CORS

Cross-Origin Resource Sharing

.NET

Cross-Origin Resource Sharing (CORS) is a mechanism that uses additional HTTP headers to tell browsers to give access to a web application running at one origin to selected resources from a different origin.

https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS

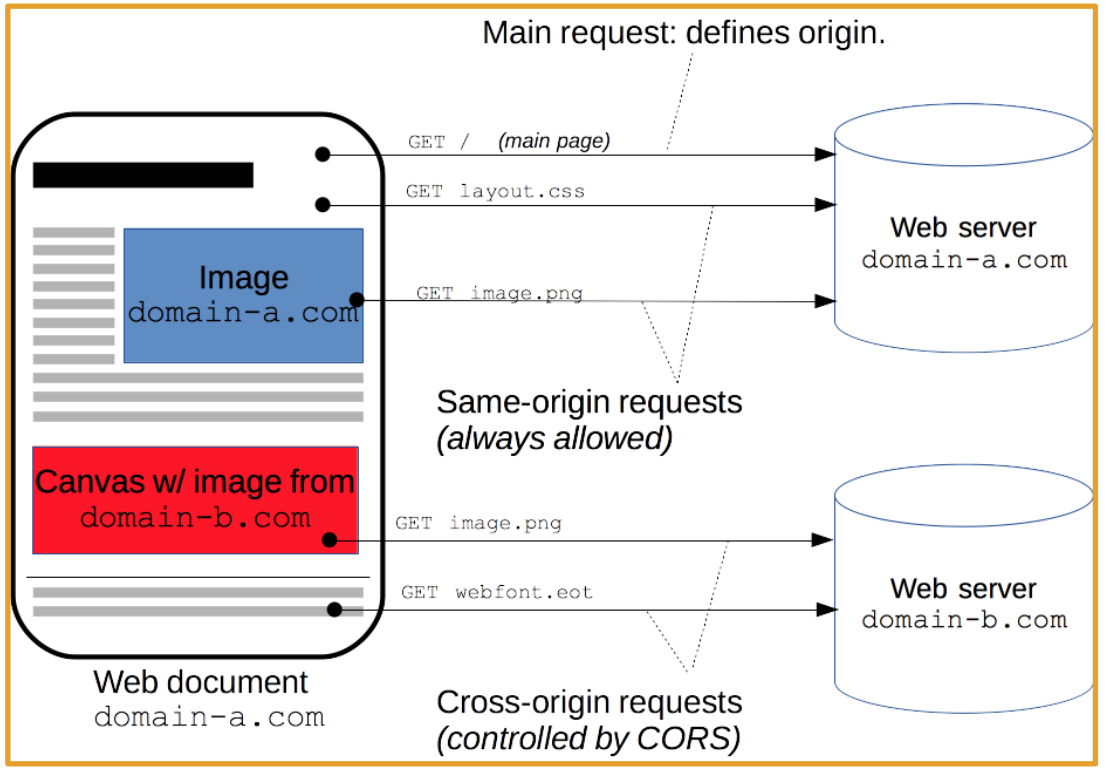
CORS - Overview

https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS

The specification for ***CORS*** is included as part of the WHATWG's ***Fetch*** Living Standard.

CORS is implemented if a document or web page needs resources from more than one source.

