Cyber Security Project Report

Bug Hunt 101 – Recon to Report

---

1. Introduction

The goal of this assignment is to gain knowledge of every detail of the bug bounty process from reconnaissance to finally submitting a formal report of the vulnerability. The basic idea of this assignment is quite simple and straightforward. The primary idea of this assignment is to use knowledge of common vulnerabilities of web applications in a lab environment.

For this purpose, OWASP Juice Shop was selected as the target application on which the tests will be performed. Juice Shop is a vulnerable web application developed specifically for creating a learning environment for web application security tests. Tests in this project are performed in a purely ethical way in the authorized lab.

2. Environment Setup

A local test environment was created using Docker to eliminate problems with dependencies and configuration.

Technologies/Tools Used:

By offering a

OWASP Juice Shop

Docker Desktop (WSL2 backend)

-bash

Web Browser (Chrome)

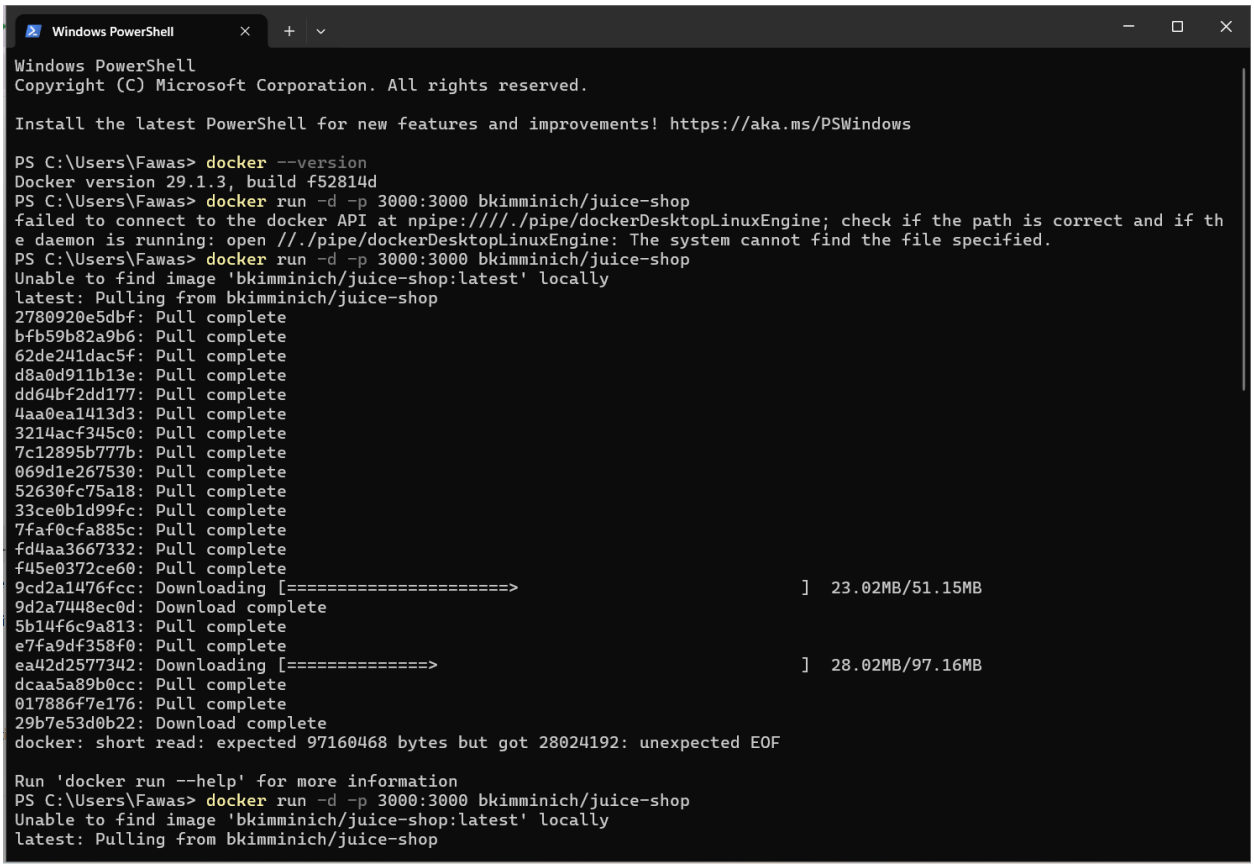
Windows 11

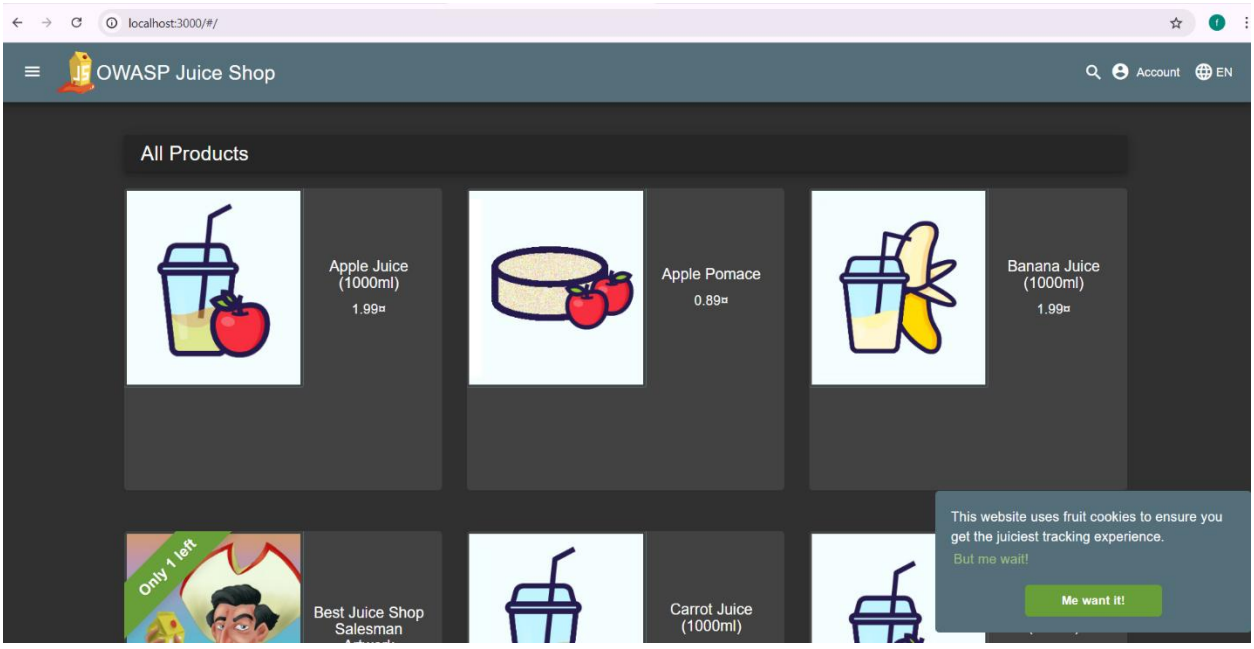
Deployment Method:
OWASP Juice Shop was deployed using the official Docker image.

