

Unity ID: asinha6

Question 1

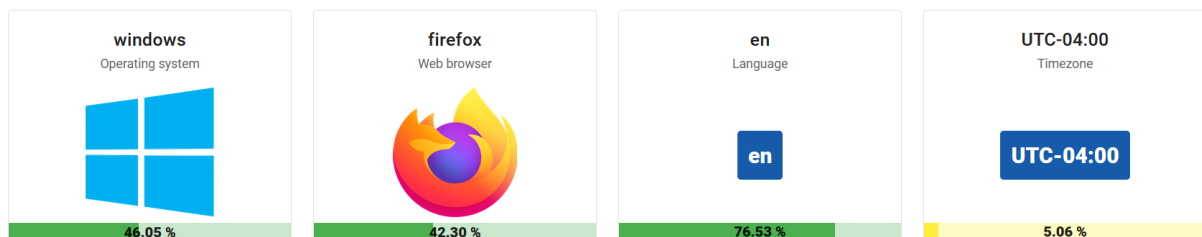
a) The differences between the browsers fingerprints are as follows:

<u>Parameter</u>	<u>Firefox</u>	<u>Tor Browser</u>
Timezone	UTC-04:00	UTC-00:00
WebGL Vendor and Renderer	The WebGL vendor is named as Google and information about WebGL rendered and data are displayed as Google Inc. (Intel)	The WebGL renderer and Vendor are not supported
Canvas	There is a particular HTML5 Canvas element rendered for Firefox	There is no canvas picture rendered. The canvas field is left blank
Screen Size (Width, Height, Depth)	The screen size is 1536x960x24 which is seen in one out of 18.94 browsers	The screen size is 1400x800x24 which is seen in 188.19 browsers making it more secure than Firefox
Hardware Concurrency	Returns the value 12	Returns the value 2
Media Devices	Returns "1 audioinput 1 videoinput" Also returns a more detailed context on audio elements rendered via audio context	Not supported. Has very limited information on the same.

Firefox:


Yes! You are unique among the 2118411 fingerprints in our entire dataset.

The following informations reveal your OS, browser, browser version as well as your timezone and preferred language. Moreover, we show the proportion of users sharing the same elements.



JAVASCRIPT ATTRIBUTES

Attribute	Similarity ratio	Value
1 - User agent ⓘ	0.17 %	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:109.0) Gecko/20100101 Firefox/118.0
2 - Platform ⓘ	33.83 %	Win32
3 - Cookies enabled ⓘ	88.21 %	✓
4 - Timezone ⓘ	5.06 %	UTC-04:00
5 - Content language ⓘ	43.08 %	en-US,en
6 - Canvas ⓘ	0.00 %	Cwm fjordbank glyphs vext quiz, 🤖
7 - List of fonts (JS) ⓘ	0.16 %	Agency FB Algerian Arabic Transparent Arial Arial Baltic And 183 others
8 - Use of Adblock ⓘ	65.65 %	✗
9 - Do Not Track ⓘ	65.20 %	✗
10 - Navigator properties ⓘ	2.37 %	42 properties detected
16 - Hardware concurrency ⓘ	5.45 %	12
17 - Java enabled ⓘ	88.90 %	✗
18 - Device memory ⓘ	43.33 %	No value
19 - List of plugins ⓘ	6.84 %	Plugin 0: PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 1: Chrome PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 2: Chromium PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 3: Microsoft Edge PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 4: WebKit built-in PDF; Portable Document Format; internal-pdf-viewer.
20 - Screen width ⓘ	4.19 %	1536
21 - Screen height ⓘ	0.67 %	960
22 - Screen depth ⓘ	80.06 %	24
23 - Screen available top ⓘ	79.10 %	0
24 - Screen available Left ⓘ	83.08 %	0
25 - Screen available Height ⓘ	0.16 %	912
26 - Screen available width ⓘ	4.12 %	1536

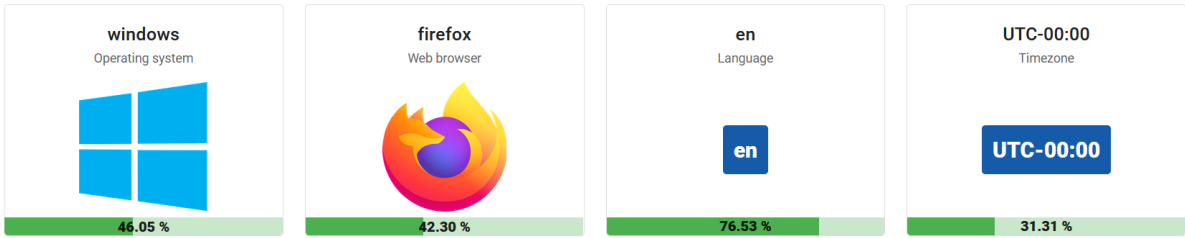
30 - WebGL Vendor	11.04 %	Google Inc. (Intel)
31 - WebGL Renderer	1.13 %	ANGLE (Intel, Intel(R) HD Graphics Direct3D11 vs_5_0 ps_5_0)
32 - WebGL Data	0.68 %	
33 - WebGL Parameters	0.20 %	27 different extensions 25 different general parameters analyzed 36 different shaders precisions analyzed
34 - Use of local storage	87.89 %	✓
35 - Use of session storage	87.98 %	✓
36 - Use of IndexedDB	88.73 %	✓

38 - Audio context	3.65 %	sampleRate : 48000 state : suspended
39 - Frequency analyser	69.80 %	channelCount : 2 channelCountMode : max channelInterpretation : speakers fftSize : 2048 frequencyBinCount : 1024 maxDecibels : -30 minDecibels : -100 numberOfInputs : 1 numberOfOutputs : 1 smoothingTimeConstant : 0.8
40 - Audio data	0.09 %	
41 - Video formats	75.03 %	video/mp4; codecs="flac" : probably video/ogg; codecs="theora" : probably video/ogg; codecs="opus" : probably video/webm; codecs="vp9, opus" : probably video/webm; codecs="vp8, vorbis" : probably
42 - Media devices	0.00 %	1 audioinput 1 videoinput
43 - Accelerometer	81.04 %	✗

Tor Browser:


Yes! You are unique among the 2118412 fingerprints in our entire dataset.

