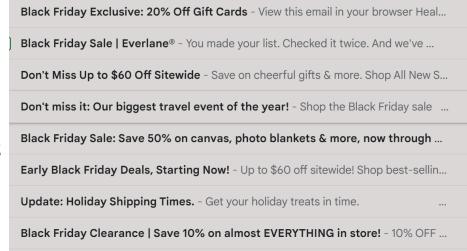
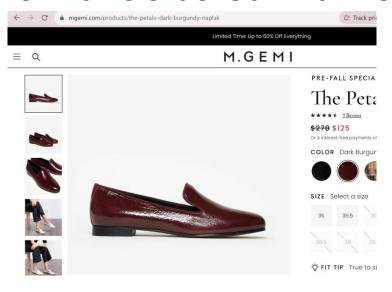
- Review your notes from Black Friday / Cyber Monday
 - Which websites or apps did you browse?
 - Did you purchase or just browse? How did you pay?
 - What is the context of the browsing or purchasing?
 - Mobile: What other apps are on the device?
 - Desktop: What other accounts are you logged into?



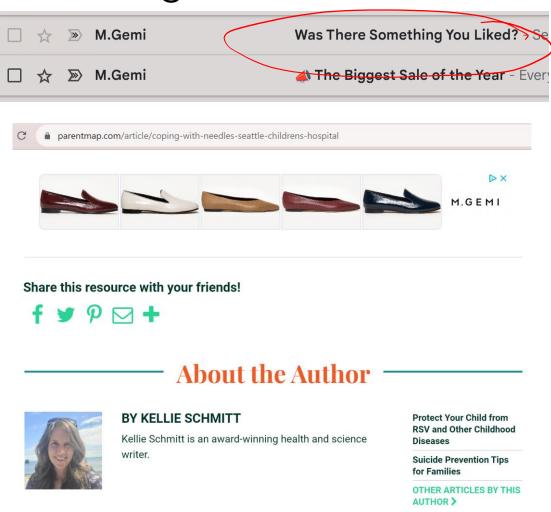
How Do They Do It?

I browsed a few shoe sales this weekend



How Do They Do It?

Then, this morning ...



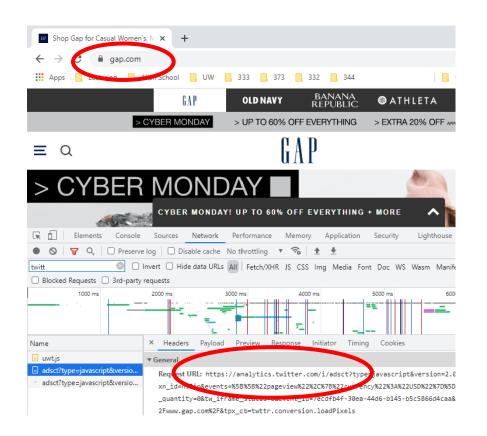
"But I have nothing to hide!"

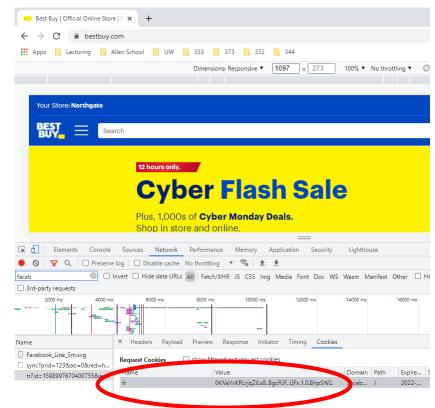
 Many people claim that they are comfortable with the information that they're giving up on the internet

 But the same people claim to be UNCOMFORTABLE if a private investigator followed them around for an entire day

- What's the difference between these two scenarios?
 - My claim: joining seemingly-disparate data sets

Tracking "Pixels"