docker run -d -p 3000:3000 bkimminich/juice-shop

The application was accessed via:

http://localhost:3000


Windows PowerShell
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\Users\Fawas> docker --version
Docker version 29.1.3, build f52814d
PS C:\Users\Fawas> docker run -d -p 3000:3000 bkimminich/juice-shop
failed to connect to the docker API at npipe:////./pipe/dockerDesktopLinuxEngine; check if the path is correct and if th
e daemon is running: open //./pipe/dockerDesktopLinuxEngine: The system cannot find the file specified.
PS C:\Users\Fawas> docker run -d -p 3000:3000 bkimminich/juice-shop
Unable to find image 'bkimminich/juice-shop:latest' locally
latest: Pulling from bkimminich/juice-shop
2780920e5dbf: Pull complete
bfb59b82a9b6: Pull complete
62de241dac5f: Pull complete
d8a0d911b13e: Pull complete
dd64bf2dd177: Pull complete
4aa0ea1413d3: Pull complete
3214acf345c0: Pull complete
7c12895b777b: Pull complete
069d1e267530: Pull complete
52630fc75a18: Pull complete
33ce0b1d99fc: Pull complete
7faf0cfa885c: Pull complete
fd4aa3667332: Pull complete
f45e0372ce60: Pull complete
9cd2a1476fcc: Downloading [=======================>] 23.02MB/51.15MB
9d2a7448ec0d: Download complete
5b14f6c9a813: Pull complete
e7fa9df358f0: Pull complete
ea42d2577342: Downloading [===============>] 28.02MB/97.16MB
dcaa5a89b0cc: Pull complete
017886f7e176: Pull complete
29b7e53d0b22: Download complete
docker: short read: expected 97160468 bytes but got 28024192: unexpected EOF
Run 'docker run --help' for more information
PS C:\Users\Fawas> docker run -d -p 3000:3000 bkimminich/juice-shop
Unable to find image 'bkimminich/juice-shop:latest' locally
latest: Pulling from bkimminich/juice-shop


localhost:3000/#/
OWASP Juice Shop
Account
EN
All Products
Apple Juice (1000ml)
1.99¤
Apple Pomace
0.89¤
Banana Juice (1000ml)
1.99¤
Only 1 left
Best Juice Shop Salesman
Carrot Juice (1000ml)
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

3. Reconnaissance

Reconnaissance was done to identify open ports and understand how the application is exposed.

3.1 Target Identification

Target Application: OWASP Juice Shop

Host: localhost

Port: 3000

3.2 Port Scanning Using Nmap

The following Nmap command was used:

nmap -p 3000 localhost

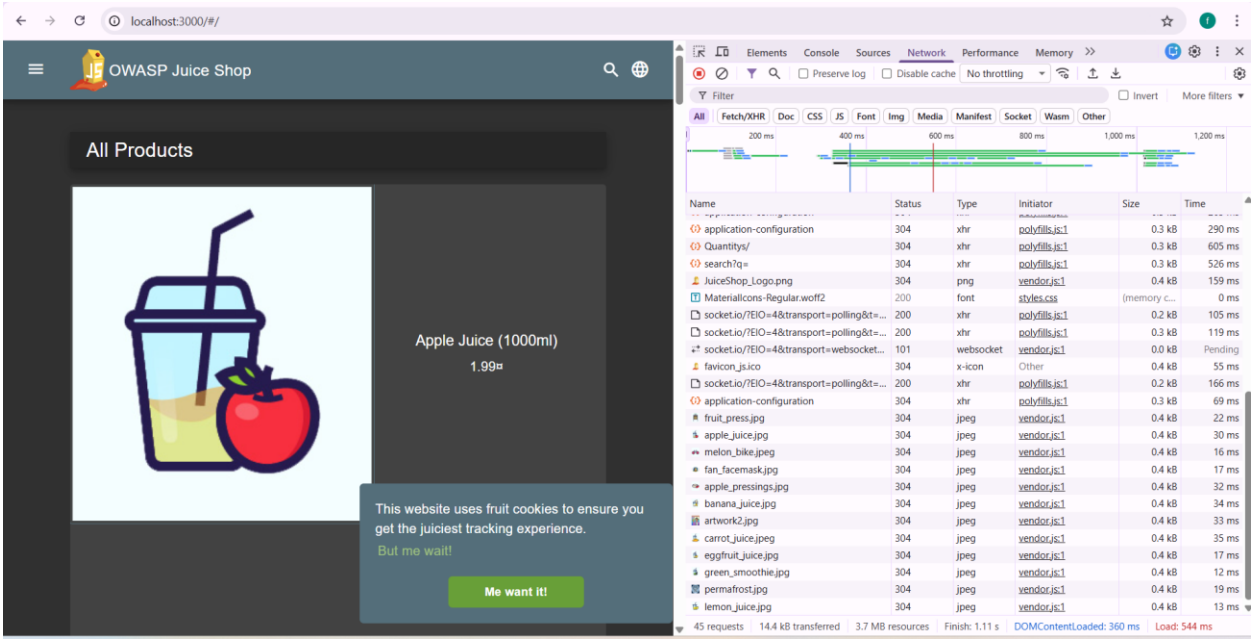
Many of us move to what we will call ' The Field' to get away from this very thing, or at least repress the knowledge of it.

TCP port 3000 was found open, which indicated that the Juice Shop service was running and accessible.

That meant the application had successfully deployed and was ready for further testing.

4. Vulnerability Findings

Testing revealed several vulnerabilities, each with straightforward steps and impact that clearly describe the vulnerability.



