)) {
            $errors[] = "Product could not be found!";
        } else {

            $id = intval($idParam);
            if(intval($idParam) != 0) {
                $product = $this->productDetailQuery->execute($id);
            }

            if($product === null) {
                $errors[] = "Product could not be found!";
            }
        }

        if(sizeof($errors) > 0) {
            return $this->redirect("Error404", "Index");
        } else {
            return $this->view("productDetail",
                [
                    "user" => $this->signedInUserQuery->execute(),
                    "product" => $product
                ]);
        }
    }

    public function GET_Create(): ViewResult {
        return $this->view("newProduct", [
            "user" => $this->signedInUserQuery->execute()
        ]);
    }

    public function Post_Create(): ActionResult {

        $name = $this->getParam("nm");
        $producer = $this->getParam("pd");

        $result = $this->addProductCommand->execute($producer, $name);

        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\AddProductCommand
::Error_NotAuthenticated) {
                $errors[] = "Product can only be added when user is
signed in.";
            }

            if($result & \Application\Commands\AddProductCommand
::Error_InvalidName) {
                $errors[] = "Product name is required.";
            }

            if($result & \Application\Commands\AddProductCommand
::Error_InvalidProducer) {
                $errors[] = "Brand name is required.";
            }

            if($result & \Application\Commands\AddProductCommand
::Error_CreateProductFailed) {
                $errors[] = "Creating of product failed.";
            }

            return $this->view(
                "newProduct", [
                "user" => $this->signedInUserQuery->execute(),
                "errors" => $errors
            ]);
        }

        return $this->redirect("Products", "Index");
    }

    public function GET_Edit(): ActionResult {

        // check for valid id

        $errors = [];
        $product = null;
        if(!$this->tryGetParam("pid", $idParam)) {
            $errors[] = "Product could not be found!";
        } else {

            $id = intval($idParam);
            if(intval($idParam) != 0) {
                $product = $this->productQuery->execute($id);
            }

            if($product === null) {
                $errors[] = "Product could not be found!";
            }
        }

        if(sizeof($errors) > 0) {
            return $this->redirect("Error404", "Index");
        } else {
            return $this->view("editProduct",
                [
                    "user" => $this->signedInUserQuery->execute(),
                    "product" => $product
                ]);
        }
    }

    public function Post_Edit(): ActionResult {

        $productId = $this->getParam("pid");
        $name = $this->getParam("nm");
        $producer = $this->getParam("pd");
        $result = $this->editProductCommand->execute($productId,
$producer, $name);

        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\EditProductCommand
::Error_NotAuthenticated) {
                $errors[] = "Product can only be updated when user is
signed in.";
            }

            if($result & \Application\Commands\EditProductCommand
::Error_InvalidName) {
                $errors[] = "Product name is required.";
            }

            if($result & \Application\Commands\EditProductCommand
::Error_InvalidProducer) {
                $errors[] = "Brand name is required.";
            }

            return $this->view(
                "editProduct", [
                "user" => $this->signedInUserQuery->execute(),
                "product" => $this->productQuery->execute($productId),
                "errors" => $errors
            ]);
        }

        return $this->redirect("Products", "Index");
    }
}
```

Listing 32. Ratings.php

```
<?php

namespace Presentation\Controllers;

use Presentation\MVC\ActionResult;
use Presentation\MVC\Controller;

class Ratings extends Controller {
    public function __construct(
        private \Application\Commands\AddRatingCommand
$addRatingCommand,
        private \Application\Commands\EditRatingCommand
$editRatingCommand,
        private \Application\Commands\RemoveRatingCommand
$removeRatingCommand,
        private \Application\Queries\ProductDetailQuery
$productDetailQuery,
        private \Application\Queries\SignedInUserQuery
$signedInUserQuery,
    ) {
    }

    public function POST_Create(): ActionResult {
        $rating = $this->getParam("rt");
        $comment = $this->getParam("ct");
        $pid = $this->getParam("pid");

        $result = $this->addRatingCommand->execute($pid, $rating,
$comment);

