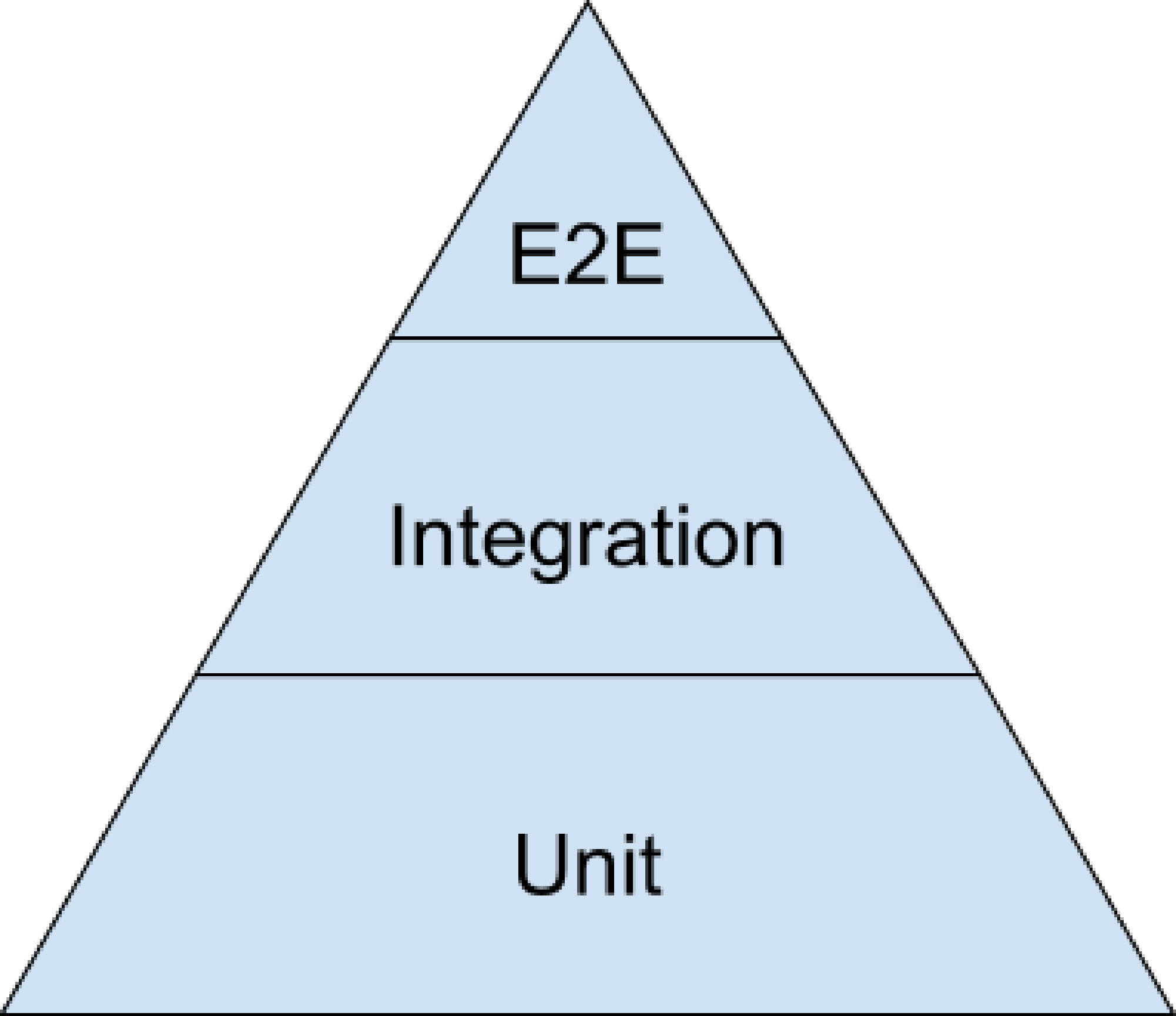
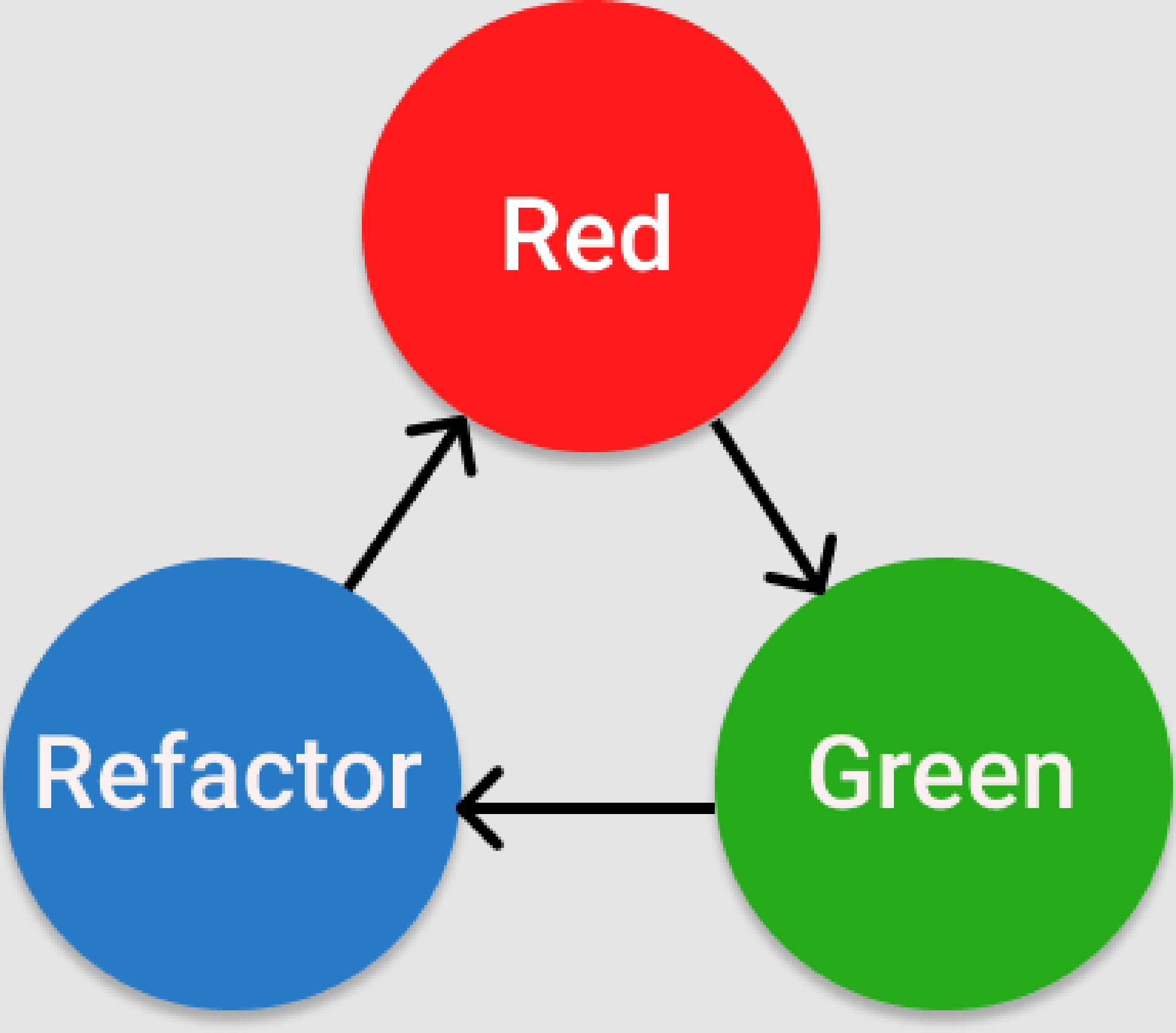