4.1 Cross-Site Scripting (XSS)

Description

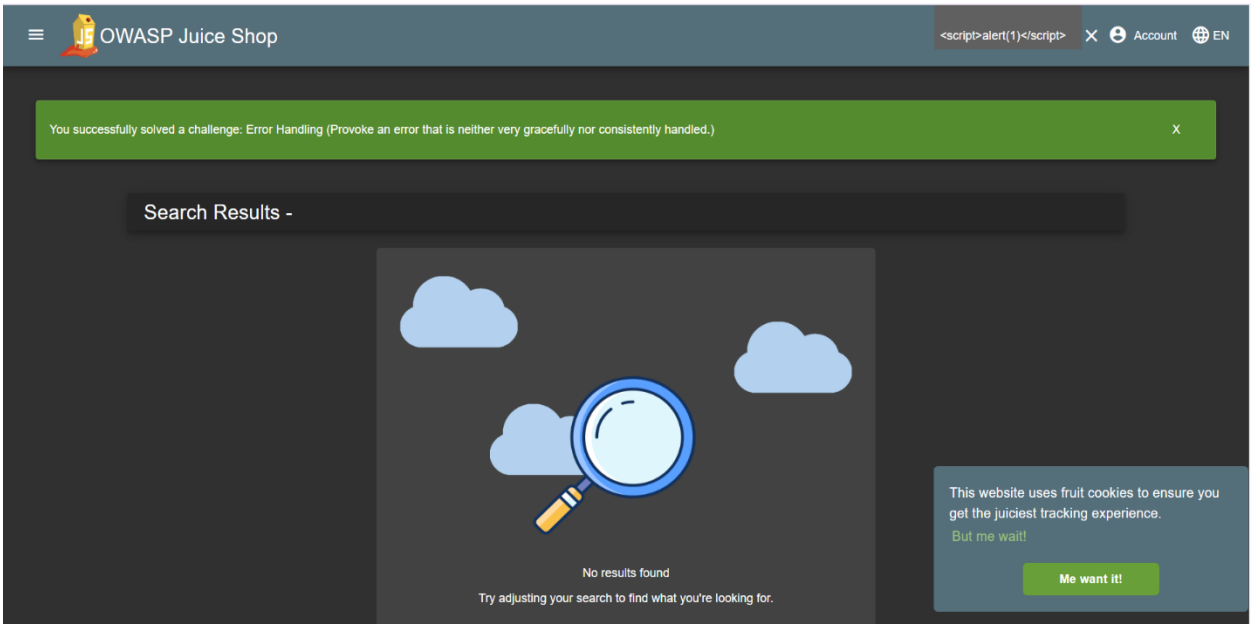
A type of reflected Cross-Site Scripting (XSS) vulnerability was found in the search function in the application. This is because the application does not sanitize the user input before it is rendered on the browser.

Affected Functionality

Search feature

Payload Used

<script>alert(1)</script>



Steps to reproduce:

1. Open OWASP Juice Shop homepage

2. Find the search bar

3. Input XSS payload into the search box

4. Submit the search

5. A JavaScript alert box is executed in the browser

Effect

“An attacker may leverage the identified vulnerability to inject malicious JavaScript in a victim's browser. This may result in session hijacking, stealing cookies, and/or malicious redirection.”

Severity

Medium

4.2 Insecure Direct Object Reference (IDOR)

Insecure Direct Object Reference (IDOR) in Product Reviews Endpoint

Affected URL:

GET /rest/reviews?productId=20

Payload:

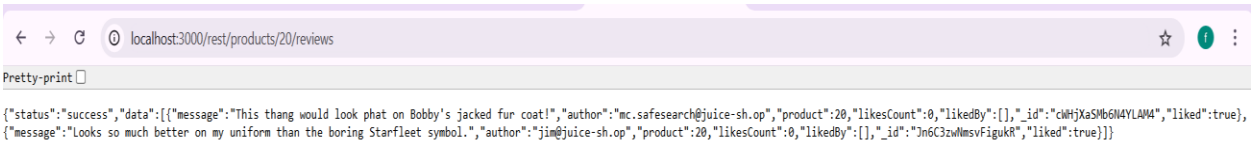
productId=20

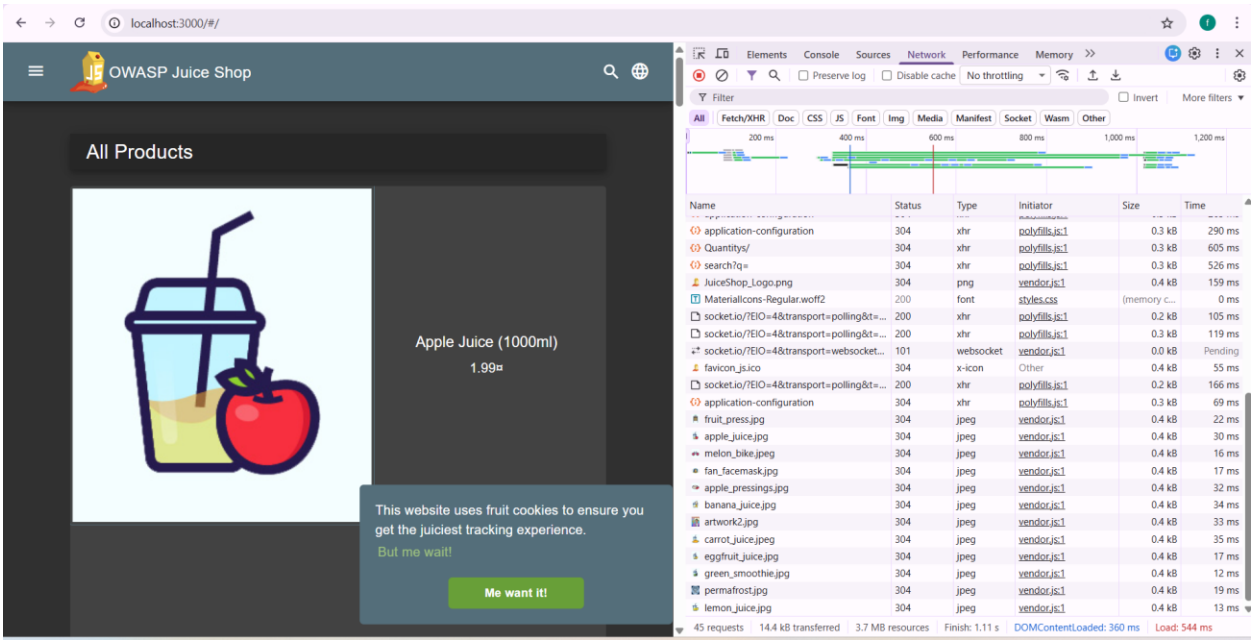
Steps to Reproduce:

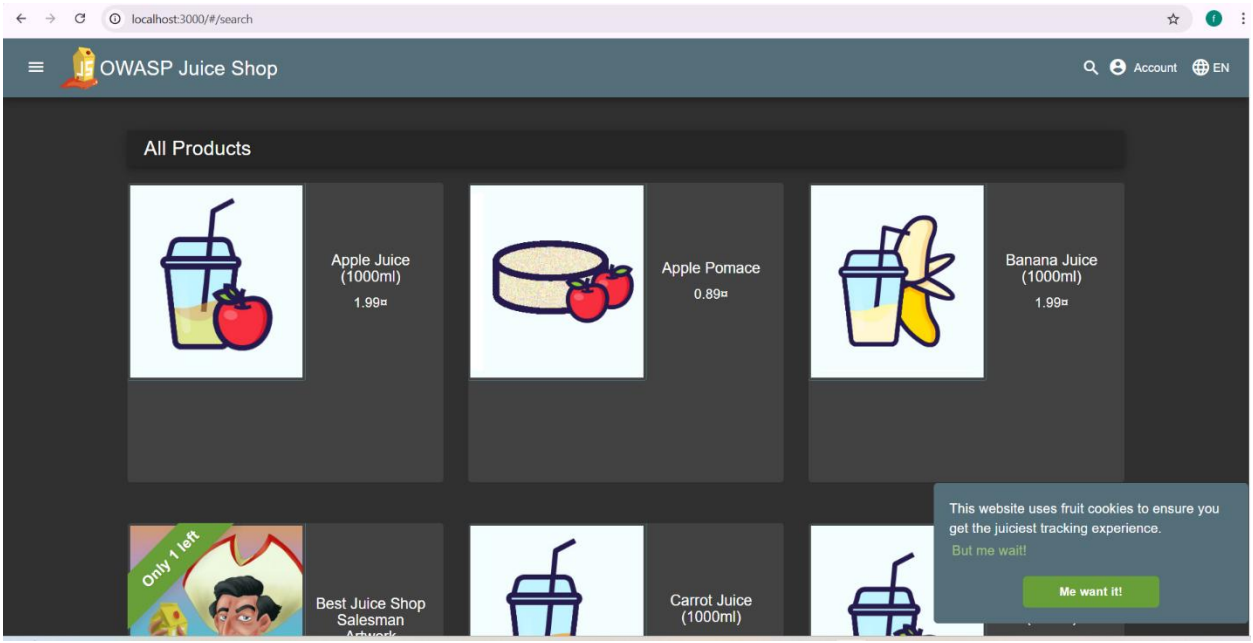
1. Log in as a normal user.
2. Open the browser developer tools (F12) and navigate to the **Network** tab.
3. Visit any product page and observe the request fetching product reviews.
4. Capture the request:
5. GET /rest/reviews?productId=<original_id>
6. Modify the productId parameter to another valid value (e.g., 20).
7. Send the modified request.
8. Observe that reviews written by other users are returned.

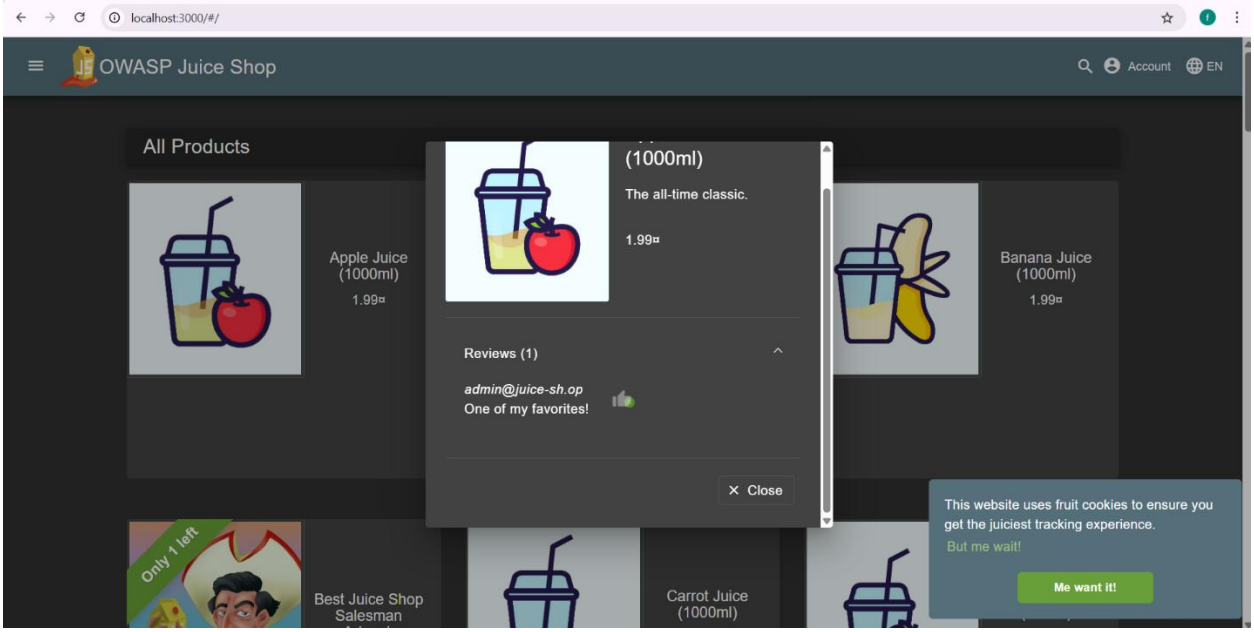
Impact:

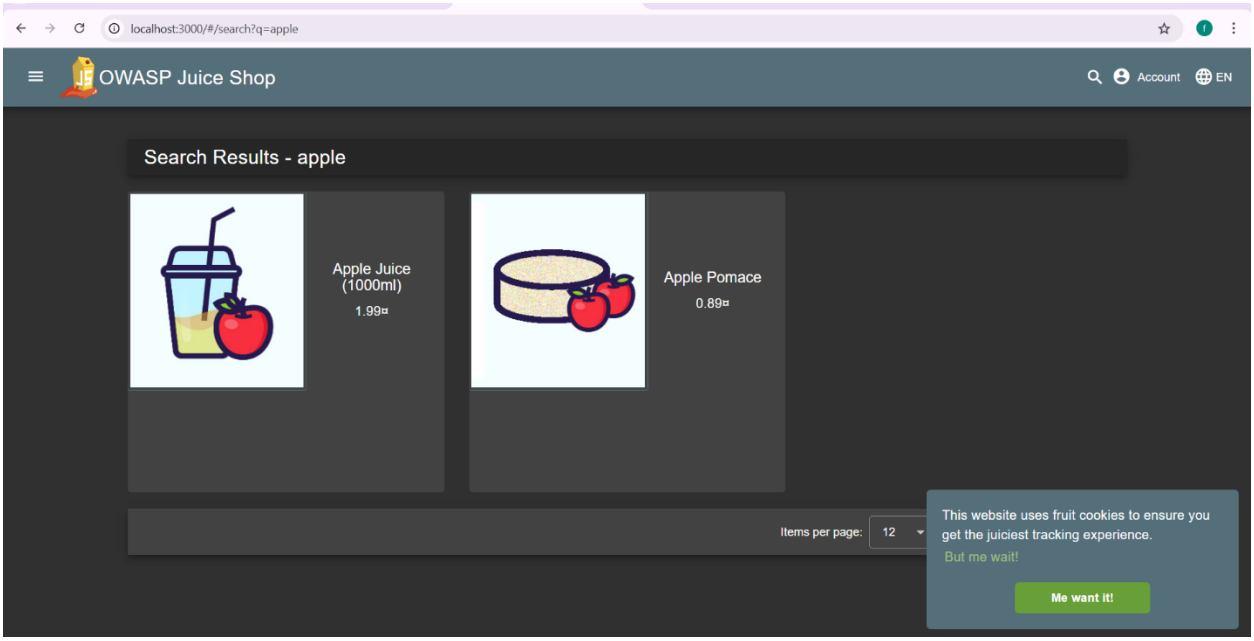
The code contains a problem where it enables unauthorized access to reviews posted by the end-users via direct references to internal objects using the identifiers provided by the end-users. The code is prone to the IDOR attack, where the attackers will be able to view information for different end-users.