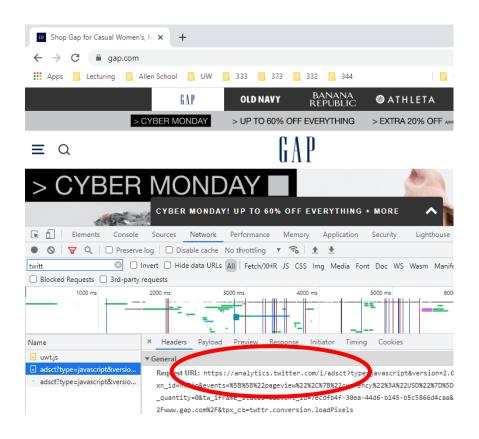




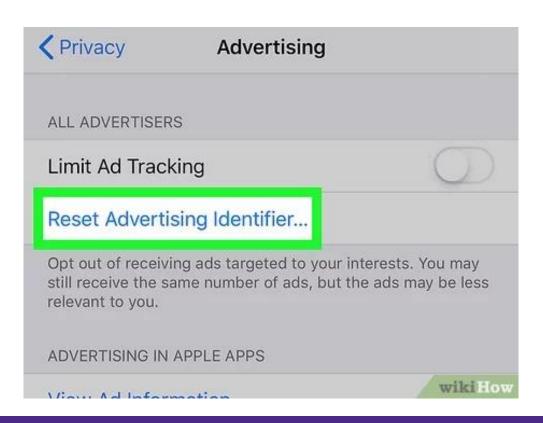
What Are The Join Keys?

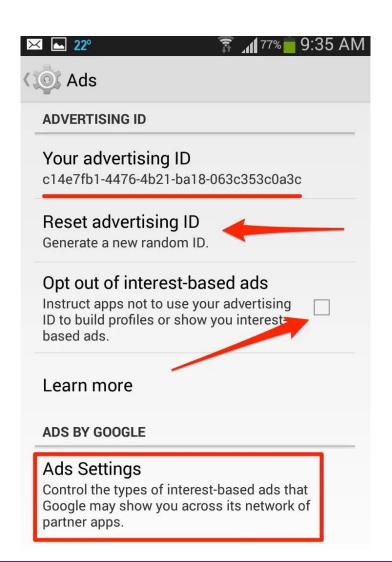
- What information do you reveal when you're browsing/shopping online?
- To whom is that information revealed?

Browser-based Identifiers

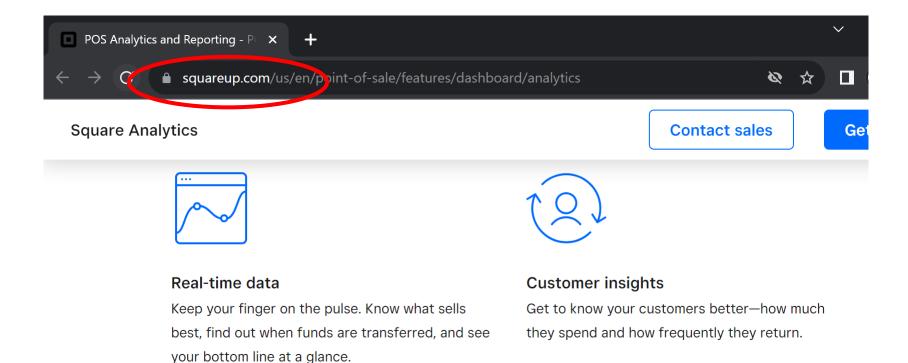


Mobile Device Identifiers





... And More



What Are The Join Keys?

- Retailer has:
 - Fmail
 - Name
 - Address
 - Phone number
 - Credit card
 - IP address and browser "fingerprint"
 - ...
- Advertiser (eg, social media network) has:
 - Geolocation (from phone)
 - Social media profile
 - Email
 - IP address and browser "fingerprint"
 - •
- Third parties (eg, payment processors) might have:
 - Credit card
 - Email
 - ...