        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\AddRatingCommand
::Error_NotAuthenticated) {
                $errors[] = "Rating can only be added when user is
signed in.";
            }

            if($result & \Application\Commands\AddRatingCommand
::Error_CreateRatingFailed) {
                $errors[] = "Creating of rating failed.";
            }

            return $this->view(
                "productDetail", [
                "user" => $this->signedInUserQuery->execute(),
                "product" => $this->productDetailQuery->execute($pid),
                "errors" => $errors
            ]);
        }
        return $this->redirect("Products", "Detail", ["pid" => $pid]);
    }

    public function POST_Edit(): ActionResult {
        $rating = $this->getParam("rt");
        $comment = $this->getParam("ct");
        $rid = $this->getParam("rid");
        $pid = $this->getParam("pid");

        $result = $this->editRatingCommand->execute($rid, $pid,
$rating, $comment);
        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\EditRatingCommand
::Error_NotAuthenticated) {
                $errors[] = "Rating can only be update when user is
signed in.";
            }

            return $this->view(
                "productDetail", [
                    "user" => $this->signedInUserQuery->execute(),
                    "product" => $this->productDetailQuery->execute
($pid),
                    "errors" => $errors
                ]);
        }

        return $this->redirect("Products", "Detail", ["pid" => $pid]);
    }

    public function POST_Remove(): ActionResult {
        $rid = $this->getParam("rid");
        $pid = $this->getParam("pid");

        $result = $this->removeRatingCommand->execute($rid);
        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\EditRatingCommand
::Error_NotAuthenticated) {
                $errors[] = "Rating can only be removed when user is
signed in.";
            }
            return $this->view(
                "productDetail", [
                "user" => $this->signedInUserQuery->execute(),
                "product" => $this->productDetailQuery->execute($pid),
                "errors" => $errors
            ]);
        }

        return $this->redirect("Products", "Detail", ["pid" => $pid]);
    }
}
```

Listing 33. User.php

```
<?php

namespace Presentation\Controllers;

use Presentation\MVC\ViewResult;
use Presentation\MVC\ActionResult;
use Presentation\MVC\Controller;

class User extends Controller {
    public function __construct(
        private \Application\Commands\SignInCommand $signInCommand,
        private \Application\Commands\SignOutCommand $signOutCommand,
        private \Application\Queries\SignedInUserQuery
$signedInUserQuery,
        private \Application\Commands\RegisterCommand $registerCommand
    ) {

    }

    public function GET_LogIn() : ActionResult {
        // only show login view when there is no authenticated user

        $user = $this->signedInUserQuery->execute();
        if($user != null) {
            return $this->redirect("Home", "Index");
        }
        return $this->view("login", [
            "userName" => "",
            "user" => $user
        ]);
    }

    public function POST_LogIn(): ActionResult {
        $ok = $this->signInCommand->execute(
            $this->getParam("un"),
            $this->getParam("pwd"));

        if(!$ok) {
            return $this->view("login", [
                "user" => $this->signedInUserQuery->execute(),
                "userName" => $this->getParam("un"),
                "errors" => ["Invalid user name or password."]
            ]);
        }

        return $this->redirect("Home", "Index");
    }

    public function POST_LogOut(): ActionResult {
        $this->signOutCommand->execute();
        return $this->redirect("Home", "Index");
    }

    public function GET_Register() : ActionResult {
        // only show register view when there is no authenticated user
        $user = $this->signedInUserQuery->execute();
        if($user != null) {
            return $this->redirect("Home", "Index");
        }
        return $this->view("register", [
            "userName" => "",
            "password" => "",
            "user" => null
        ]);
    }

    public function POST_Register(): ActionResult {
        $userName = $this->getParam("un");
        $password = $this->getParam("pwd");
        $result = $this->registerCommand->execute(
            $userName,
            $password
        );
        // Check for errors
        if($result != 0) {
            $errors = [];
            if($result & \Application\Commands\RegisterCommand
::Error_UsernameAlreadyExists) {
                $errors[] = "User with username already exists.";
            }
            if($result & \Application\Commands\RegisterCommand
::Error_CreateUserFailed) {
                $errors[] = "User creation failed.";
            }
            if($result & \Application\Commands\RegisterCommand
::Error_InvalidUsername) {
                $errors[] = "Username is required.";
            }
            if($result & \Application\Commands\RegisterCommand
::Error_InvalidPassword) {
                $errors[] = "Password is required and needs a minimum
length of 4.";
            }

            if(sizeof($errors) == 0) {
                $errors[] = "Something went wrong.";
            }

            return $this->view("register", [
                "userName" => $userName,
                "password" => $password,
                "user" => null,
                "errors" => $errors
            ]);
        }