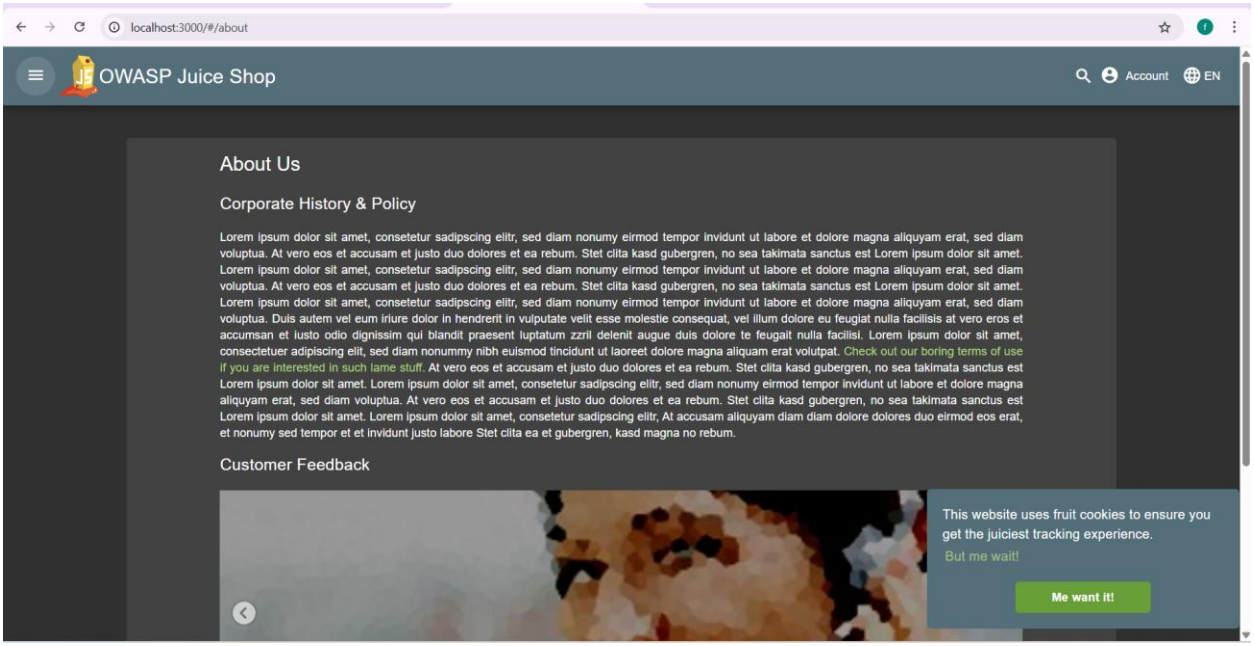


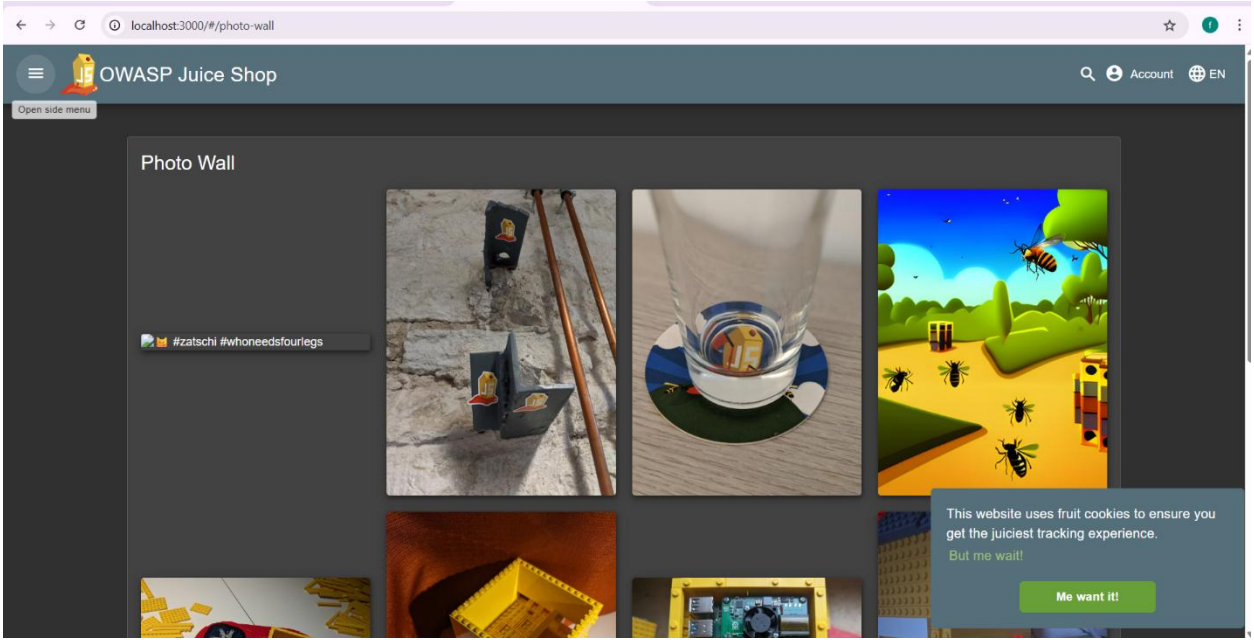

localhost:3000/#/
OWASP Juice Shop
All Products
Apple Juice (1000ml)
1.99¤
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!
Elements
Console
Sources
Network
Performance
Memory
Name
Status
Type
Initiator
Size
Time
45 requests
14.4 kB transferred
3.7 MB resources
Finish: 1.11 s
DOMContentLoaded: 360 ms
Load: 544 ms

