“Won’t Somebody Think of the Children?”
Examining COPPA Compliance at Scale

Irwin Reyes, Primal Wijesekera, Joel Reardon, Amit Elazari Bar On, Abbas Razaghpanah, Narseo Vallina-Rodriguez, Serge Egelman

Flashlight

Version 8.6.0 may request access to

Location

- access approximate location (network-based)
- access precise location (GPS and network-based)

Phone

- read phone status and identity

Storage

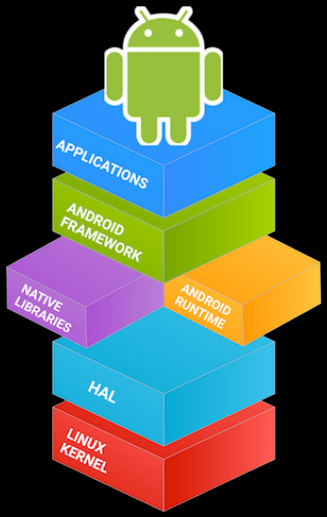
- read the contents of your USB storage

Other

- have full network access
- Google Play billing service
- receive data from Internet
- view network connections
- view Wi-Fi connections

dynamic analysis platform to observe how apps **actually access and share** data

custom android for logging api calls



+

lumen app for network flow analysis

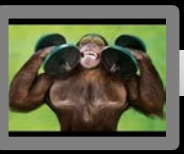
P. Wijesekera, A. Baokar, L. Tsai, J. Reardon, S. Egelman, D. Wagner, K. Beznosov, *The Feasibility of Dynamically Granted Permissions: Aligning Mobile Privacy with User Preferences*, IEEE Security and Privacy (Oakland) 2017

A. Razaghpanah, R. Nithyanand, N. Vallina Rodriguez, Srikanth Sundaresan, M. Allman, C. Kreibich, P. Gill, *Apps, Trackers, Privacy, and Regulators: A Global Study of the Mobile Tracking Ecosystem*, Network and Distributed System Security (NDSS) 2018

dynamic analysis environment

any Android app

input event generator
to explore the app



observed app behavior

what was accessed

where it was shared

current deployment runs 1,000 apps/day

PERSONAL INFORMATION	PERSISTENT IDENTIFIERS
Owner Email Address	Hardware Serial Number
Phone Number	IMEI
GPS Latitude/Longitude	Wi-Fi MAC
Wi-Fi Router BSSID (MAC)	Android ID
Wi-Fi Router SSID (Name)	SIM Card ID
	Google Services Framework (GSF) ID
	Android Advertising ID (AAID)

Children's Online Privacy Protection A
COPPA

personal informati

behavior sing X

ve arental consent ✓

sonable security measures ✓

FINES UP TO 40K USD PER VIOLATION

FEDERAL TRADE COMMISSION
PROTECTING AMERICA'S CONSUMERS

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Two App Developers Settle FTC Charges They Violated Children's Online Privacy Protection Act

Companies' Apps Shared Kids' Information with Ad Networks; Will Pay $360K In Civil Penalties