        //sign in if successful
        $ok = $this->signInCommand->execute($userName, $password);

        if(!$ok) {
            return $this->view("register", [
                "userName" => $userName,
                "password" => $password,
                "user" => null,
                "errors" => ["Sign in after registration was
unsuccessful!"]
            ]);
        }

//        return $this->view("register");
        return $this->redirect("Home", "Index");
    }
}
```

3.4. Views

3.4.1. Pages

Listing 34. 404.inc

```
<?php $render("partial/header", $data); ?>
    <h1 class="mb-3">Error - 404</h1>
    <div class="alert alert-danger" role="alert">
        Page could not be found!
    </div>
<?php $render("partial/footer", $data); ?>
```

Listing 35. editProduct.inc

```
<?php $render('partial/header', $data); ?>

    <h1 class="mb-3">Edit product</h1>

    <?php $product = $data['product'] ?>

    <?php if ($product !== null) {?>
        <?php $beginForm('Products', 'Edit', ["pid" => $product-
>getId()], method: 'post'); ?>
            <div class="mb-3">
                <label for="name" class="form-label">Name</label>
                <input class="form-control" id="name" name="nm"
value="<?php $htmlOut($product->getName()) ?>" autocomplete="off">
            </div>
            <div class="mb-3">
                <label for="producer" class="form-label">Brand</label>
                <input class="form-control" id="producer" name="pd"
value="<?php $htmlOut($product->getProducer()) ?>" autocomplete="off">
            </div>
            <button class="btn btn-outline-secondary">Update</button>
        <?php $endForm(); ?>
    <?php } ?>

<?php $render('partial/footer', $data); ?>
```

Listing 36. home.inc

```
<?php $render("partial/header", $data); ?>
    <h1 class="mb-3">Welcome</h1>
    <p>Welcome to the product rating app!</p>
<?php $render("partial/footer", $data); ?>
```

Listing 37. login.inc

```
<?php $render('partial/header', $data); ?>

    <h1 class="mb-3">Login</h1>

    <?php $beginForm('User', 'LogIn', method: 'post'); ?>
        <div class="mb-3">
            <label for="userName" class="form-label">User name</label>
            <input class="form-control" id="userName" name="un"
value="<?php $htmlOut($data['userName']); ?>" autocomplete="off">
        </div>
        <div class="mb-3">
            <label for="password" class="form-label">Password</label>
            <input type="password" class="form-control" id="password"
name="pwd" autocomplete="off">
        </div>
        <button class="btn btn-outline-primary">Log in</button>
    <?php $endForm(); ?>

<?php $render('partial/footer', $data); ?>
```

Listing 38. newProduct.inc

```
<?php $render('partial/header', $data); ?>

    <h1 class="mb-3">New product</h1>

    <?php $beginForm('Products', 'Create', method: 'post'); ?>
        <div class="mb-3">
            <label for="name" class="form-label">Name</label>
            <input class="form-control" id="name" name="nm"
autocomplete="off">
        </div>
        <div class="mb-3">
            <label for="producer" class="form-label">Brand</label>
            <input class="form-control" id="producer" name="pd"
autocomplete="off">
        </div>
        <button class="btn btn-outline-secondary">Create</button>
    <?php $endForm(); ?>

<?php $render('partial/footer', $data); ?>
```

Listing 39. productDetail.inc

```
<?php $render("partial/header", $data); ?>

    <?php if($data['product'] !== null) { ?>
        <h1>Product</h1>

        <?php $render("partial/productInfo", $data); ?>
        <?php $render("partial/productRatings", $data); ?>