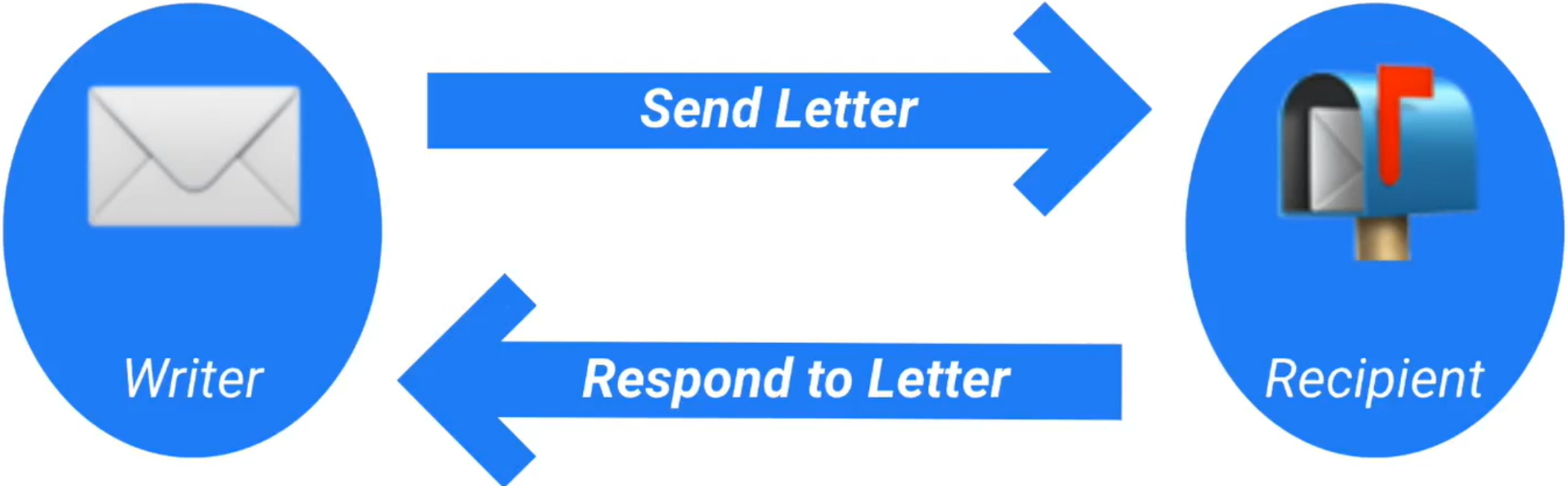
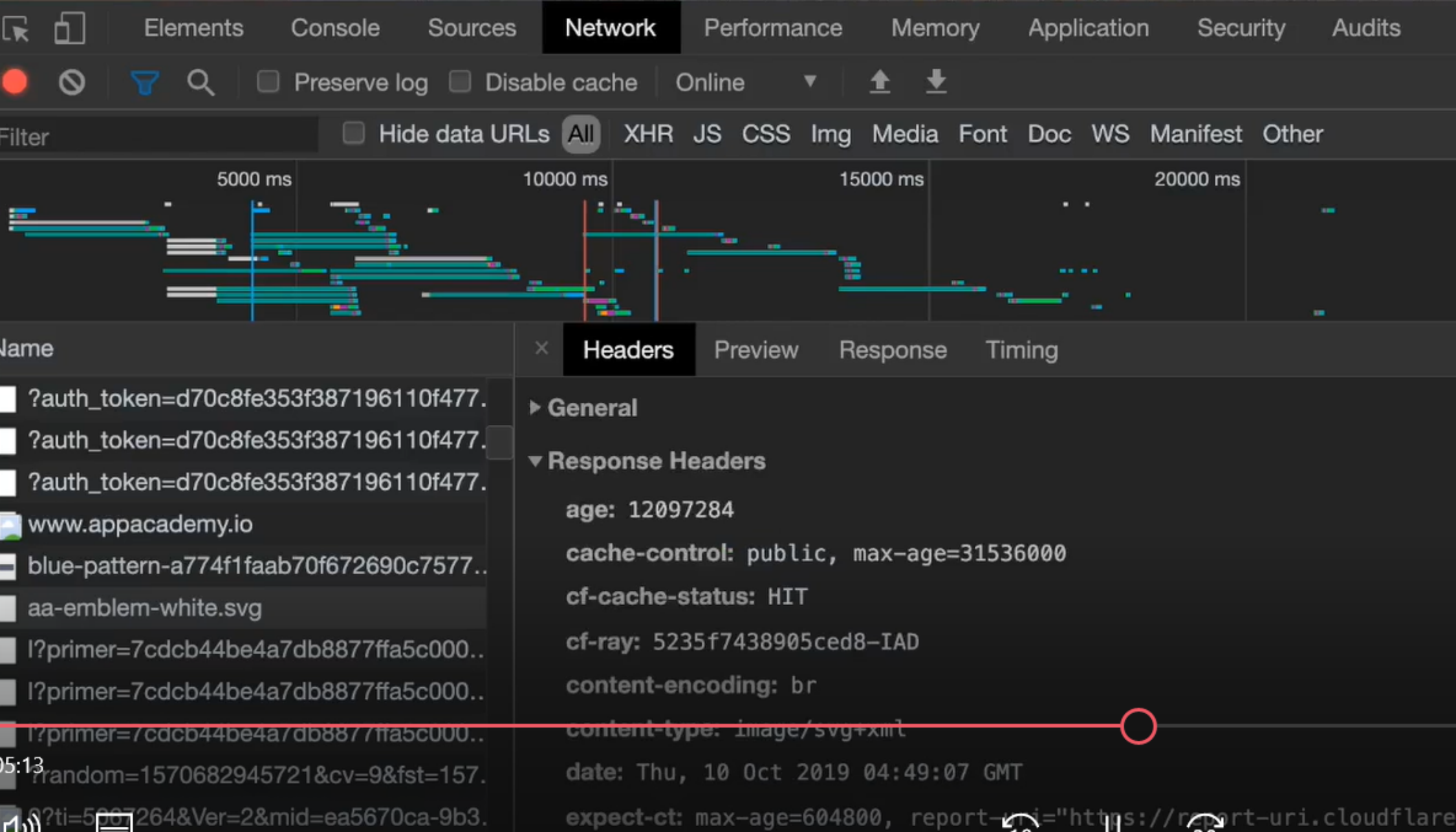