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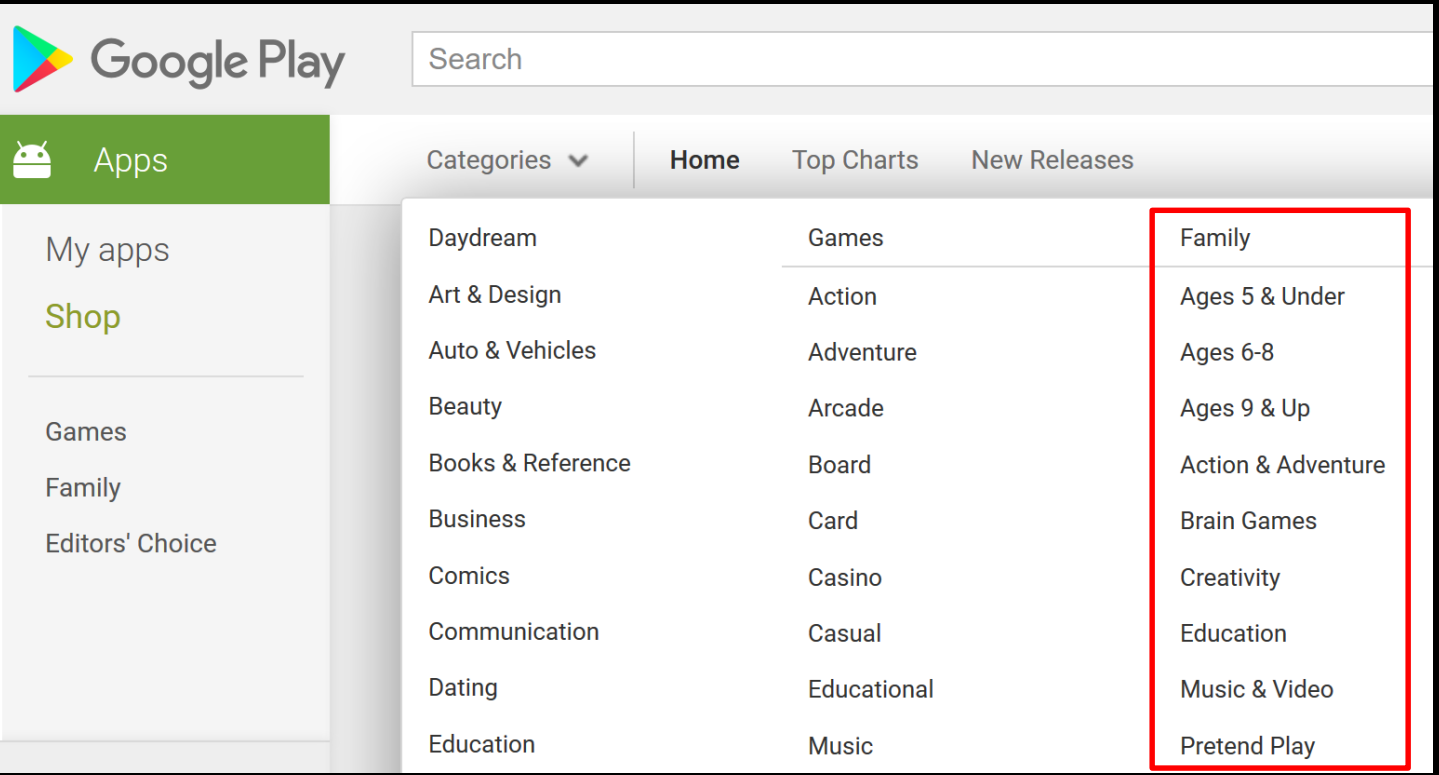
Permission

Mobile Advertising Network InMobi Settles FTC Charges It Tracked Hundreds of Millions of Consumers' Locations Without Permission

Company Will Pay $950,000 For Tracking Children Without Parental Consent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Beauty
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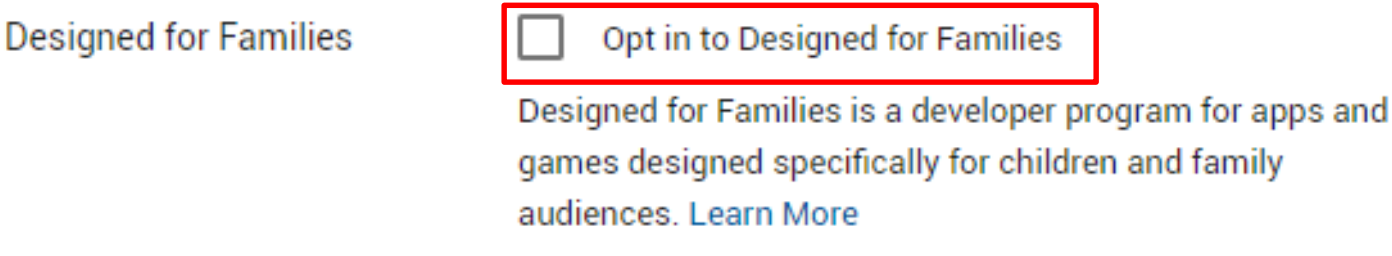
Business
Comics
Communication
Dating
Education
Games
Action
Adventure
Arcade
Board
Card
Casino
Casual
Educational
Music
Family
Ages 5 & Under
Ages 6-8
Ages 9 & Up
Action & Adventure
Brain Games
Creativity
Education
Music & Video
Pretend Play


Designed for Families
Opt in to Designed for Families
Designed for Families is a developer program for apps and games designed specifically for children and family audiences. Learn More

5,855 free “Designed for Families” apps

57% of “Designed for Families” apps are in potential violation

POTENTIAL VIOLATION	RATE (n=5,855)
 Personal information	4.8%
 Non-resettable identifiers	39%
 Potentially non-compliant SDKs	19%
 Failure to take security measures	40%


4.8% collect personal information
WITHOUT VERIFIABLE PARENTAL CONSENT

KOCHAVA

STARTAPP

mopub

skydeo

4.4% collect fine geolocation data

appnext

INNERACTIVE

AERSERV

Greedy Game

Fun Kid Racing

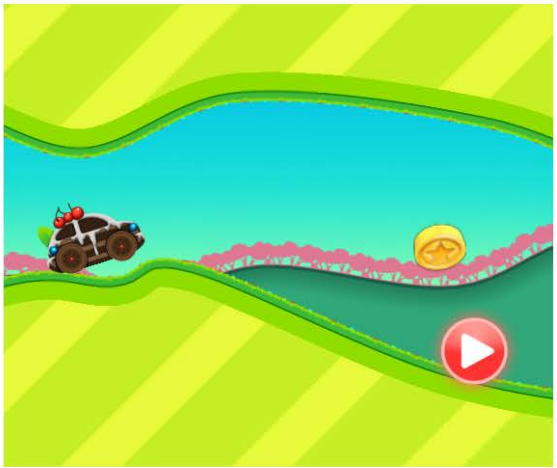
Tiny Lab Racing Games Racing Action & Adventure ★★★★☆ 79,028