    <?php } ?>

<?php $render("partial/footer", $data); ?>
```

Listing 40. productList.inc

```
<?php $render("partial/header", $data); ?>

    <h1 class="mb-4">Products</h1>

    <?php $beginForm("Products", "Index"); ?>
    <div class="row justify-content-between">
        <div class="row col-auto mb-3">
            <div class="col-auto">
                <input autocomplete="off" class="form-control" name="f"
value="<?php $htmlOut($data["filter"]); ?>">
            </div>
            <div class="col-auto">
                <button class="btn btn-outline-success">Search</button>
            </div>
        </div>
        <?php if($data['user'] !== null) { ?>
        <div class="col-auto mb-3">
            <?php $link("Create new product", 'Products', 'Create',
cssClass: 'btn btn-outline-secondary'); ?>
        </div>
        <?php } ?>
        </div>
    <?php $endForm(); ?>

    <?php $render("partial/productTable", $data); ?>

<?php $render("partial/footer", $data); ?>
```

Listing 41. register.inc

```
<?php $render('partial/header', $data); ?>

    <h1 class="mb-3">Register</h1>

    <?php $beginForm('User', 'Register', method: 'post'); ?>
        <div class="mb-3">
            <label for="userName" class="form-label">Username</label>
            <input class="form-control" id="userName" name="un"
value="<?php $htmlOut($data['userName']); ?>" autocomplete="off">
        </div>
        <div class="mb-3">
            <label for="password" class="form-label">Password</label>
            <input class="form-control" id="password" name="pwd"
type="password" value="<?php $htmlOut($data['password']); ?>"
autocomplete="off">
            <div class="form-text">A password with a minimum length of
4 characters is required.</div>
        </div>
        <button class="btn btn-outline-primary">Register</button>
    <?php $endForm(); ?>

<?php $render('partial/footer', $data); ?>
```

3.4.2. Partial views

Listing 42. errors.inc

```
<div class="alert alert-danger">
  <p>
    <strong>Please correct the following and try again:</strong>
  </p>
  <ul>
    <?php foreach ($data as $errMsg): ?>
      <li><?php $htmlOut($errMsg); ?></li>
    <?php endforeach; ?>
  </ul>
</div>
```

Listing 43. footer.inc

```
</div>
    <footer class="bg-light fixed-bottom mt-5">
      <div class="container">
        <div class="text-muted py-2 d-flex justify-content-between">
            <span>
                Author:
                <a href="https://github.com/awenzelhuemer" class="link-
secondary">Andreas Wenzelhuemer</a></span>
            <?php $htmlOut(strftime('%c')); ?>
        </div>
      </div>
    </footer>
    <script src="js/bootstrap.bundle.min.js"></script>
</body>
</html>
```

Listing 44. header.inc

```
<!doctype html>
<html lang="en">
<head>
    <meta charset="utf-8">
    <meta name="viewport" content="width=device-width, initial-
scale=1">
    <link rel="stylesheet"
href="https://cdn.jsdelivr.net/npm/bootstrap-
icons@1.5.0/font/bootstrap-icons.css">
    <link href="css/bootstrap.min.css" rel="stylesheet">
    <title>Product Rating App</title>
</head>
<body>
    <nav class="navbar navbar-expand-lg navbar-dark bg-dark sticky-
top">
        <div class="container">
            <?php $link("Product Rating App", "Home", "Index",
cssClass: "navbar-brand"); ?>
            <button class="navbar-toggler" type="button" data-bs-
toggle="collapse" data-bs-target="#navbar">
                <span class="navbar-toggler-icon"></span>
            </button>
            <div class="collapse navbar-collapse" id="navbar">
                <nav class="navbar-nav me-auto">
                    <?php $link("Home", "Home", "Index", cssClass:
"nav-link"); ?>
                    <?php $link("Products", "Products", "Index",
cssClass: "nav-link"); ?>
                </nav>
                <?php $render("partial/user", $data["user"])  ?>
            </div>
        </div>
    </nav>
    <div class="container my-5">
    <?php if(isset($data["errors"])) {
        $render("partial/errors", $data["errors"]);
    } ?>
```

Listing 45. productInfo.inc