E2E
Integration
Unit


Red
Green
Refactor


Send Letter
Respond to Letter
Writer
Recipient

Name	Method	Status	Type	Initiator	Size	Time	Waterfall
?auth_token=d70c8fe353f387196110f477dcbc3e…	OPTIONS	200	xhr	site-d7c6a01….js:18964	695 B	2.23 s	
?auth_token=d70c8fe353f387196110f477dcbc3e…	OPTIONS	200	xhr	site-d7c6a01….js:18964	695 B	2.23 s	
?auth_token=d70c8fe353f387196110f477dcbc3e…	OPTIONS	200	xhr	site-d7c6a01….js:18964	696 B	2.33 s	


Elements
Console
Sources
Network
Performance
Memory
Application
Security
Audits
Preserve log
Disable cache
Online
Filter
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
5000 ms
10000 ms
15000 ms
20000 ms
Name
?auth_token=d70c8fe353f387196110f477.
?auth_token=d70c8fe353f387196110f477.
?auth_token=d70c8fe353f387196110f477.
www.appacademy.io
blue-pattern-a774f1faab70f672690c7577..
aa-emblem-white.svg
l?primer=7cdcb44be4a7db8877ffa5c000..
l?primer=7cdcb44be4a7db8877ffa5c000..
l?primer=7cdcb44be4a7db8877ffa5c000..
random=1570682945721&cv=9&fst=157.
Headers
Preview
Response
Timing
General
Response Headers
age: 12097284
cache-control: public, max-age=31536000
cf-cache-status: HIT
cf-ray: 5235f7438905ced8-IAD
content-encoding: br
content-type: image/svg+xml
date: Thu, 10 Oct 2019 04:49:07 GMT
expect-ct: max-age=604800, report-uri="https://report-uri.cloudflare

Body

When we need to send data that doesn't fit in a header & is too complex for the URI, we can place it in the *body* of our HTTP request. The body comes right after the headers and can be formatted a few different ways.

The most common way form data is formatted is *URL encoding*. This is the default for data from web forms and looks a little like this:

```
name=claire&age=29&iceCream=vanilla
```

Alternatively, you might format your request body using JSON or XML or some other standard. What's most important is that you remember to set the appropriate `Content-Type` header so the server knows how to interpret your body.

```
Host:: command not found
bryan@LAPTOP-F699FFV1:/mnt/c/Users/15512/Google Drive/App Academy August Cohort 2020/Weeks/Week 6/Days/Monday/Projects/build-your-own-server$
bryan@LAPTOP-F699FFV1:/mnt/c/Users/15512/Google Drive/App Academy August Cohort 2020/Weeks/Week 6/Days/Monday/Projects/build-your-own-server$ nc -v neverssl.com 80
Connection to neverssl.com 80 port [tcp/http] succeeded!
GET / HTTP/1.1
Host: neverssl.com

HTTP/1.1 200 OK
Content-Type: text/html
Content-Length: 1416
Connection: keep-alive
Last-Modified: Thu, 06 Jun 2019 04:19:28 GMT
Accept-Ranges: bytes
Server: AmazonS3
Date: Mon, 14 Sep 2020 11:14:02 GMT
ETag: "92b6819fcf2865f6be341e02390d23bf"
```

Status

Like the request, an HTTP response's first line gives you a high-level overview of the server's intention. For the response, we refer to this as the *status-line*.

Here's the status line from our `appacademy.io` response:

```
HTTP/1.1 200 OK
```

We open with the HTTP version the server is responding with. `1.1` is still the most commonly used, though you may occasionally see `2` or even `1.0`. We follow this with a `Status-Code` and `Reason-Phrase`. These give us a quick way of understanding if our request was successful or not.

HTTP status codes are a numeric way of representing a server's response. Each code is a three-digit number accompanied by a short description. They're grouped by the first digit (so, for example, all "Informational" codes begin with a `1`: `100` - `199`).

Status codes 100 - 199: Informational

Informational codes let the client know that a request was received, and provide extra info from the server. There are very few informational codes defined by the HTTP specification and you're unlikely to see them, but it's good to know that they exist!

Status codes 200 - 299: Successful

Successful response codes indicate that the request has succeeded and the server is handling it. Here are a couple common examples:

- **200 OK:** Request received and fulfilled. These usually come with a `body` that contains the resource you requested.
- **201 Created:** Your request was received and a new record was created as a result. You'll often see this response to `POST` requests.

Status codes 300 - 399: Redirection

These responses let the client know that there has been a change. There are a few different ways for a server to note a redirect, but the two most common are also the most important:

- **301 Moved Permanently**: The resource you requested is in a totally new location. This might be used if a webpage has changed domains, or if resources were reorganized on the server. Most clients will automatically process this redirect and send you to the new location, so you may not notice this response at all.

