Restore Online Freedom!

Mike Gerwitz

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- The truth is: the Web has become alarmingly hostile and freedom-denying toward users
- Freedom trumps all.

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  - CSS—Describes the document style (appearance)
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- “Assembly language” of the web
  - Subset: asm.js
  - Soon: WebAssembly (WebASM)

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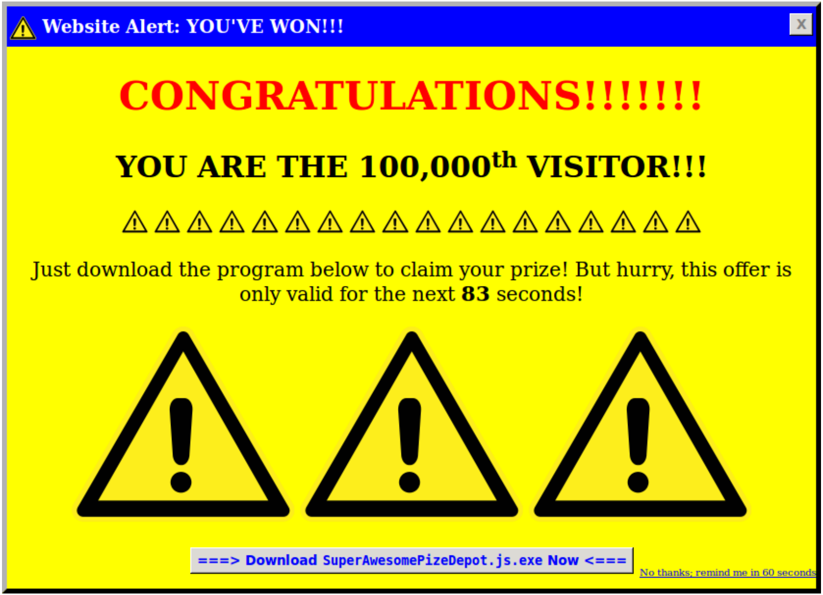
- JavaScript programs run *on the client*
- Illusion inhibits consideration of freedoms



⚠ Website Alert: YOU'VE WON!!!

X

CONGRATULATIONS!!!!!!!

YOU ARE THE 100,000th VISITOR!!!

⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠ ⚠

Just download the program below to claim your prize! But hurry, this offer is only valid for the next **83** seconds!

===> Download SuperAwesomePizeDepot.js.exe Now <===

No thanks; remind me in 60 seconds

Would you run some random website's program on your computer?

Well, you do.

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Just Say “Yes!”

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Advertisers

Just Say “Yes!”

Crackers & Script Kiddies

Just Say “Yes!”

Governments (also Crackers & Script Kiddies)

Just Say “Yes!”

ISPs (Like Comcast)

Just Say “Yes!”

People who want to show off their cool stuff

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- You aren't just running that site's JavaScript

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  - GNU/Linux—Usually through a package manager
  - Source distribution (tarballs/etc)
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- There is a conscious effort made by the user

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- I wish I had time to discuss this
  - What not to do: Firefox refuses to install/run addons that are not signed by Mozilla
  - No "walled gardens"

Everyone is flocking to the web

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    - Your browser is effectively a backdoor
- We control your data and computing (SaaSS)!
- So easy to spy on you!

We can finally get rid of that pesky little bit of control you had left over your physical computing!

The Web Is Easy

- Low Barrier To Entry
- Huge number of libraries and tools for web development
- Even server/desktop software [substitutes] using web libraries

This is great for software freedom.

But we have a problem.

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- Permissive licensing *enables* proprietary software

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- Peer pressure

Partial freedom isn't freedom!

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- Neutral on freedom $\equiv$ allowing erosion of freedoms
- Copyleft is *essential* for a free Web
  - If you use pushover licenses, you're helping to push over everyone else (but perhaps not intentionally)

If you value freedom, talk about Free Software!

If you value freedom, choose copyleft!

Freedom is only as good as your ability to exercise it

Maybe free...?

- Almost always no license information or link to source code
- Might also load non-free code as a separate program (e.g. Google Analytics spyware)

Corresponding Source Code

- Where can I find the corresponding source?

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- Minified code is not source code!
- “The ’source code’ for a work means the preferred form of the work for making modifications to it. ’Object code’ means any non-source form of a work.”

```
add:function(a,b,c,d,e){var
f,g,h,i,j,k,l,m,o,p,q,r=N.get(a);if(r){c.handler&&(f=c,c=f.handler,
e=f.selector),c.guid||(c.guid=n.guid++),(i=r.events)||(i=r.events={}),
(g=r.handle)||(g=r.handle=function(b){return"undefined"!=typeof
n&&n.event.triggered!==b.type?n.event.dispatch.apply(a,arguments):void
0}),b=(b||"").match(G)||[""],j=b.length;while(j--)h=fa.exec(b[j])||[],
o=q=h[1],p=(h[2]||"").split(".").sort(),o&&(l=n.event.special[o]||{},
o=(e?l.delegateType:l.bindType)||o,l=n.event.special[o]||{},k=n.extend(
{type:o,origType:q,data:d,handler:c,guid:c.guid,selector:e,needsContext:
e&&n.expr.match.needsContext.test(e),namespace:p.join(".")},f),(m=i[o])
||(m=i[o]=[],m.delegateCount=0,l.setup&&l.setup.call(a,d,p,g)!==!1||
a.addEventListener&&a.addEventListener(o,g)),l.add&&(l.add.call(a,k),
k.handler.guid||(k.handler.guid=c.guid)),e?m.splice(m.delegateCount++,0,k)
:m.push(k),n.event.global[o]=!0)}}
```

https://code.jquery.com/jquery-2.2.1.min.js

LibreJS

Free JavaScript in your browser

LibreJS

- Blocks execution of non-free JavaScript
- JavaScript should contain `@license` tags
- Hashes of common libraries recognized as free
- Web Labels map scripts to corresponding source code

.

