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# Cookies

- Way to maintain state for http
- Necessary because each page and each image may be separate http connection
- Sent by a site; returned to that site
- Can hold arbitrary state data, with arbitrary expiration time

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## Cookies Going to a Web Server

```
GET / HTTP/1.1
Host: gg1.cs.columbia.edu
User-Agent: Mozilla/5.0 (X11; U; NetBSD i386; en-US; rv:1.7.5)
Accept: text/xml,application/xml,application/xhtml+xml,text/html;q=0.9,text/css;q=0.8,application/javascript;q=0.7,*/*;q=0.5
Accept-Language: en-us,en;q=0.5
Accept-Encoding: gzip,deflate
Accept-Charset: ISO-8859-1,utf-8;q=0.7,*;q=0.7
Keep-Alive: 300
Connection: keep-alive
Cookie: Max-Age=60; Flavor="Chocolate-chip"; Size="Large"; Wh
```

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## Playing with Cookies

- Note what else your browser leaks
- What wonderful information for evil websites that want to exploit browser bugs...
- Connect to `http://gg1.cs.columbia.edu` and try it.
- Also connect to it via `http://www.anonymizer.com`
- Note: my privacy policy is not atypical

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## DoubleClick

- Very explicit privacy policy
- Explains how they use cookies to track you across sites: ad images on sites point to doubleclick.com.
- Sites visited are tracked; this is used to build up an interest profile
- Opt-out cookie available
- Explains things like email-tracking and clear GIFs (“web bugs”)

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## Google/Orkut

- Cookies used to track search users, trends, and search patterns
- “We may share such information . . . [if] we . . . have a good faith belief that access . . . is reasonably necessary to protect . . . the public”.
- “If you have an account, we may share the information submitted under your account among all of our services ”
- Gmail: scans your email, too, to deliver ads — but advertisers don’t get personally identifiable information
- Orkut: shares personally identifiable information with Google

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## Amazon/A9

- “We receive and store any information you enter on our Web site or give us in any other way”
- “Examples of the information we collect and analyze include . . . purchase history, . . . products you viewed or searched for”
- Personal opinion: Amazon does an excellent job of tracking your purchases and figuring out what else you might want to buy
- A9: “we might receive information about you from other sources and add it to our information.”
- A9: “A9.COM IS A WHOLLY OWNED SUBSIDIARY OF AMAZON.COM, INC. IF YOU HAVE AN ACCOUNT ON AMAZON.COM AND AN AMAZON.COM COOKIE, INFORMATION GATHERED BY A9.COM . . . MAY BE CORRELATED WITH ANY PERSONALLY IDENTIFIABLE INFORMATION THAT AMAZON.COM HAS”