```
<ul class="list-group">
    <?php $product = $data['product'] ?>
    <li class="list-group-item"><strong>Product name:</strong> <?php
$htmlOut($product->getName()) ?></li>
    <li class="list-group-item"><strong>Created from:</strong> <?php
$htmlOut($product->getUsername())  ?></li>
    <li class="list-group-item"><strong>Brand:</strong> <?php
$htmlOut($product->getProducer()) ?></li>
    <li class="list-group-item"
        data-bs-placement="top" title="<?php $htmlOut($product-
>getRating())?> out of 5">
        <strong>Average Rating:</strong>
        <?php for ($i = 0; $i < 5; $i++) {
            if($i < $product->getRating()) {?>
                <i class="bi bi-star-fill text-warning"></i>
            <?php } else {?>
                <i class="bi-star"></i>
            <?php } ?>
        <?php }?>
        / <small class="text-secondary"><?php $htmlOut($product-
>getRatingCount())?> ratings</small>
    </li>
</ul>
```

Listing 46. productRatings.inc

```
    <h2 class="mt-4 mb-3">Ratings</h2>
    <?php $product = $data['product'] ?>
    <div class="accordion" id="accordionExample">
        <?php if($data["user"] === null && sizeof($product-
>getRatings()) == 0) { ?>
            <div class="alert alert-info" role="alert">
                No ratings.
            </div>
        <?php } else if($data["user"] !== null) { ?>
        <div class="accordion-item">
        <h2 class="accordion-header">
            <button class="accordion-button" type="button" data-bs-
toggle="collapse" data-bs-target="#newRating" aria-expanded="true">
                New rating
            </button>
        </h2>
```

```
             <div id="newRating" class="accordion-collapse collapse
show" data-bs-parent="#newRating">
                 <div class="accordion-body">
                     <?php $beginForm('Ratings', 'Create', ["pid" =>
$product->getId()], method: 'post'); ?>
                     <span class="me-4">Rating</span>
                     <div class="form-check form-check-inline">
                         <input class="form-check-input" type="radio"
name="rt" id="rating1" value="1">
                         <label class="form-check-label" for="rating1">
                         <i class="bi bi-star"></i>
                         </label>
                     </div>
                     <div class="form-check form-check-inline">
                         <input class="form-check-input" type="radio"
name="rt" id="rating2" value="2">
                         <label class="form-check-label" for="rating2">
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                         </label>
                     </div>
                     <div class="form-check form-check-inline">
                         <input class="form-check-input" type="radio"
name="rt" id="rating3" value="3">
                         <label class="form-check-label" for="rating3">
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                         </label>
                     </div>
                     <div class="form-check form-check-inline">
                         <input class="form-check-input" type="radio"
name="rt" id="rating4" value="4">
                         <label class="form-check-label" for="rating4">
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                             <i class="bi bi-star"></i>
                         </label>
                     </div>
                     <div class="form-check form-check-inline">
                         <input class="form-check-input" type="radio"
name="rt" id="rating5" value="5" checked>
                         <label class="form-check-label" for="rating5">
```

```
                            <i class="bi bi-star"></i>
                            <i class="bi bi-star"></i>
                            <i class="bi bi-star"></i>
                            <i class="bi bi-star"></i>
                            <i class="bi bi-star"></i>
                        </label>
                    </div>
                    <div class="my-3">
                        <label for="ct" class="form-label">
Comment</label>
                        <textarea class="form-control" id="ct"
name="ct" rows="3"></textarea>
                    </div>
                    <button class="btn btn-outline-primary">Add new
rating</button>
                    <?php $endForm(); ?>
                </div>
            </div>
        </div>
        <?php } ?>
        <?php foreach($product->getRatings() as $rating) { ?>
        <div class="accordion-item">
            <h2 class="accordion-header">
                <button class="accordion-button" type="button" data-bs-
toggle="collapse" data-bs-target="#rating<?php $htmlOut($rating-
>getId()) ?>" >
                    <div class="d-flex justify-content-between w-100">
                        <span>
                            <?php for ($i = 0; $i < 5; $i++) {
                                if($i < $rating->getRating()) {?>
                                    <i class="bi bi-star-fill text-
warning"></i>