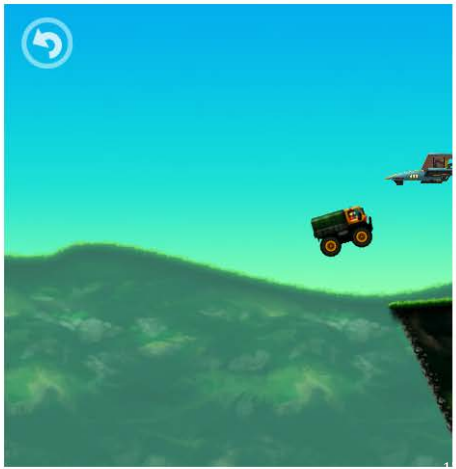
Everyone

Contains Ads · Offers in-app purchases

You don't have any devices.

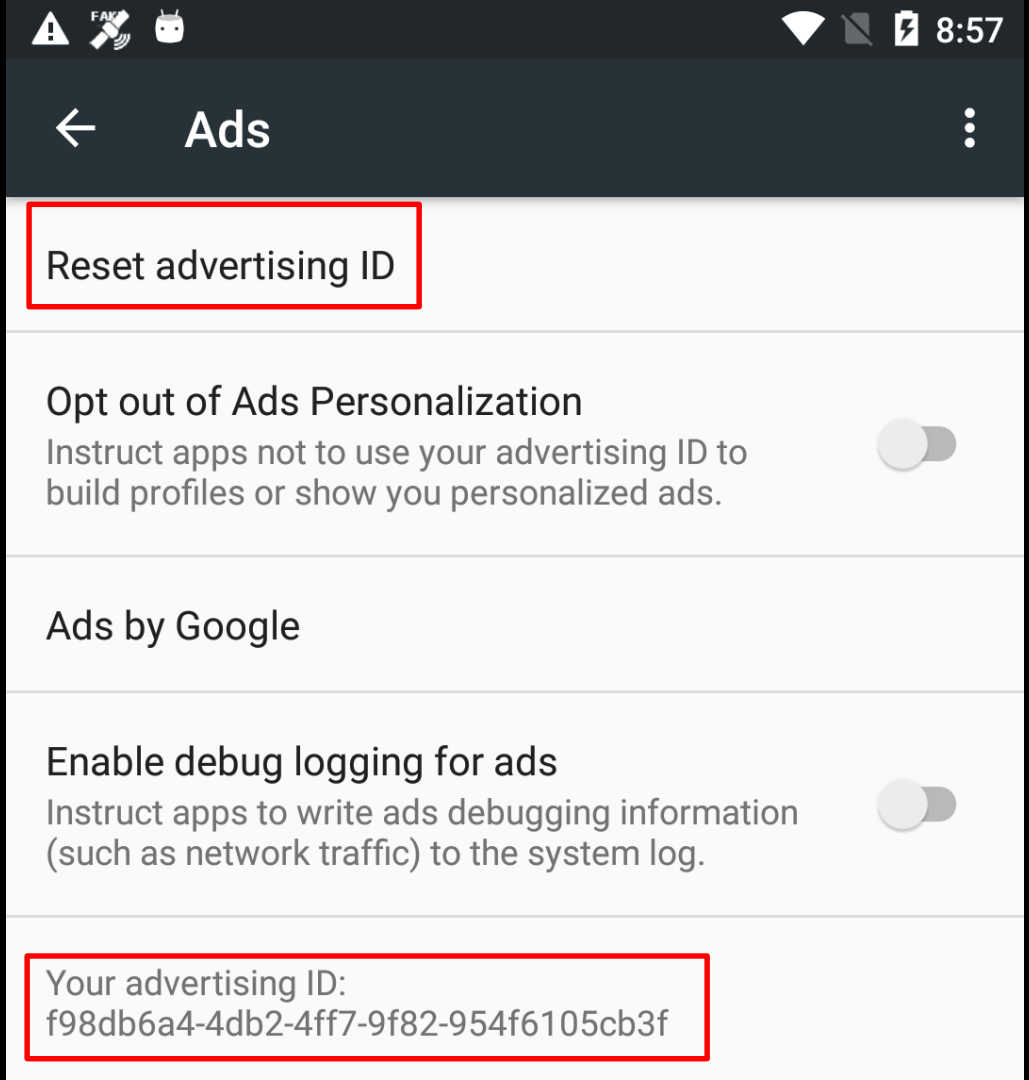
Add to Wishlist Install





1.9% collect **contact information**

skydeo


8:57
Ads
Reset advertising ID
Opt out of Ads Personalization
Instruct apps not to use your advertising ID to build profiles or show you personalized ads.
Ads by Google
Enable debug logging for ads
Instruct apps to write ads debugging information (such as network traffic) to the system log.
Your advertising ID:
f98db6a4-4db2-4ff7-9f82-954f6105cb3f