Submit Patches To Projects!

- Patch your own projects!
- Submit patches to add headers to projects
- Patches for minifiers (e.g. UglifyJS)
- Patches for programs that combine sources (e.g. Browserify)
- For Node.js programs: can pull license right out of `package.json`

Replacing Programs

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- How do you replace a program (free or non-) on the Web?

Is that a trick question?

Replacing Programs—The Best Case

1. The program is entirely packaged in its own JavaScript file(s)
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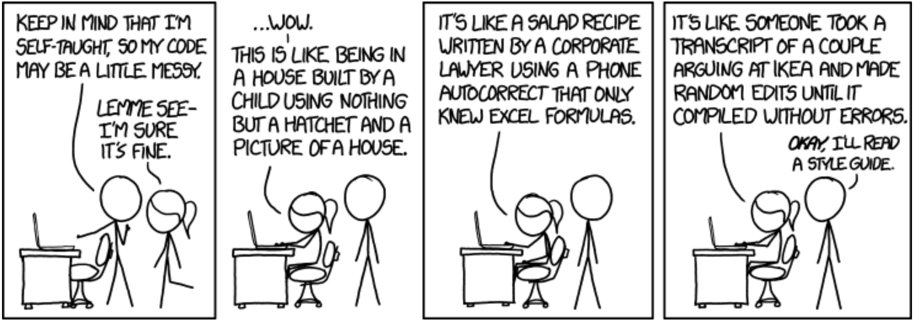
Solution:

1. Block program scripts
2. Block undesirable dependencies
3. Inject replacement program

Replacing Programs—The Realistic Case

1. The program is actually a number of independent programs (scripts) doing different things
2. Some scripts are packaged in one or more JavaScript files
3. Some are inline `<script>` tags scattered throughout
4. Some are inline JavaScript fragments in HTML attributes


KEEP IN MIND THAT I'M SELF-TAUGHT, SO MY CODE MAY BE A LITTLE MESSY.
LEMME SEE– I'M SURE IT'S FINE.
...WOW.
THIS IS LIKE BEING IN A HOUSE BUILT BY A CHILD USING NOTHING BUT A HATCHET AND A PICTURE OF A HOUSE.
IT'S LIKE A SALAD RECIPE WRITTEN BY A CORPORATE LAWYER USING A PHONE AUTOCORRECT THAT ONLY KNEW EXCEL FORMULAS.
IT'S LIKE SOMEONE TOOK A TRANSCRIPT OF A COUPLE ARGUING AT IKEA AND MADE RANDOM EDITS UNTIL IT COMPILED WITHOUT ERRORS.
OKAY, I'LL READ A STYLE GUIDE.

"Code Quality" by Randall Munroe (http://xkcd.com/1513/) CC BY-NC 2.5

Solution?

Write a presentation complaining about it.

Blocking Scripts—Entirely

- Can disable JavaScript entirely
- But then you can't run replacements

Blocking Scripts—NoScript

- NoScript is effective at blocking scripts per (sub-)domain
- Careful—some domains serve lots of scripts (e.g. CDNs)
- Some sites require you to trust many different domains

Blocking Scripts—LibreJS

- Blocks non-free JS with a high level of granularity
- Recognizes JavaScript files (or parts of), script tags, inline scripts in attributes, etc.
- But doesn't block scripts recognized as free
    - So that we can replace specific programs
    - Free software can do bad things too

Injecting Scripts—Greasemonkey

- Expat / Modified BSD / MPL 1.1
- Inject user-defined scripts into web pages
- `http://openuserjs.org`, `http://greasyfork.org`, `http://userscripts-mirror.org`

Injecting Scripts/Styles—dotjs

- MPL 1.1
- Inject user-defined scripts from `~/.js`
- Inject user-defined styles from `~/.css`

Replacing Scripts—What We Need

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- Something your grandparents can use!
- Package changes:
  - Install replacement software like you'd install an addon
  - Automatically block scripts with granularity of LibreJS
  - Automatically inject scripts
  - Verify package signatures
  - Update mechanism
- Ideally: add that support to LibreJS

But all this is just a kluge.

Service as a Software Substitute (SaaSS)

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- You simply cannot modify a program running on someone else’s server
- SaaS—Shackles as a Service

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- Difference: elasticity—servers/resources brought online only when needed
- We can’t talk about freedoms using terms that cloud understanding
  - May as well call it the “fog”

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- To regain control, must host it yourself
- This means running the entire stack (server and client) on your own computer
- Unweb

Unwebbing

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- Cannot unweb a partially (or non-) free stack
  - Webserver
  - Programs/scripts that it runs to generate output
  - Script dependencies
  - Client

The Affero GPL Doesn't Solve All Problems

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- AGPL'd programs can be used in a pipeline with proprietary programs
- Doesn't cover works that the AGPL'd program might invoke externally

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7. Program terminates
8. All services are stopped
9. Environment is destroyed (but not persistent storage)

Web software works just as desktop software

End Goal: Just Run `./foo`

Mike Gerwitz
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Interested in submitting your project to GNU?
https://www.gnu.org/help/evaluation.html

https://gitlab.com/mikegerwitz/online-freedom