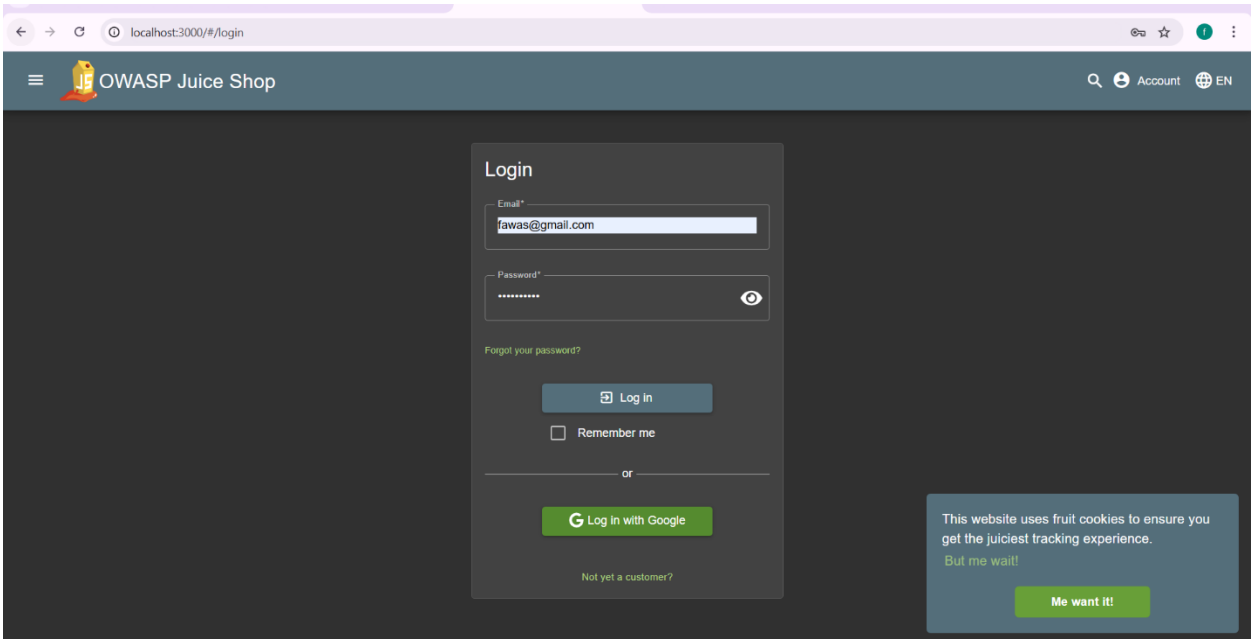

localhost:3000/#/search
OWASP Juice Shop
Account
EN
All Products
Apple Juice (1000ml)
1.99¤
Apple Pomace
0.89¤
Banana Juice (1000ml)
1.99¤
Only 1 left
Best Juice Shop Salesman
Carrot Juice (1000ml)
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

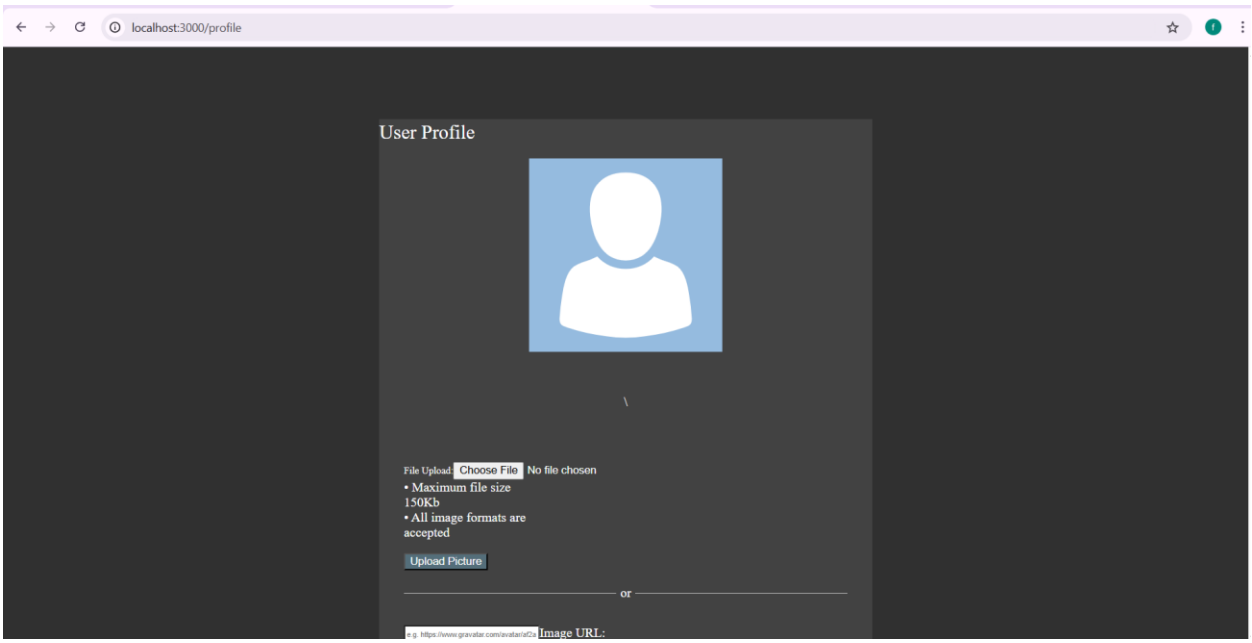

localhost:3000/#/
OWASP Juice Shop
Account
EN
All Products
Apple Juice (1000ml)
1.99¤
(1000ml)
The all-time classic.
1.99¤
Reviews (1)
admin@juice-sh.op
One of my favorites!
Close
Banana Juice (1000ml)
1.99¤
Only 1 left
Best Juice Shop Salesman
Carrot Juice (1000ml)
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