- **302 Found**: Similarly, to *301 Moved Permanently*, this indicates that a resource has moved. However, this code is used to indicate a temporary move. It's not often that you see temporary moves online, but this code may be used to indicate a permanent move where the old domain should still be valid too. Clients will usually follow this redirect automatically as well, but you shouldn't necessarily update your links until the server returns a `301`.

301 Moved Permanently and 302 Found often get confused. When might we want to use a 302 Found `? The most common use case today is for the transition from HTTP to HTTPS. _HTTPS is secure HTTP messaging, where requests & responses are encrypted so they can't be read by prying eyes while en route to their destinations.

This is a much safer way of communicating online, so most websites require access via `https://` *before the domain. However, we don't want to ignore folks still trying to access our content from the older* `http://` *approach!*

In this case, we'll return a 302 Found response to the client, letting them know that it's okay to keep navigating to `http://our-website.com`*, but we're going to redirect them to* `https://our-website.com` *for their protection.*

Hypertext delivered

An HTTP response contains either the content we requested or an explanation of why that content couldn't be delivered. It's just like ordering at a restaurant: you place your order and receive either a plate of delicious food or an apology from the chef. In a good restaurant, the apology will include some extra help: "I'm sorry, we're out of broccoli. Can we get you something else? How can we make this right?".

When designing your own HTTP responses, remember that restaurant example. It's important to note that there's a problem, but it's equally important to provide reliable, helpful details. We'll look at some examples of this when we build our own HTTP server in a later lesson.

Structure of a Response

Responses are formatted similarly to requests: we'll have a *status-line* (instead of a request-line), headers that provide helpful metadata about the response, and the response body: a representation of the requested resource.

Here's what the HTTP response looks like when visiting `appacademy.io`:

```
HTTP/1.1 200 OK
Content-Type: text/html; charset=utf-8
Transfer-Encoding: chunked
Connection: close
X-Frame-Options: SAMEORIGIN
X-Xss-Protection: 1; mode=block
X-Content-Type-Options: nosniff
Cache-Control: max-age=0, private, must-revalidate
Set-Cookie: _rails-class-site_session=BAh7CEkiD3NlcnNpb25faWQGOg2FVEkiJTA5N4A5YTU1NTEyZDR
X-Request-Id: cf9f30dd-90d0-46d7-86d7-6fe57753b0ad
X-Runtime: 0.006884
Strict-Transport-Security: max-age=31536000
Vary: Origin
Via: 1.1 vegur
Expect-CT: max-age=604800, report-uri="https://report-uri.cloudflare.com/cdn-cgi/beacon/e
Server: cloudflare
CF-RAY: 51d641d1ce9d2d45-TXL

<!DOCTYPE html>
<html>
...
...
</html>
```

Oof! That's a lot of unfamiliar stuff. Let's walk through the important bits together.

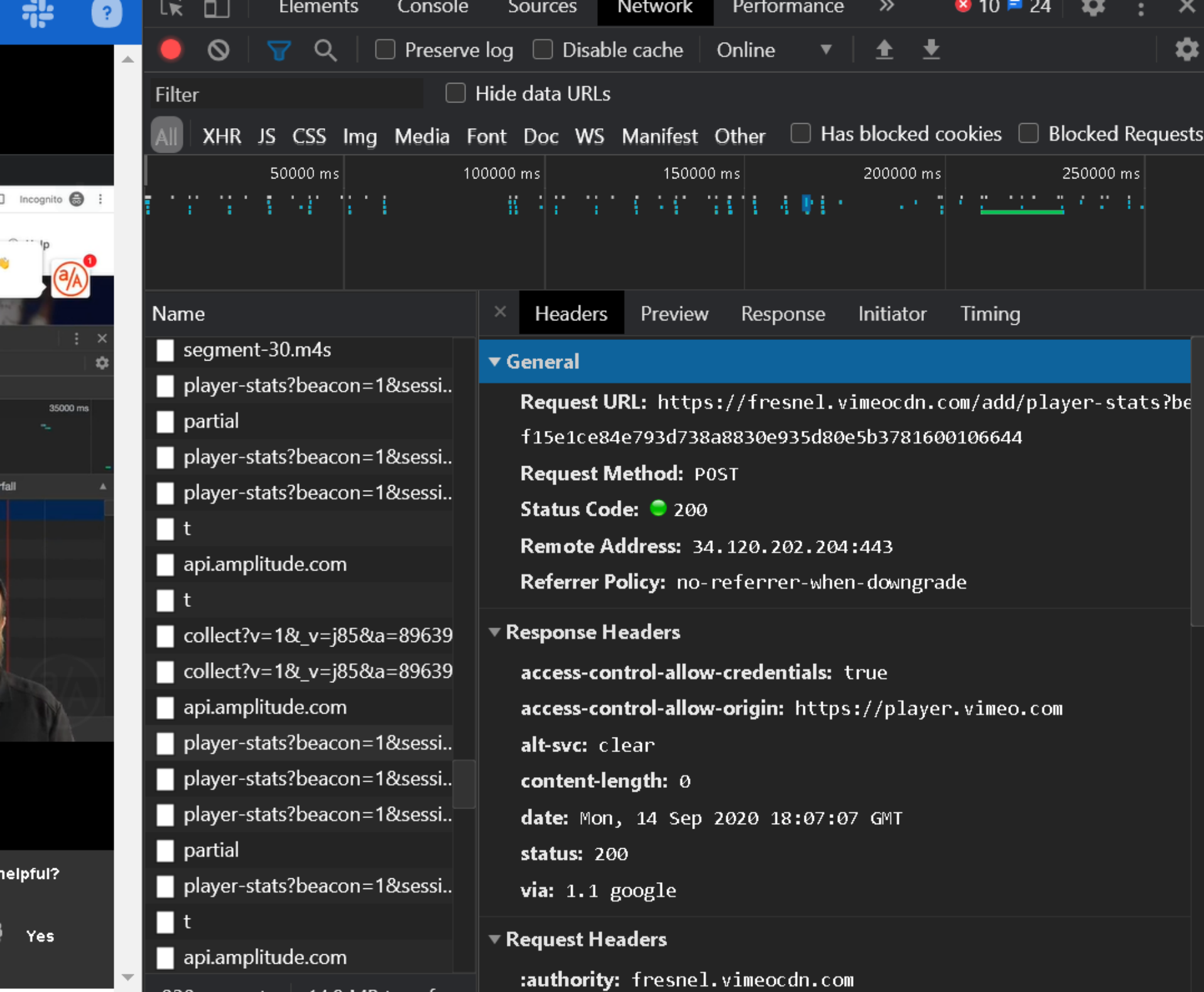
Structure of a Response

Responses are formatted similarly to requests: we'll have a *status-line* (instead of a request-line), headers that provide helpful metadata about the response, and the response body: a representation of the requested resource.