The following informations reveal your OS, browser, browser version as well as your timezone and preferred language. Moreover, we show the proportion of users sharing the same elements.



JAVASCRIPT ATTRIBUTES

Search for an attribute

Attribute	Similarity ratio	Value
1 - User agent <i>i</i>	0.29 %	Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:109.0) Gecko/20100101 Firefox/115.0
2 - Platform <i>i</i>	33.83 %	Win32
3 - Cookies enabled <i>i</i>	88.21 %	✓
4 - Timezone <i>i</i>	31.31 %	UTC-00:00
5 - Content language <i>i</i>	43.08 %	en-US,en
6 - Canvas <i>i</i>	0.00 %	
7 - List of fonts (JS) <i>i</i>	0.07 %	Arabic Transparent Arial Arial Baltic Arial Black Arial CE And 50 others
8 - Use of Adblock <i>i</i>	65.65 %	✗
9 - Do Not Track <i>i</i>	65.20 %	✗
10 - Navigator properties <i>i</i>	0.01 %	35 properties detected

16 - Hardware concurrency <i>i</i>	24.63 %	2
17 - Java enabled <i>i</i>	88.90 %	✗
18 - Device memory <i>i</i>	43.33 %	No value
19 - List of plugins <i>i</i>	6.84 %	Plugin 0: PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 1: Chrome PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 2: Chromium PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 3: Microsoft Edge PDF Viewer; Portable Document Format; internal-pdf-viewer. Plugin 4: WebKit built-in PDF; Portable Document Format; internal-pdf-viewer.
20 - Screen width <i>i</i>	0.25 %	1400
21 - Screen height <i>i</i>	1.82 %	800
22 - Screen depth <i>i</i>	80.06 %	24
23 - Screen available top <i>i</i>	79.10 %	0
24 - Screen available Left <i>i</i>	83.08 %	0
25 - Screen available Height <i>i</i>	1.35 %	800
26 - Screen available width <i>i</i>	0.26 %	1400

30 - WebGL Vendor	14.18 %	Not supported
31 - WebGL Renderer	14.18 %	Not supported
32 - WebGL Data	14.80 %	
33 - WebGL Parameters	14.14 %	Not supported
34 - Use of local storage	87.89 %	✓
35 - Use of session storage	87.98 %	✓
36 - Use of IndexedDB	88.73 %	✓
38 - Audio context	1.88 %	Not supported
39 - Frequency analyser	1.88 %	Not supported
40 - Audio data	49.59 %	Not supported
41 - Video formats	75.03 %	video/mp4; codecs="flac" : probably video/ogg; codecs="theora" : probably video/ogg; codecs="opus" : probably video/webm; codecs="vp9, opus" : probably video/webm; codecs="vp8, vorbis" : probably
42 - Media devices	5.51 %	Not supported
43 - Accelerometer	81.04 %	✗

b) We can infer from the comparisons above that the TOR browser is more effective than Firefox in concealing its identity. We can see that some crucial information, such as WebGL information, is displayed in detail in the Firefox browser fingerprint but is concealed by the TOR browser. Another significant distinction between the two browsers is how they handle the HTML5 Canvas Element, where TOR outperforms Firefox. There are more comparisons we can make as given from the screenshots above. The basic takeaways can be summarized as follows:

- Due to its non-unique fingerprint and decreased data leakage compared to Firefox, Tor is superior at protecting privacy.
- In order to prevent screen size measurements from being included to the fingerprint and make it more similar to other fingerprints, Tor also has the default window reduced.
- A significant portion of the data gathered to create a browser fingerprint is represented as entirely separate values to create a unique fingerprint that is shared with other browsers.
- The bottom line is that Tor protects the users' privacy better.

Question 2

The output looks as follows:

Answer to part a

The number of unique third-party domains loaded while visiting macys.com is 73

The number of unique third-party domains loaded while visiting cnn.com is 80

Answer to part b:

The unique third-party domains that appear on both macys.com and cnn.com are: {'criteo.net', 'googlesyndication.com', 'facebook.com', 'casalemedia.com', 'bounceexchange.com', 'mathtag.com', 't.co', 'doubleclick.net', 'twitter.com', 'ads-twitter.com', 'adnxs.com', 'cookielaw.org', 'adsvr.org', 'google.com', 'yahoo.com', 'bouncex.net', 'rubiconproject.com', 'criteo.com'}

The number of the common domains are: 18

Answer to part c:

Website | # of requests blocked

----- | -----

Macys | 176

CNN | 263

Website	# of requests blocked
Cnn.com	176
Macys.com	263

Question 3

The output looks like this:

of HTTP requests blocked:

Block any request containing 'cookiesync?' string: 2

Block any image (e.g., jpg, gif etc.) loading from scorecardresearch.com: 3

Block any script loading from doubleclick.net: 3

Rule	# of HTTP requests blocked
Block any request containing 'cookiesync?' string	2
Block any image (e.g., jpg, gif etc.) loading from scorecardresearch.com	3
Block any script loading from doubleclick.net	3