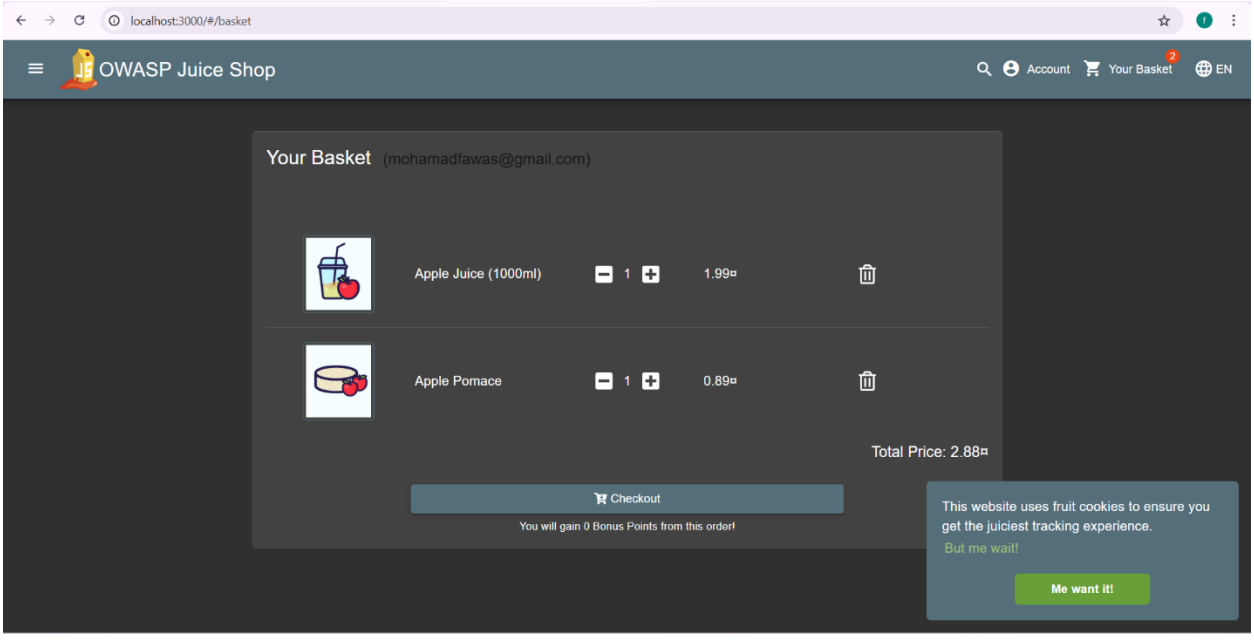

localhost:3000/#/search?q=apple
OWASP Juice Shop
Account
EN
Search Results - apple
Apple Juice (1000ml)
1.99¤
Apple Pomace
0.89¤
Items per page:
12
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

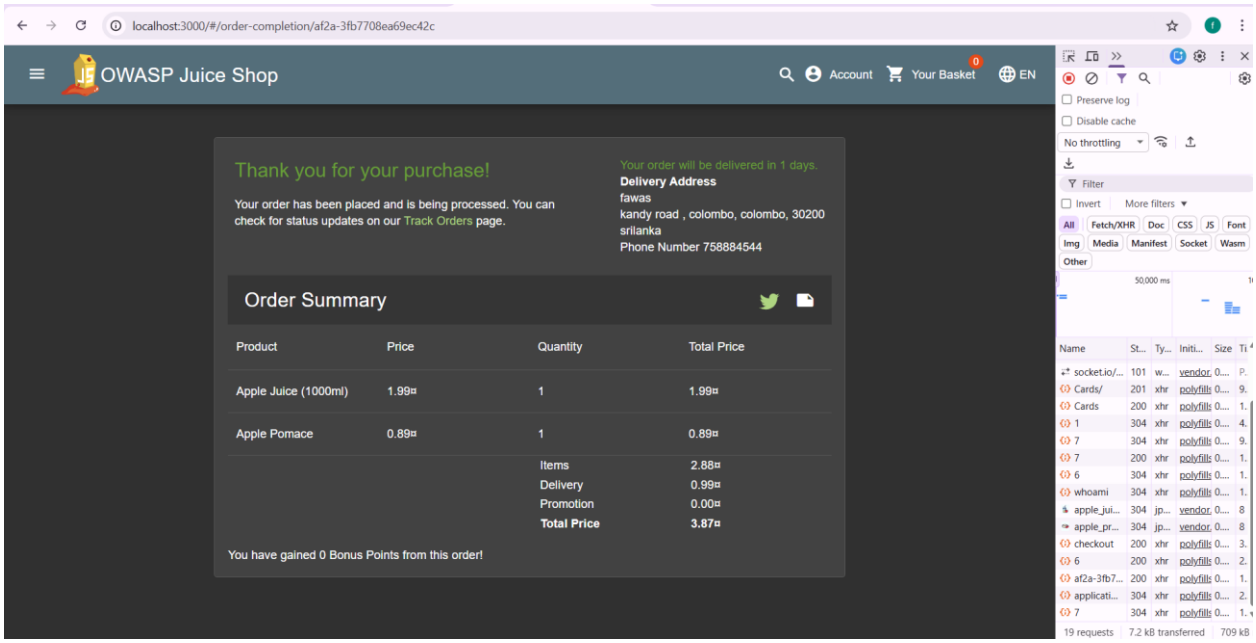

localhost:3000/#/about
OWASP Juice Shop
Account
EN
About Us
Corporate History & Policy
Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. Duis autem vel eum iriure dolor in hendrerit in vulputate velit esse molestie consequat, vel illum dolore eu feugiat nulla facilisis at vero eros et accumsan et iusto odio dignissim qui blandit praesent luptatum zzril delenit augue duis dolore te feugait nulla facilisi. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut laoreet dolore magna aliquam erat volutpat. Check out our boring terms of use if you are interested in such lame stuff. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, sed diam nonumy eirmod tempor invidunt ut labore et dolore magna aliquyam erat, sed diam voluptua. At vero eos et accusam et justo duo dolores et ea rebum. Stet clita kasd gubergren, no sea takimata sanctus est Lorem ipsum dolor sit amet. Lorem ipsum dolor sit amet, consetetur sadipscing elitr, At accusam aliquyam diam diam dolore dolores duo eirmod eos erat, et nonumy sed tempor et et invidunt justo labore Stet clita ea et gubergren, kasd magna no rebum.
Customer Feedback
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