                                <?php } else {?>
                                    <i class="bi-star"></i>
                                <?php } ?>
                            <?php }?>
                            <span class="ms-2">by <?php
$htmlOut($rating->getUser()->getUserName()) ?></span>
                        </span>
                        <span class="me-2">from <?php $htmlOut($rating-
>getCreatedDate()) ?></span>
                    </div>
                </button>
            </h2>
            <div id="rating<?php $htmlOut($rating->getId()) ?>"
class="accordion-collapse collapse <?php ($rating->getComment() !==
null) ? $htmlOut('show') : $htmlOut('')?>">
                <div class="accordion-body">
                    <?php if($data["user"] !== null && $data["user"]-
>getId() === $rating->getUser()->getId()) {?>
                        <?php $beginForm('Ratings', 'Remove', ["pid" =>
$product->getId(), "rid" => $rating->getId()], method: 'post'); ?>
                        <button class="btn btn-sm btn-outline-danger
float-end bi bi-trash-fill"
                                data-bs-toggle="tooltip" data-bs-
placement="top" title="Remove rating" ></button>
                        <?php $endForm(); ?>
                        <?php $beginForm('Ratings', 'Edit', ["pid" =>
$product->getId(), "rid" => $rating->getId()], method: 'post'); ?>
                            <span class="me-4">Rating</span>
                            <div class="form-check form-check-inline">
                                <input class="form-check-input"
type="radio" name="rt" id="rating1Update" value="1" <?php ($rating-
>getRating()) === 1 ? $htmlOut('checked') : $htmlOut('') ?>>
                                <label class="form-check-label"
for="rating1Update">
                                    <i class="bi bi-star"></i>
                                </label>
                            </div>
                            <div class="form-check form-check-inline">
                                <input class="form-check-input"
type="radio" name="rt" id="rating2Update" value="2" <?php ($rating-
>getRating()) === 2 ? $htmlOut('checked') : $htmlOut('') ?>>
                                <label class="form-check-label"
for="rating2Update">
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                </label>
                            </div>
                            <div class="form-check form-check-inline">
                                <input class="form-check-input"
type="radio" name="rt" id="rating3Update" value="3" <?php ($rating-
>getRating()) === 3 ? $htmlOut('checked') : $htmlOut('') ?>>
                                <label class="form-check-label"
for="rating3Update">
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                </label>
                            </div>
                            <div class="form-check form-check-inline">
                                <input class="form-check-input"
type="radio" name="rt" id="rating4Update" value="4" <?php ($rating-
>getRating()) === 4 ? $htmlOut('checked') : $htmlOut('') ?>>
                                <label class="form-check-label"
for="rating4Update">
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                    <i class="bi bi-star"></i>
                                </label>
                            </div>
                            <div class="form-check form-check-inline">
                                <input class="form-check-input"
type="radio" name="rt" id="rating5Update" value="5" <?php ($rating-
>getRating()) === 5 ? $htmlOut('checked') : $htmlOut('') ?>>
                                <label class="form-check-label"
for="rating5Update">
                                    <i class="bi bi-star text-
secondary"></i>
                                    <i class="bi bi-star text-
secondary"></i>
                                    <i class="bi bi-star text-
secondary"></i>
                                    <i class="bi bi-star text-
secondary"></i>
                                    <i class="bi bi-star text-
secondary"></i>
                                </label>
                            </div>
                            <div class="my-3">
                                <label for="ct" class="form-label"
>Comment</label>
                                <textarea class="form-control" id="ct"
name="ct" rows="3"><?php $htmlOut($rating->getComment()) ?></textarea>
                            </div>
                            <button class="btn btn-outline-secondary"
>Update existing rating</button>
                        <?php $endForm(); ?>
                    <?php } else { ?>

                    <?php if($rating->getComment() !== null) {
                         $htmlOut($rating->getComment());
                    } else { ?>
                        <div class="alert alert-secondary" role=
"alert">
                            This rating includes no comment!
                        </div>
                    <?php } ?>
                <?php } ?>
                </div>
            </div>
        </div>
        <?php } ?>
    </div>
```

Listing 47. productTable.inc

