



R&D Full Stack Intern Engineer Test

Backend Question

The purpose of this task is to evaluate your technical abilities in various aspects of Software Engineering, Optimizations, Concurrency Issues and Architecture. It also enables a common ground to hold a discussion in the interview that takes place after you complete this test.

You are encouraged to use any resources at your disposal. You will be asked to explain your solution in the interview, emphasizing on correctness, design and coding decisions.

We are looking for code that is:

- Working - **at least one** metric should work
- Flexibility - adding more metrics should be easy (code-wise)
- Well designed (Object Oriented)
- Readable
- Simple

We are not looking for a generic software in all aspects, for example, you may assume the output will always be written to the console.

The code should be in Java.

The goal of this exercise is to process an Apache log file and output various analytics about the users of the web server.

example for log line. The **red is the **GeoIP** part, the **blue** is the **User Agent**.

```
"82.166.148.154 - - [20/Jan/2013:06:56:32 -0600] "GET  
/wp-content/themes/twentytwelve/js/navigation.js?ver=1.0 HTTP/1.1" 200 863  
"http://creditcardandloanoffers.com/?utm_source=Contextin&utm_term=_" "Mozilla/5.0 (Windows  
NT 6.1; WOW64; rv:15.0) Gecko/20100101 Firefox/15.0.1" 361 1133 - 5625"
```

At the end, by the final phase, we would like the program to print the following output:

Countries:

US - 64.12%

Germany - 19.01%

Brazil - 12.5%

Israel - 5.00%

Operating systems:

Windows - 75.01%

Android - 13.99%

iOS - 11.01%

Browsers:

Firefox - 43.12%

Chrome - 32.34%

IE - 24.11%

Think about data structure which can represent this object.

The code must be object oriented, for example: if we want to extract another property from the log, it should be added easily.

- Object oriented is more important than performance.
- Precision should be 2 digits after the decimal point.
- The printed list should be sorted in descending order.
- **You can (and should) use 3rd party jars.**

Frontend Question

Introduction

The purpose of this task is to evaluate your technical abilities in frontend design and development and to allow common grounds for discussion during the test.

You are encouraged to use any resource at your disposal online. You will be asked to explain your solution in the interview, emphasizing on design and coding decisions. We expect a working product. The solution is expected to be designed to allow extensions in the future.

Main Objective

Your job is to **design and implement** a recommendation widget using the Taboola REST API (described below). You will need to invoke our API in order to receive recommendations and then display the recommendations in a recommendation widget that you've designed. The recommendation widget should be fully functional and should open selected recommendations.

There are two types of the recommendations: organic and sponsored. The organic recommendations are additional articles from the hosting site. Such recommendations include the article thumbnail and a caption. The article is opened in the same tab when clicked. The sponsored recommendations are brought by various advertisers. They include the article thumbnail, the caption and the source of the recommendation (the advertiser name). The article is opened in a new tab when clicked.

You are expected to create the widget using only client side code. The API should be invoked using Javascript and the widget should be rendered in the client side using a combination of HTML, JS and CSS.

Design Restrictions/Guidelines

- Code should be written in vanilla Javascript
- Design should be responsive (desktop / mobile)
- Code should include tests
- You should supply instructions for running your project

Think about the usability and design of the widget, in a way that would produce the optimal performance for the recommendation widget while still being sensible in your decisions (remember we render on other peoples' websites).

Please design your code in a way that allows adding more types of recommendations in the future. For example: in addition to the sponsored and organic recommendations, we might want to show video inside the widget.

In **Appendix** you can see a couple of examples of how some of our widgets are placed and implemented in several publishers' sites. These examples are for reference, and **aren't a**

requirement for designing the widgets.

How to use the Taboola REST API?

The API is fairly simple - send a GET request, receive a JSON response.

In this test you will be using a publisher that only receives "sponsored" content items, meaning this publisher wants to only place a widget that has outbound links.

The parameters needed in order to invoke the API for this test are:

Key	Value
<i><code>publisher id</code></i>	taboola-templates
<i><code>app.type</code></i>	desktop
<i><code>app.apikey</code></i>	f9040ab1b9c802857aa783c469d0e0ff7e7366e4
<i><code>source.id</code></i>	You can use a constant string, as it's only a demo

For example, here's a request for recommendations and the response received. For the following request:

<http://api.taboola.com/1.0/json/taboola-templates/recommendations.get?app.type=desktop&app.apikey=f9040ab1b9c802857aa783c469d0e0ff7e7366e4&count=4&source.type=video&source.id=214321562187&source.url=http://www.site.com/videos/214321562187.html>