39% share the AAID along another identifier, negating its privacy preserving benefits

AD PLATFORM	VIOLATION OF IDENTIFIER POLICY
Chartboost	> 99%
Greedy Game	> 99%
Tapjoy	98%
…	…
mopub	3%
LKQD	2%
DoubleClick by Google	1%

Platforms Statistics Settings Instructions

PROJECT OVERVIEW

This is a short project overview that contains information that you might need wh

Project details can be edited in Unity Connect, click here to open it in a new tab.

Project ID: f8ede587-8091-48d5-aaff-986995bb4915

Coppa

This game is directed to children under the age of 13 in the United States

Learn more about COPPA

50% used Unity (from DFF corpus of 5,855)

84% of Unity apps did NOT get coppaCompliant=true

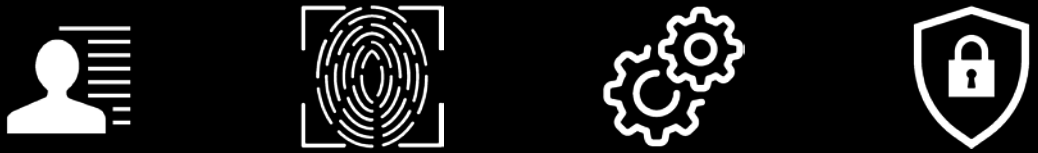
not for children’s apps

Developer further agrees it will not integrate the Software into any Application or Beta Application (i) with end users who Developer has actual knowledge are under the age of 13, or (ii) that may be deemed to be a "Web site or online service directed to children" as defined under the Children's Online Privacy Protection Act of 1998 ("COPPA") and the regulations promulgated thereunder.

19% share identifiers or personal information with **SDKs not allowed in children's apps**

SDK	TOTAL DFF INSTALLS
crashlytics	556M
supersonic + ironSource	481M
Tapjoy	386M
mopub	296M
INNERACTIVE	239M
heyZap	150M

40% share identifiers and personal info without using encrypted HTTP



Overall, 57% of “Designed for Families” apps are in potential violation


ESRB
PRIVO
Privacy & Permission=TRUST
kidSAFE
SEAL PROGRAM
TrustArc
the new TRUSTe
INTEGRITY
Children's Advertising Review Unit
iKeepSafe

	DFF (n=5,855)	SAFE HARBOR (n=237)
SHARE PERSONAL INFO	4.8%	10%
SHARE AAID + ANOTHER ID	39%	39%
USE VERBOTEN SDK	19%	33%
UNENCRYPTED HTTP	40%	49%

Children's Advertising Review Unit®

Rail Rush

Miniclip.com Arcade

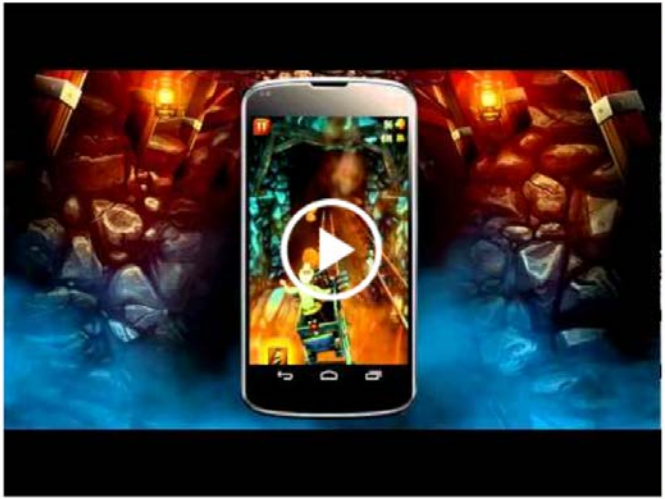
★★★★☆ 934,939

Everyone

Contains Ads · Offers in-app purchases

You don't have any devices.

Add to Wishlist Install



closing recommendations

developers: use compliant SDKs and options

SDK providers: enforce terms of use

platform providers: stricter security and analysis

Crashlytics

From Wikipedia, the free encyclopedia

Crashlytics is a Google-owned Boston, Massachusetts-based software company founded in May 2011 by entrepreneurs Wayne Chang and Jeff Seibert.

closing recommendations

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