Here's what the HTTP response looks like when visiting `appacademy.io`:

```
HTTP/1.1 200 OK
Content-Type: text/html; charset=utf-8
Transfer-Encoding: chunked
Connection: close
X-Frame-Options: SAMEORIGIN
X-Xss-Protection: 1; mode=block
X-Content-Type-Options: nosniff
Cache-Control: max-age=0, private, must-revalidate
Set-Cookie: _rails-class-site_session=BAh7CEkiD3Nlc3Npb25faWQG0gZFVEkiJTM5NWM5YTV
X-Request-Id: cf5f30dd-99d0-46d7-86d7-6fe57753b20d
X-Runtime: 0.006894
Strict-Transport-Security: max-age=31536000
Vary: Origin
Via: 1.1 vegur
Expect-CT: max-age=604800, report-uri="https://report-uri.cloudflare.com/cdn-cgi/
Server: cloudflare
CF-RAY: 51d641d1ca7d2d45-TXL

<!DOCTYPE html>
<html>
```


Elements
Console
Sources
Network
Performance
10
24
Preserve log
Disable cache
Online
Filter
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
Has blocked cookies
Blocked Requests
50000 ms
100000 ms
150000 ms
200000 ms
250000 ms
Name
segment-30.m4s
player-stats?beacon=1&sessi..
partial
player-stats?beacon=1&sessi..
player-stats?beacon=1&sessi..
t
api.amplitude.com
t
collect?v=1&_v=j85&a=89639
collect?v=1&_v=j85&a=89639
api.amplitude.com
player-stats?beacon=1&sessi..
player-stats?beacon=1&sessi..
player-stats?beacon=1&sessi..
partial
player-stats?beacon=1&sessi..
t
api.amplitude.com
Headers
Preview
Response
Initiator
Timing
General
Request URL: https://fresnel.vimeocdn.com/add/player-stats?be
f15e1ce84e793d738a8830e935d80e5b3781600106644
Request Method: POST
Status Code: 200
Remote Address: 34.120.202.204:443
Referrer Policy: no-referrer-when-downgrade
Response Headers
access-control-allow-credentials: true
access-control-allow-origin: https://player.vimeo.com
alt-svc: clear
content-length: 0
date: Mon, 14 Sep 2020 18:07:07 GMT
status: 200
via: 1.1 google
Request Headers
:authority: fresnel.vimeocdn.com

Referrer Policy: no-referrer-when-downgrade

Response Headers

access-control-allow-credentials: true

access-control-allow-origin: https://player.vimeo.com

alt-svc: clear

content-length: 0

date: Mon, 14 Sep 2020 18:07:07 GMT

status: 200

via: 1.1 google

Request Headers

:authority: fresnel.vimeocdn.com

:method: POST

:path: /add/player-stats?beacon=1&session-id=85dedf15e1ce84e793d738a8830e935d80e5b3781600106644

:scheme: https

accept: */*

▼ **Request Headers**

:authority: fresnel.vimeocdn.com

:method: POST

:path: /add/player-stats?beacon=1&session-id=85dedf15e1ce84e793d738a8830e935d80e5b3781600106644