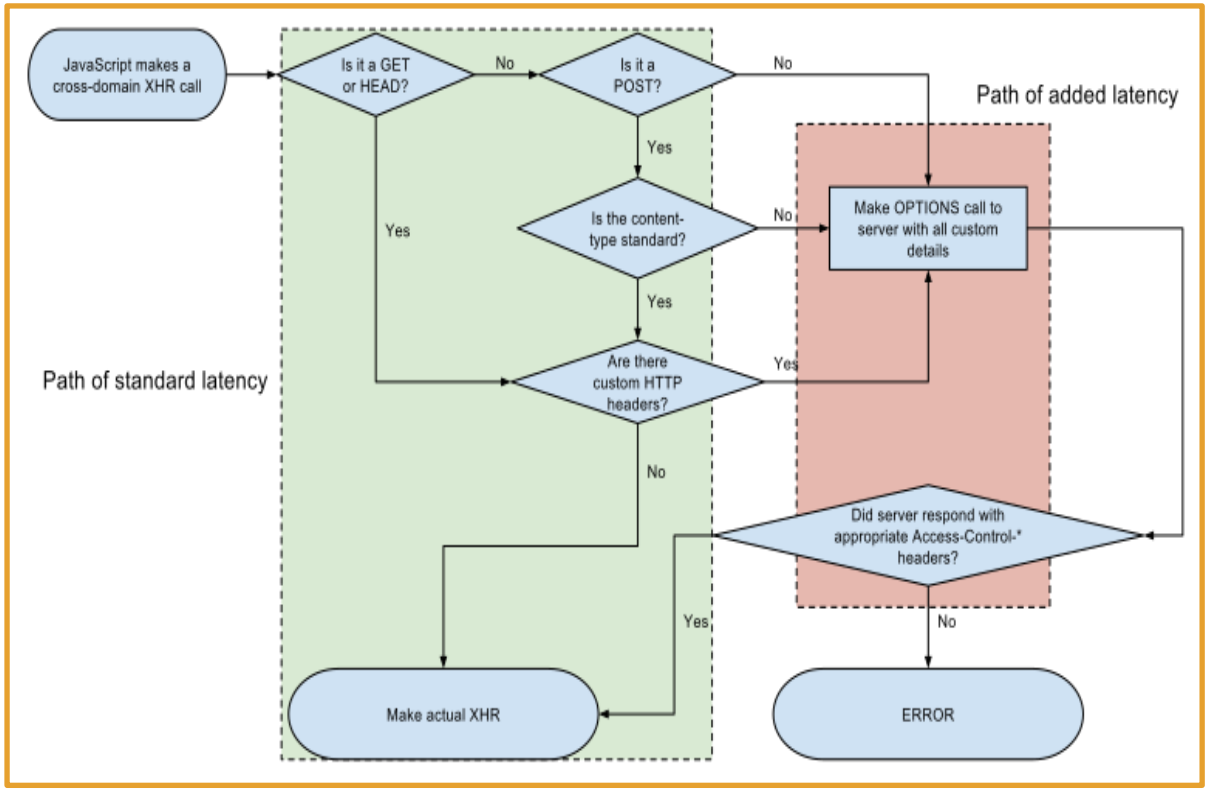
This was originally not allowed (for security reasons) but the ***CORS Standard*** has put protocols in place to make relax security and make ***CORS*** safe.



CORS Standard Protocols

https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS
https://en.wikipedia.org/wiki/Cross-origin_resource_sharing

- The ***CORS*** Standard adds new HTTP headers
  - servers describe which origins are permitted to read information from web browsers.
- Browsers must "preflight" any requests that can alter data.
  - Browsers solicit supported methods from the server. Upon "approval" from the server, the browser sends the actual request.