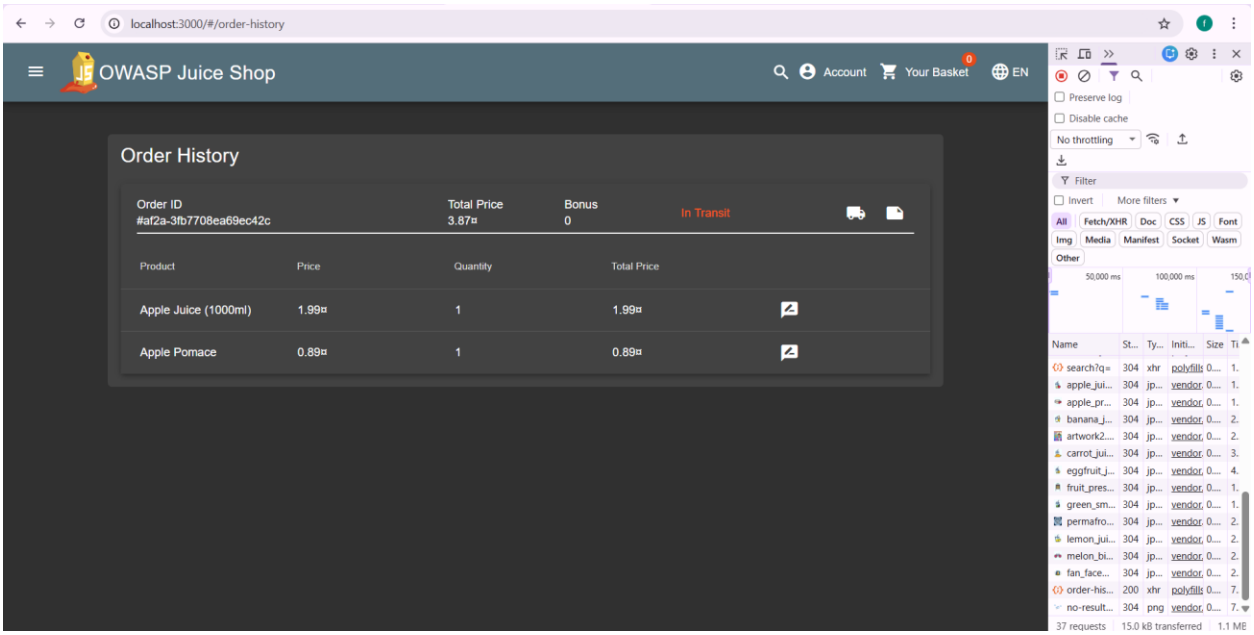

localhost:3000/#/photo-wall
OWASP Juice Shop
Account
EN
Open side menu
Photo Wall
#zatschi #whoneedsfourlegs
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!

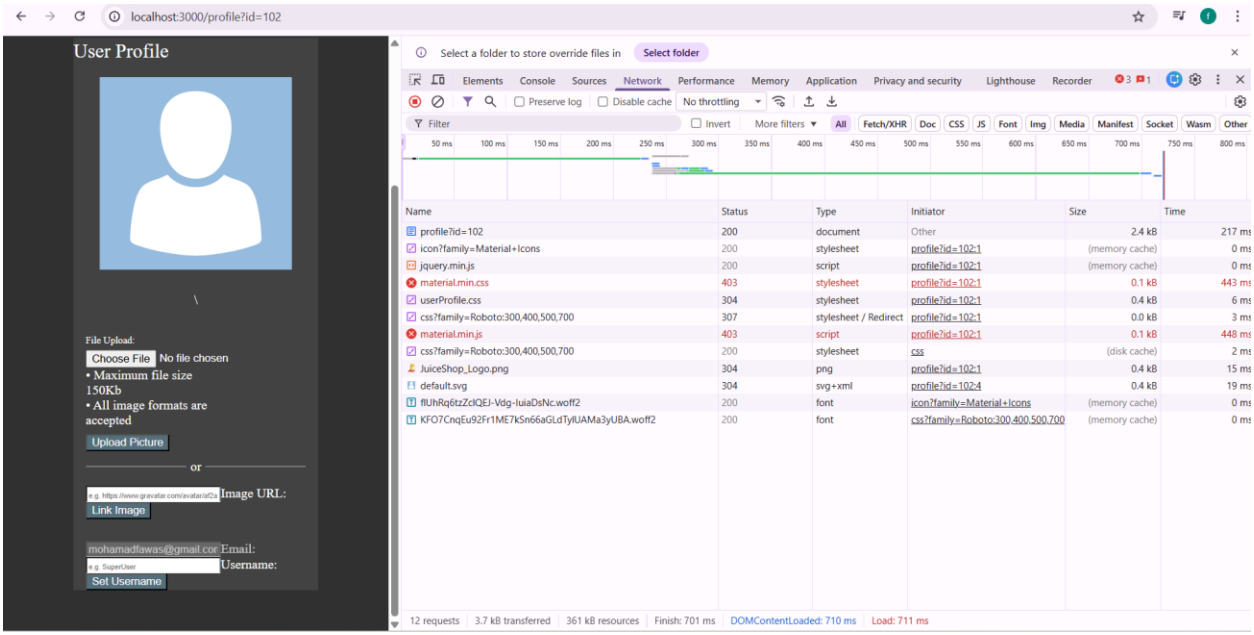

localhost:3000/#/login
OWASP Juice Shop
Account
EN
Login
Email*
fawas@gmail.com
Password*
Forgot your password?
Log in
Remember me
or
Log in with Google
Not yet a customer?
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!


localhost:3000/profile
User Profile
File Upload:
Choose File
No file chosen
• Maximum file size 150Kb
• All image formats are accepted
Upload Picture
or
Image URL:


localhost:3000/#/basket
OWASP Juice Shop
Account
Your Basket
2
EN
Your Basket (mohamadfawas@gmail.com)
Apple Juice (1000ml)
1
1.99¤
Apple Pomace
1
0.89¤
Total Price: 2.88¤
Checkout
You will gain 0 Bonus Points from this order!
This website uses fruit cookies to ensure you get the juiciest tracking experience.
But me wait!
Me want it!


localhost:3000/#/order-completion/af2a-3fb7708ea69ec42c
OWASP Juice Shop
Account
Your Basket
EN
Thank you for your purchase!
Your order has been placed and is being processed. You can check for status updates on our Track Orders page.
Your order will be delivered in 1 days.
Delivery Address
fawas
kandy road , colombo, colombo, 30200
srilanka
Phone Number 758884544
Order Summary
Product
Price
Quantity
Total Price
Apple Juice (1000ml)
1.99¤
1
1.99¤
Apple Pomace
0.89¤
1
0.89¤
Items
2.88¤
Delivery
0.99¤
Promotion
0.00¤
Total Price
3.87¤
You have gained 0 Bonus Points from this order!


localhost:3000/#/order-history
OWASP Juice Shop
Account
Your Basket
EN
Order History
Order ID
#af2a-3fb7708ea69ec42c
Total Price
3.87¤
Bonus
0
In Transit
Product
Price
Quantity
Total Price
Apple Juice (1000ml)
1.99¤
1
1.99¤
Apple Pomace
0.89¤
1
0.89¤


localhost:3000/profile?id=102
User Profile
File Upload:
Choose File
No file chosen
• Maximum file size 150Kb
• All image formats are accepted
Upload Picture
or
Image URL:
Link Image
Email:
Username:
Set Username
Select a folder to store override files in
Select folder
Elements
Console
Sources
Network
Performance
Memory
Application
Privacy and security
Lighthouse
Recorder
Name
Status
Type
Initiator
Size
Time
profile?id=102
icon?family=Material+Icons
jquery.min.js
material.min.css
userProfile.css
css?family=Roboto:300,400,500,700
material.min.js
JuiceShop_Logo.png
default.svg
flUhRq6tzZclQEJ-Vdg-IuiaDsNc.woff2
KFO7CnqEu92Fr1ME7kSn66aGLdTylUAMa3yUBA.woff2
12 requests
3.7 kB transferred
361 kB resources
Finish: 701 ms
DOMContentLoaded: 710 ms
Load: 711 ms


localhost:3000/profile?id=10
Sync history?
OWASP Juice Shop (Express ^4.21.0)
500 Error: Blocked illegal activity by ::ffff:172.17.0.1
at /juice-shop/build/routes/userProfile.js:60:18