:scheme: https

accept: */*

accept-encoding: gzip, deflate, br

accept-language: en-US,en;q=0.9

content-length: 1815

content-type: text/plain;charset=UTF-8

origin: https://player.vimeo.com

referer: https://player.vimeo.com/video/365678426?rel=0

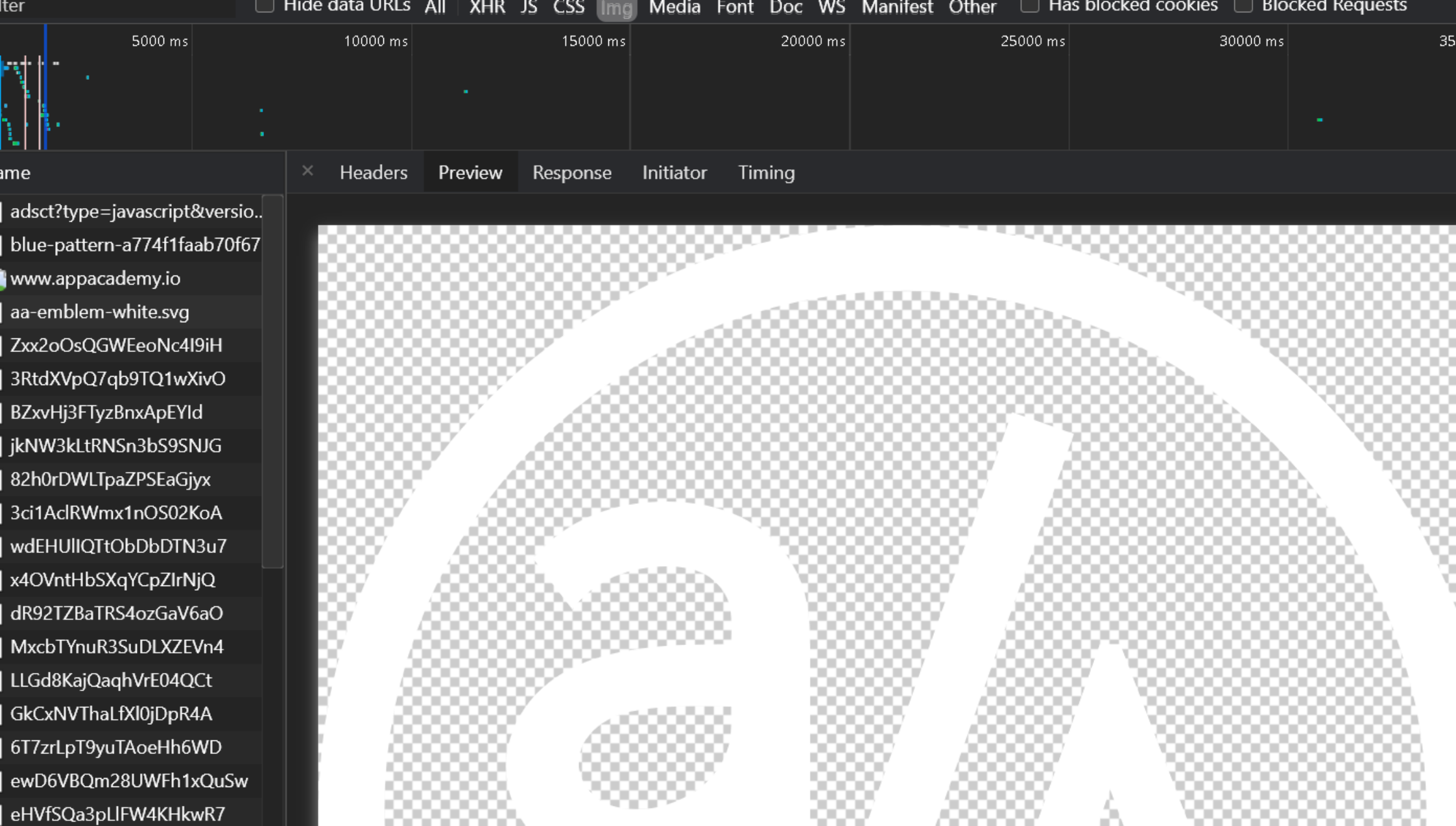
sec-fetch-dest: empty

sec-fetch-mode: no-cors

sec-fetch-site: cross-site

user-agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/85.0.4183.102 S

afari/537.36


Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
Has blocked cookies
Blocked Requests
5000 ms
10000 ms
15000 ms
20000 ms
25000 ms
30000 ms
ame
adsct?type=javascript&versio..
blue-pattern-a774f1faab70f67
www.appacademy.io
aa-emblem-white.svg
Zxx2oOsQGWEeoNc4I9iH
3RtdXVpQ7qb9TQ1wXivO
BZxvHj3FTyzBnxApEYId
jkNW3kLtRNSn3bS9SNJG
82h0rDWLTpaZPSEaGjyx
3ci1AclRWmx1nOS02KoA
wdEHUlIQTtObDbDTN3u7
x4OVntHbSXqYCpZIrNjQ
dR92TZBaTRS4ozGaV6aO
MxcbTYnuR3SuDLXZEVn4
LLGd8KajQaqhVrE04QCt
GkCxNVThaLfXl0jDpR4A
6T7zrLpT9yuTAoeHh6WD
ewD6VBQm28UWFh1xQuSw
eHVfSQa3pLlFW4KHkwR7
Headers
Preview
Response
Initiator
Timing

Headers Preview Response Initiator Timing

Response preview

```
<?xml version="1.0" encoding="utf-8"?>
<!-- Generator: Adobe Illustrator 18.1.1, SVG Export Plug-In . SVG Version: 6.00 Build 0)  -->
<svg version="1.1" id="Layer_1" xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink" x=
     viewBox="0 0 193.4 193.4" enable-background="new 0 0 193.4 193.4" xml:space="preserve">
<g>
    <g>
        <path fill="#FFFFFF" d="M96.7,193.4C43.4,193.4,0,150,0,96.7S43.4,0,96.7,0s96.7,43.4,96.7,96.7S150,193.4,
            c-47.3,0-85.8,38.5-85.8,85.8c0,47.3,38.5,85.8,85.8,85.8s85.8-38.5,85.8-85.8C182.5,49.4,144,10.8,96.
    </g>
    <path fill="#FFFFFF" d="M77.9,55.5c-3.9-6.4-11.2-10-20.6-10c-8.4,0-15.7,2.8-20.9,8.2l-1.1,1.1l6.5,8.4l1.4-1
        c4.6-4.8,11-5.5,14.4-5.5c4.6,0,7.5,1.5,9.3,4.4c1.5,2.5,1.1,5.6,1.1,8.3V69h-0.6c-7,0-15.7,0.1-22.8,2.7
        c-10.1,3.7-13.7,11.5-13.7,17.4c0,8.4,6.6,17.3,19.7,17.3c6.2,0,11.4-1.9,17.4-5.6v4.1h13V69.4C81,64.5,80.
         M52.4,96.2c-6.4,0-9.5-3.9-9.5-7.7c0-1.6,0.6-3.3,2-4.8c1.3-1.5,3.4-2.9,6.5-3.6c3.1-0.7,7.5-0.9,10.9-0.9
        v3C68,91.8,58.9,96.2,52.4,96.2z"/>
    <g>

            <rect x="91.3" y="28.7" transform="matrix(0.9428 0.3333 -0.3333 0.9428 37.7561 -26.698)" fill="#FFF
    </g>
    <path fill="#FFFFFF" d="M132.1,69h-3.4L103,142h11.5l6.7-21h19.3l7.6,21h11.9L132.1,69z M124,112l6.4-19.1l7.1
</g>
<g>
</g>
<g>
</g>
<g>
</g>
<g>
</g>
```