The response will look like this:

```
{
  "id": "b3085375647d2ce3914e5b29d5aa060e",
  "list": [
    {
      "branding": "entrepreneur",
      "origin": "sponsored",
      "type": "video",
      "url": " http://www.entrepreneur.com/blog/222954?utm_source=taboola ",

```

```
      "name": "Is Your Website Lost in Translation?",
      "duration": "0",
      "thumbnail": [
        {
          "url": " http://cdn.taboolasyndication.com/entrepreneur116.png " }
        ],
      "created": "Mon, 26 Nov 2012 17:04:41 UTC",
      "views": "0",
      "rating": "0.0",

```

```
"id": "::SPONSORED::taboolashowcase::322688"
},
{
  "branding": "entrepreneur",
  "origin": "sponsored",
  "type": "video",
  "url": " http://www.entrepreneur.com/video/220463", "name": "Soul
Surfer Bethany Hamilton on Overcoming Challenges", "duration": "0",
  "thumbnail": [
    {
      "url": " http://cdn.taboolasyndication.com/entrepreneur122.png " }
  ],
  "created": "Mon, 26 Nov 2012 17:04:41 UTC",
  "views": "0",
  "rating": "0.0",
  "id": "::SPONSORED::taboolashowcase::401176"
},
{
  "branding": "travelchannel",
  "origin": "sponsored",
  "type": "video",
  "url": "http://www.travelchannel.com/interests/artdestinations",
  "name": "Tour World's Best Art Destinations",
  "duration": "0",
  "thumbnail": [
    {
      "url": " http://cdn.taboolasyndication.com/travelchannel111.png" }
  ],
  "created": "Mon, 26 Nov 2012 17:30:06 UTC",
  "views": "0",
```

```

"rating": "0.0",
"id": "::SPONSORED::taboolashowcase::575192"
},
{
  "branding": "travelchannel",
  "origin": "sponsored",
  "type": "video",
  "url": "http://www.travelchannel.com/exploreforbiddenusspots15137",
  "name": "How to Explore forbidden US Spots",
  "duration": "0",
  "thumbnail": [
    {
      "url": " http://cdn.taboolasyndication.com/travelchannel112.png" }
  ],
  "created": "Mon, 26 Nov 2012 17:30:06 UTC",
  "views": "0",
  "rating": "0.0",
  "id": "::SPONSORED::taboolashowcase::458701"
}
]
}

```

Appendix

Below you can see a couple of examples of our widgets on various publishers.

MSN (Article Page)

1. Example URL:

<https://www.msn.com/en-us/entertainment/celebrity/diana-ross-tony-bennett-and-more-of-hollywoods-cutest-celebrity-grandparents/ss-BBEMcGL?li=BBnb2gh>

2. At the bottom of the article you can see the widgets:

MORE FOR YOU

Promoted Links by Taboola ▶



Should Optometrists Start Prescribing These 3 Foods Instead of Lenses?

Health News Tips Ebook



This app will have you speaking a new language in 3 weeks!

Babbel



Start playing and you won't sleep for 3 days!

Throne: Free Online Game



Kate Middleton Gives a Glimpse of Her Growing Belly During a Charity Gala

PopSugar on MSN



Diana Ross Poses With Her Kids and Grandkids For Epic Family Photo at American Music...

ETOnline on MSN



See All the Photos from Serena Williams' Perfect Wedding to Alexis Ohanian in New Orleans

People on MSN

USA Today Article Page

1. Example URL:

<http://www.usatoday.com/story/news/politics/onpolitics/2016/06/20/hillaryclintonbuiltbigstockpileshowdowndonaldtrump/86161596/>

2. At the bottom of the article you can see two widgets:

1. The top one is a Sponsored Content only widget all recommendations are from other websites/providers.
2. The bottom one is an organic widget all recommendations are from Billboard.

AD CONTENT by Taboola



That's How You Find Super Cheap Hotels!

Save70



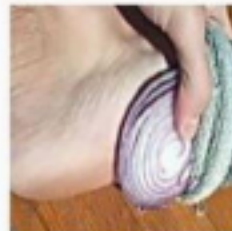
Shaq's Bank Account Will Stun You

PressroomVIP



Aged 35 he speaks 11 languages - his 11 tricks to learn any language

Babbel



8 Tips to Keep Your Liver Healthy

Vitality



7 Uses For Lemons You Never Knew

HealthyPanda.net



How To Create a Gorgeous Website For Free

Wix.com

MORE FROM USATODAY



Steph Curry reveals what he wanted to say to LeBron after Game 7

SPORTS | 14 hours ago



New poll shows Clinton maintains lead over Trump nationally

NEWS | 20 hours ago