```
<?php if($data['products'] !== null) { ?>
    <?php if(sizeof($data['products']) > 0) { ?>
        <div class="table-responsive">
            <table class="table table-sm table-striped table-hover">
                <thead>
                <tr>
                    <th>Name</th>
                    <th>Brand</th>
                    <th>Rating</th>
                    <th>Created user</th>
                    <th></th>
                </tr>
                </thead>
                <tbody>
                <?php foreach($data['products'] as $product) { ?>
                    <tr>
                        <td>
                            <?php $link($product->getName(),
'Products', 'Detail', ['pid' => $product->getId()], cssClass: 'link-
primary'); ?>
                        </td>
                        <td><?php $htmlOut($product->getProducer());
?></td>
                        <td data-bs-placement="top" title="<?php
$htmlOut($product->getRating())?> out of 5">
                            <?php for ($i = 0; $i < 5; $i++) {
                                if($i < $product->getRating()) {?>
                                    <i class="bi bi-star-fill text-
warning"></i>
                                <?php } else {?>
                                    <i class="bi-star"></i>
                                <?php }?>

                            <?php }?>/
                            <small class="text-secondary"><?php
$htmlOut($product->getRatingCount())?> ratings</small></td>
                        <td><?php $htmlOut($product->getUserName());
?></td>
                        <td>
                            <?php if($data['user'] !== null &&
$product->getUserId() === $data['user']->getId()) {?>
                                <?php $link("", 'Products', 'Edit',
['pid' => $product->getId()], cssClass: 'btn btn-sm btn-outline-
secondary bi bi-pencil-fill'); ?>
                            <?php } ?>
                        </td>
                    </tr>
                <?php } ?>
                </tbody>
            </table>
        </div>
    <?php } else { ?>
        <div class="alert alert-info" role="alert">
            No products founds.
        </div>
    <?php } ?>
<?php } ?>
```

4. Datenbank

4.1. Datenbankmodell

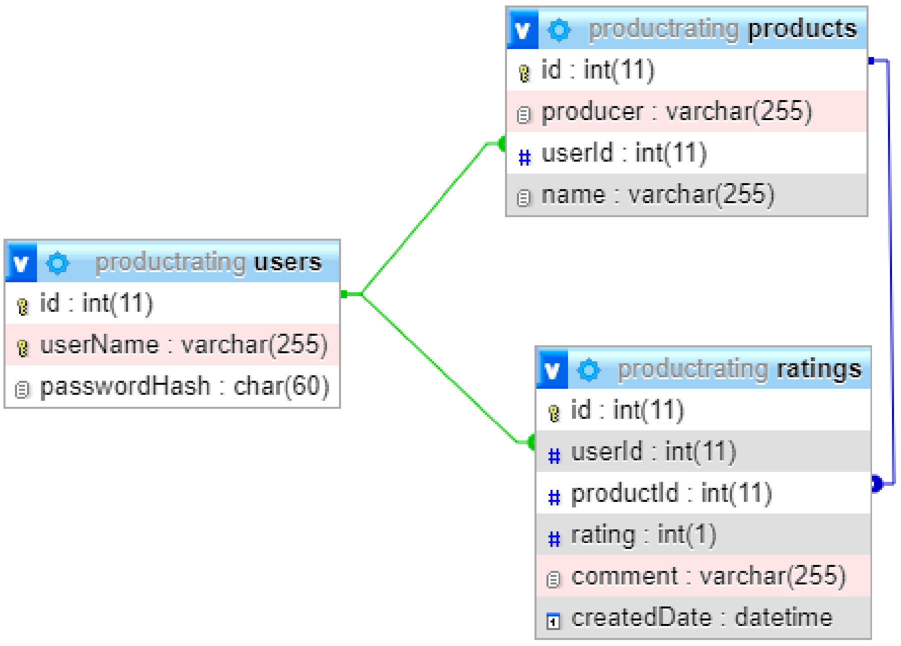


Figure 1. Modell

4.2. Scripts

Listing 48. CREATE_DB.sql

```
SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
SET AUTOCOMMIT = 0;
START TRANSACTION;
SET time_zone = "+00:00";

DROP DATABASE IF EXISTS productRating;

CREATE DATABASE IF NOT EXISTS `productRating` DEFAULT CHARACTER SET
latin1 COLLATE latin1_general_ci;
USE `productRating`;