Queued at 601.24 ms

Started at 601.24 ms

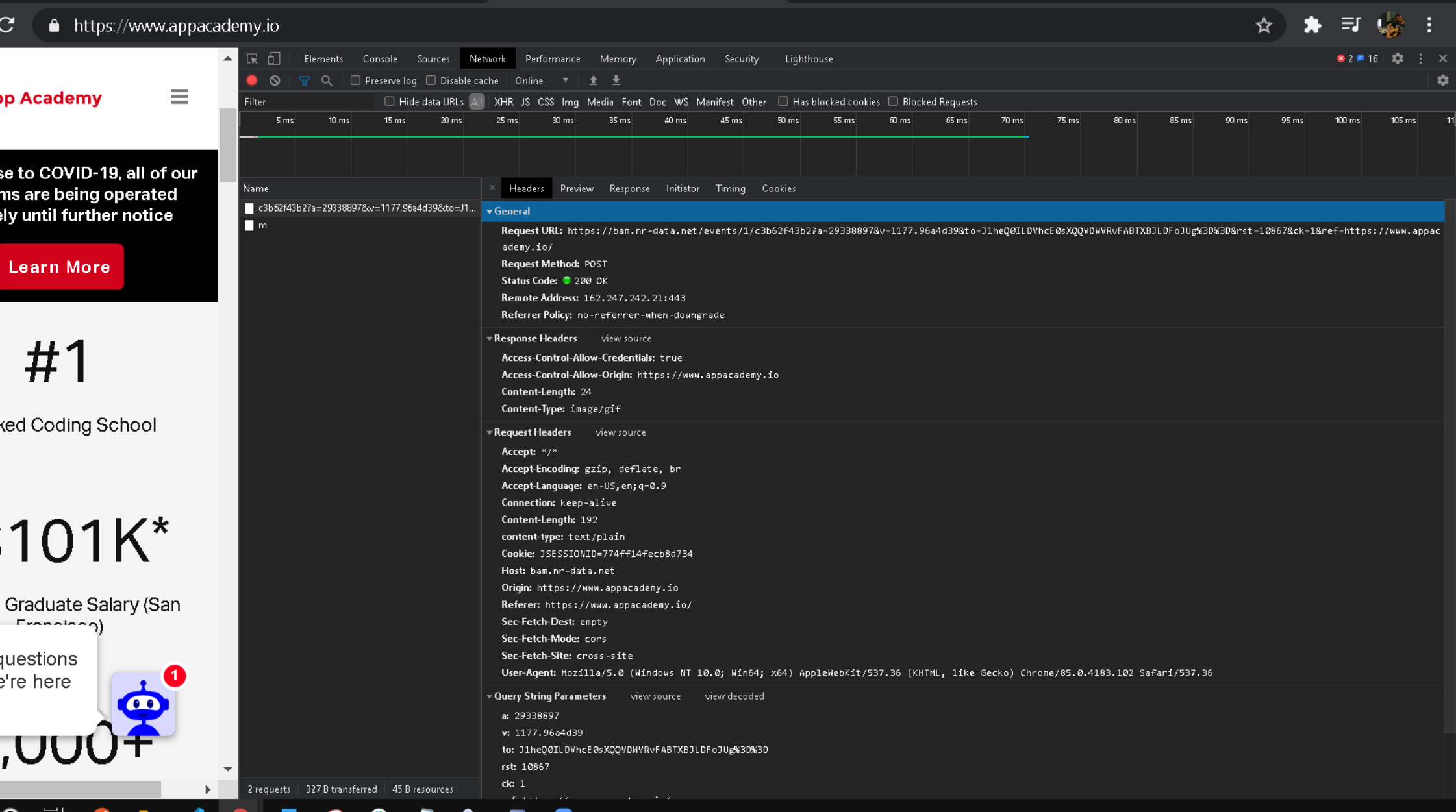
Connection Start	DURATION
Stalled	41 µs

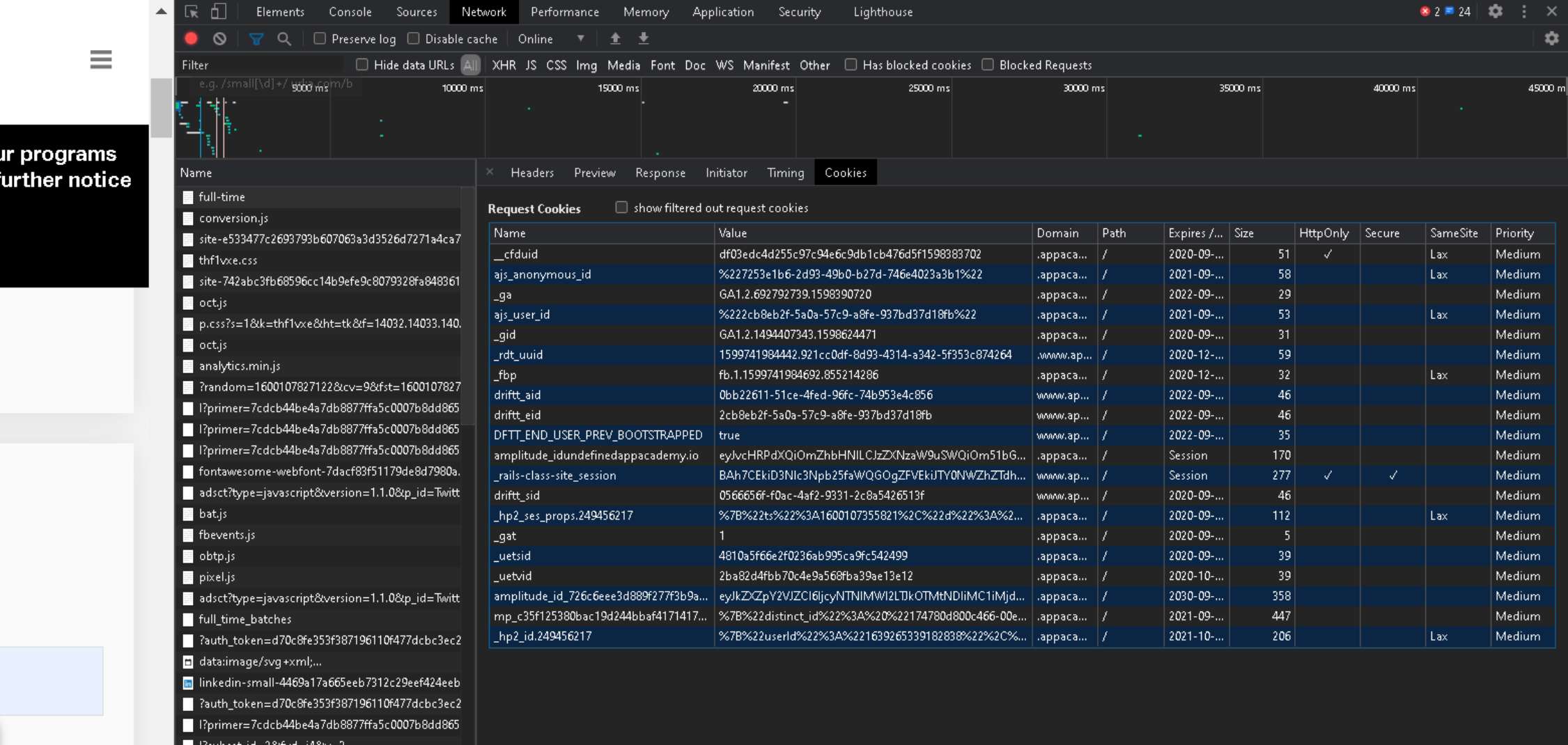
Request/Response	DURATION
Content Download	2 µs

Explanation **43 µs**

Server Timing	TIME

During development, you can use the Server Timing API to add insights into the server-side timing of this request.