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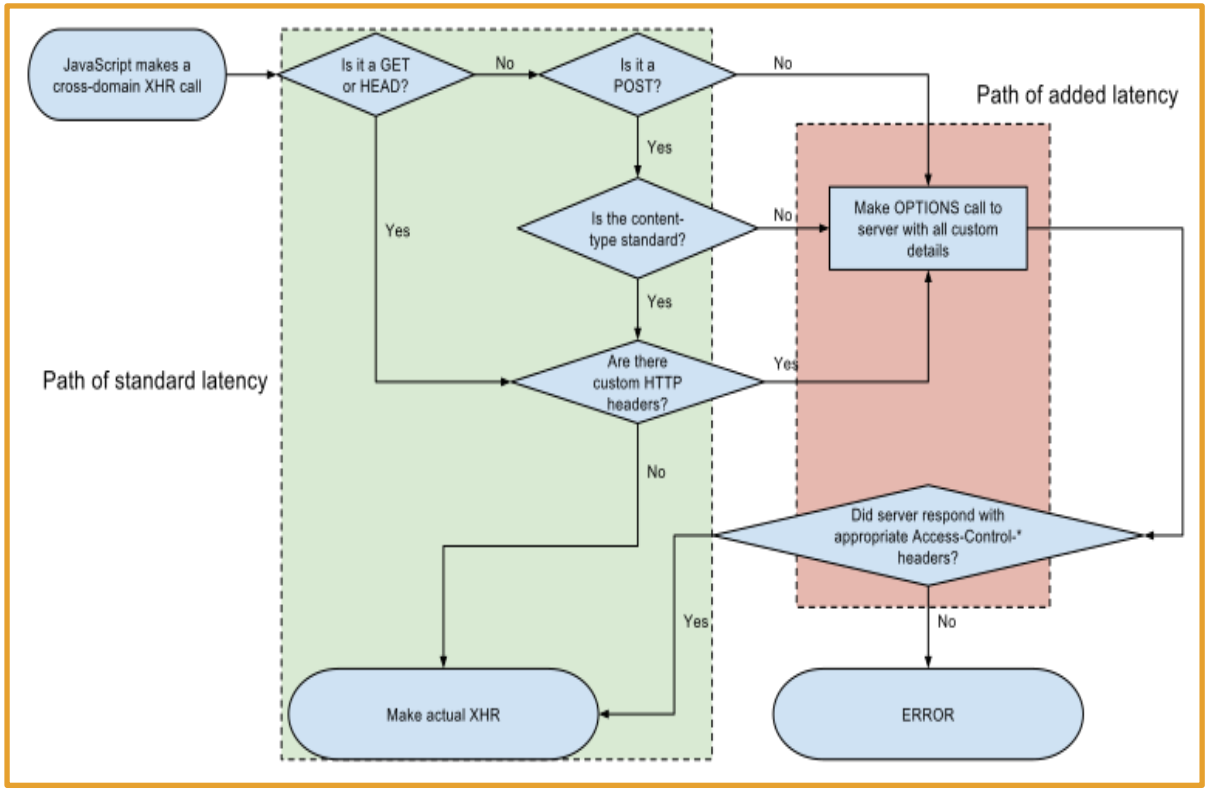
- Servers can inform clients whether "credentials“ like Cookies or HTTP Authentication) should be sent with requests.
- CORS failures result in errors (rejected HTTP Requests) but the details are not available on JavaScript for security reasons.
- You can see what went wrong in the Browsers Console display.



CORS Simple Example

https://en.wikipedia.org/wiki/Cross-origin_resource_sharing
https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS (more examples)

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1. A user visits http://www.revature.com. The Revature.com needs to validate the information of the user so it sends a request to another site, http://www.verify_users.com, to verify the data. This is a cross-origin request.
2. Browsers are the enforcers of CORS. A CORS-compatible browser will attempt to make a cross-origin request to www.verify_users.com.
3. The browser sends the GET request with an extra Origin: HTTP header to www.verify_users.com. This extra header looks like this - Origin: http://www.revature.com.
4. Depending on www.verify_users.com's policies, it can respond in three ways.
    1. With the requested data and another header, Access-Control-Allow-Origin: http://www.revature.com. This response says that only http://www.revature.com is allowed to use the data. Www.verify_users.com uses ***CORS*** to permit the browser to authorize www.revature.com to make requests to www.verify_users.com.
    2. With the requested data and another header, Access-Control-Allow-Origin: *. The * is a 'wildcard' that allows any other site to access the data.
    3. An error.

CORS in .NET - Implementation

https://docs.microsoft.com/en-us/aspnet/core/security/cors?view=aspnetcore-5.0

In startup.cs. =>

```
public void ConfigureServices(IServiceCollection services)
{
    services.AddCors((options) =>
    {
        options.AddPolicy(name: "dev", builder =>
        {
            builder.WithOrigins("http://localhost:4200")
            .AllowAnyHeader()
            .AllowAnyMethod();
        });
    });
```

```
app.UseRouting();

app.UseCors("dev");//you must

app.UseAuthorization();
```