-- table creation
CREATE TABLE `users` (
                         `id` int(11) NOT NULL,
                         `userName` varchar(255) NOT NULL,
                         `passwordHash` char(60) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

CREATE TABLE `products` (
                            `id` int(11) NOT NULL,
                            `producer` varchar(255) NOT NULL,
                            `userId` int(11) NOT NULL,
                            `name` varchar(255) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

CREATE TABLE `ratings` (
                           `id` int(11) NOT NULL,
                           `userId` int(11) NOT NULL,
                           `productId` int(11) NOT NULL,
                           `rating` int(1) NOT NULL,
                           `comment` varchar(255) NULL,
                           `createdDate` datetime NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=latin1;

-- primary keys
ALTER TABLE `users`
    ADD PRIMARY KEY (`id`),
  ADD UNIQUE KEY `userName` (`userName`);

ALTER TABLE `products`
```

```
    ADD PRIMARY KEY (`id`),
  ADD KEY `userId` (`userId`);

ALTER TABLE `ratings`
    ADD PRIMARY KEY (`id`),
  ADD KEY `userId` (`userId`),
  ADD KEY `productId` (`productId`);;

-- auto incrementing ids
ALTER TABLE `users`
    MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=2;
ALTER TABLE `products`
    MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=11;
ALTER TABLE `ratings`
    MODIFY `id` int(11) NOT NULL AUTO_INCREMENT, AUTO_INCREMENT=11;

ALTER TABLE `products`
    ADD CONSTRAINT `products_ibfk_1` FOREIGN KEY (`userId`) REFERENCES
`users` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;

ALTER TABLE `ratings`
    ADD CONSTRAINT `ratings_ibfk_1` FOREIGN KEY (`userId`) REFERENCES
`users` (`id`) ON DELETE CASCADE ON UPDATE CASCADE,
    ADD CONSTRAINT `ratings_ibfk_2` FOREIGN KEY (`productId`)
REFERENCES `products` (`id`) ON DELETE CASCADE ON UPDATE CASCADE;
COMMIT;
```

<< .DB_SEEDING.sql

```
SET SQL_MODE = "NO_AUTO_VALUE_ON_ZERO";
SET AUTOCOMMIT = 0;
START TRANSACTION;
SET time_zone = "+00:00";

-- seeding
INSERT INTO `users` (`id`, `userName`, `passwordHash`) VALUES
(1, 'scr4',
'$2y$10$0dhe3ngxlmzgZrX6MpSHkeoDQ.d0aceVTomUq/nQXV0vSkFojq.VG');

INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(1, 'Bosch', 1, 'Schlagbohrmaschine GSB 13 RE');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(2, 'Bosch', 1, 'Schlagbohrmaschine EasyImpact 550');
```

```
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(3, 'Tilswall', 1, 'Schlagbohrmaschine 3000');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(4, 'Bosch', 1, 'Bosch Schlagbohrmaschine UniversalImpact');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(5, 'Einhell', 1, 'Schlagbohrmaschine TC-ID 650E');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(6, 'Makita', 1, 'Schlagbohrmaschine HP1631');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(7, 'Makita', 1, 'Kombihammer SDS-Plus');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(8, 'Metabo', 1, 'Schlagbohrmaschine SBEV 1000-2');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(9, 'Hi-Spec', 1, 'Akkubohrmaschinenset');
INSERT INTO `products` (`id`, `producer`, `userId`, `name`) VALUES
(10, 'Bosch', 1, 'Schlagbohrmaschine GSP 19-2 RE');

INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(1, 1, 1, 5, 'Works perfectly!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(2, 1, 2, 4, 'Works good!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(3, 1, 3, 3, 'Works perfectly, some parts are missing!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(4, 1, 4, 4, 'Works fine!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(5, 1, 5, 5, 'Works perfectly!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(6, 1, 6, 5, 'Works perfectly!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(7, 1, 7, 2, 'Not working!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(8, 1, 7, 2, 'Not good at all!', NOW());
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(9, 1, 7, 1, NULL, NOW());
```

```
INSERT INTO `ratings` (`id`, `userId`, `productId`, `rating`,
`comment`, `createdDate`) VALUES
(10, 1, 8, 1, 'Total crap!', NOW());
COMMIT;
```