https://www.appacademy.io
Elements
Console
Sources
Network
Performance
Memory
Application
Security
Lighthouse
Preserve log
Disable cache
Online
Filter
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
Has blocked cookies
Blocked Requests
Name
c3b62f43b2?a=29338897&v=1177.96a4d39&to=J1...
m
Headers
Preview
Response
Initiator
Timing
Cookies
General
Request URL: https://bam.nr-data.net/events/1/c3b62f43b2?a=29338897&v=1177.96a4d39&to=J1heQ0ILDVhcE0sXQQVDWVRvFABTXBJLDFoJUg%3D%3D&rst=10867&ck=1&ref=https://www.appacademy.io/
Request Method: POST
Status Code: 200 OK
Remote Address: 162.247.242.21:443
Referrer Policy: no-referrer-when-downgrade
Response Headers
view source
Access-Control-Allow-Credentials: true
Access-Control-Allow-Origin: https://www.appacademy.io
Content-Length: 24
Content-Type: image/gif
Request Headers
view source
Accept: */*
Accept-Encoding: gzip, deflate, br
Accept-Language: en-US,en;q=0.9
Connection: keep-alive
Content-Length: 192
content-type: text/plain
Cookie: JSESSIONID=774ff14fecb8d734
Host: bam.nr-data.net
Origin: https://www.appacademy.io
Referer: https://www.appacademy.io/
Sec-Fetch-Dest: empty
Sec-Fetch-Mode: cors
Sec-Fetch-Site: cross-site
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/85.0.4183.102 Safari/537.36
Query String Parameters
view source
view decoded
a: 29338897
v: 1177.96a4d39
to: J1heQ0ILDVhcE0sXQQVDWVRvFABTXBJLDFoJUg%3D%3D
rst: 10867
ck: 1
2 requests
327 B transferred
45 B resources
Learn More
#1
101K*
Graduate Salary (San
questions
e're here


Elements
Console
Sources
Network
Performance
Memory
Application
Security
Lighthouse
Preserve log
Disable cache
Online
Filter
Hide data URLs
All
XHR
JS
CSS
Img
Media
Font
Doc
WS
Manifest
Other
Has blocked cookies
Blocked Requests
Name
full-time
conversion.js
site-e533477c2693793b607063a3d3526d7271a4ca7
thf1vxe.css
site-742abc3fb68596cc14b9efe9c8079328fa848361
oct.js
p.css?s=1&k=thf1vxe&ht=tk&f=14032.14033.140.
oct.js
analytics.min.js
?random=1600107827122&cv=9&fst=1600107827
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865
fontawesome-webfont-7dacf83f51179de8d7980a.
adsct?type=javascript&version=1.1.0&p_id=Twitt
bat.js
fbevents.js
obtp.js
pixel.js
adsct?type=javascript&version=1.1.0&p_id=Twitt
full_time_batches
?auth_token=d70c8fe353f387196110f477dcbc3ec2
data:image/svg+xml;...
linkedin-small-4469a17a665eeb7312c29eef424eeb
?auth_token=d70c8fe353f387196110f477dcbc3ec2
l?primer=7cdcb44be4a7db8877ffa5c0007b8dd865
Headers
Preview
Response
Initiator
Timing
Cookies
Request Cookies
show filtered out request cookies
Name
Value
Domain
Path
Expires /...
Size
HttpOnly
Secure
SameSite
Priority
__cfduid
df03edc4d255c97c94e6c9db1cb476d5f1598383702
.appaca...
/
2020-09-...
51
✓
Lax
Medium
ajs_anonymous_id
%227253e1b6-2d93-49b0-b27d-746e4023a3b1%22
.appaca...
/
2021-09-...
58
Lax
Medium
_ga
GA1.2.692792739.1598390720
.appaca...
/
2022-09-...
29
Medium
ajs_user_id
%222cb8eb2f-5a0a-57c9-a8fe-937bd37d18fb%22
.appaca...
/
2021-09-...
53
Lax
Medium
_gid
GA1.2.1494407343.1598624471
.appaca...
/
2020-09-...
31
Medium
_rdt_uuid
1599741984442.921cc0df-8d93-4314-a342-5f353c874264
.www.ap...
/
2020-12-...
59
Medium
_fbp
fb.1.1599741984692.855214286
.appaca...
/
2020-12-...
32
Lax
Medium
drift_aid
0bb22611-51ce-4fed-96fc-74b953e4c856
www.ap...
/
2022-09-...
46
Medium
drift_eid
2cb8eb2f-5a0a-57c9-a8fe-937bd37d18fb
www.ap...
/
2022-09-...
46
Medium
DFTT_END_USER_PREV_BOOTSTRAPPED
true
www.ap...
/
2022-09-...
35
Medium
amplitude_idundefinedappacademy.io
eyJvcHRpdXQiOmZhbHNlLCJzZXNzaW9uSWQiOm51bG...
.appaca...
/
Session
170
Medium
_rails-class-site_session
BAh7CEkiD3Nlc3Npb25faWQGOgZFVEkiJTY0NWZhZTdh...
www.ap...
/
Session
277
✓
✓
Medium
drift_sid
0566656f-f0ac-4af2-9331-2c8a5426513f
www.ap...
/
2020-09-...
46
Medium
_hp2_ses_props.249456217
%7B%22ts%22%3A1600107355821%2C%22d%22%3A%2...
.appaca...
/
2020-09-...
112
Lax
Medium
_gat
1
.appaca...
/
2020-09-...
5
Medium
_uetsid
4810a5f66e2f0236ab995ca9fc542499
.appaca...
/
2020-09-...
39
Medium
_uetvid
2ba82d4fbb70c4e9a568fba39ae13e12
.appaca...
/
2020-10-...
39
Medium
amplitude_id_726c6eee3d889f277f3b9a...
eyJkZXZpY2VJZCI6IjcyNTNlMWI2LTJkOTMtNDliMC1iMjd...
.appaca...
/
2030-09-...
358
Medium
mp_c35f125380bac19d244bbaf4171417...
%7B%22distinct_id%22%3A%20%22174780d800c466-00e...
.appaca...
/
2021-09-...
447
Medium
_hp2_id.249456217
%7B%22userId%22%3A%2216392653391828 38%22%2C%...
.appaca...
/
2021-10-...
206
Lax
Medium