Imagine how inconvenient it would be to communicate if people addressed each other not by name but by a numerical value corresponding to their birthday or phone number. If there were no names, people would definitely try to come up with them.

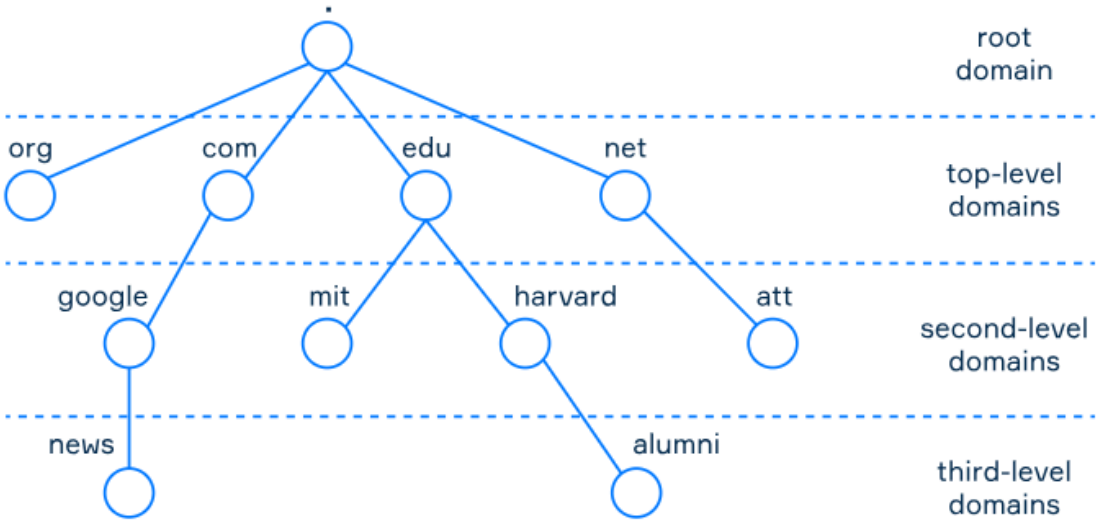
When a computer connects to the Internet, it is assigned a unique number called **IP Address**. Each web resource also has one. For example, let's look at the address `74.125.131.113`. If you write it in the address bar, the browser will open the site of the search engine Google. Unless you have a phenomenal memory, it is way too difficult to remember long numeric values to visit several sites, which is why domain names were invented. It's much easier to write

`google.com` instead of a long set of numbers. **The domain name** acts as a unique name on the Internet and is a more straightforward and more human-friendly way of recording IP addresses.

All information about domain names is stored in a distributed database of **DNS (Domain Name System)**, which is a network of computers scattered around the world.

Domain name structure

Domains are arranged hierarchically: they consist of levels. The hierarchical structure allows the browser to quickly find and open the site. By default, each domain consists of two levels, but there can be more levels (three, four, etc).



Let's take a closer look at domains placed from the root to the third level.

Root domain

The **root** domain, or the top (zero) level domain, is marked with a **dot**. In common use, the dot is not displayed as part of the domain name.

You can skip the root domain because it does not interfere with access to the site.

Top-level domain

The **top-level domains** are divided into **national domain names** and **public domains**.

The first group defines the region of the site and its geographical location:

`.us` for the United States and `.eu` for the European Union.

The second group does not reflect the geographical characteristics of the resource, but rather its affiliation to a particular field. For example, an information site will have an

`.info` endpoint, a commercial site will have `.com`, and a non-profit site will have `.org`.

There are some more specific domains. The domain

`.net` (from the *network*) was originally intended for network technology organizations. For example, Internet service providers. The domain

`.edu` is used by the US-affiliated institutions of higher education.

Today the domains `.com`, `.org` and `.net` are used with almost no restrictions. You can find any type of organization registered under these domain names. But the `.edu` domain remains very restricted in use.

Second-level domain

The **second-level domain** is a unique website address that people remember and use for surfing the Internet like

`google`, `facebook`, `uber`, and others.

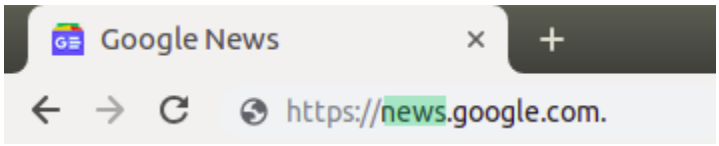
This domain name can be taken when registering with registrars on the Internet. It is worth remembering that you can use this resource only for a

certain period of time, which is usually about a year. To use this part of the name, you have to annually renew the application for hosting.

Third-level domain

Third-level names are available to register resources with second-level domain name companies. The owner of a second-level domain has the ability to create multiple resources at once on the site with a common domain name. For example, if the site is called

`google.com`, the news blog will be `news.google.com` .



Not all organizations use third-level domains since it's not the only way to organize the resources.

We will not consider deeper domain levels (4th, 5th, etc), but they can also exist on the Internet. We hope the presented information is enough for practice and the successful completion of the interviews.

Localhost

You may be wondering if you can refer to your own computer in the network by name. The common alias for this purpose is the *localhost*. **Localhost** is the hostname that refers to the computer you're working on. Localhost is also a reserved top-level domain for DNS, but its only purpose is to access the current machine.

Besides localhost, you can set other aliases to access the current computer or even sites like Hyperskill in host files: on Unix at

/etc/hosts

and on Windows at

C:\Windows\System32\driver\etc\hosts

. Beware, this information can be used by malware because it allows redirecting you from

goodsite.com

to

evilsite.com

by modifying your host files.

Addresses from `127.0.0.0` to `127.255.255.255`

are reserved for localhosts. In a network that consists of a single PC, meaning on your machine, localhost is located at the address `127.0.0.1`. When you enter this address or a `localhost` into your browser's address bar, you will be automatically rerouted to your machine. The most common usage of this process is to run and test web services in a local environment. This allows developers to simulate an internet connection, maintaining security and speed.

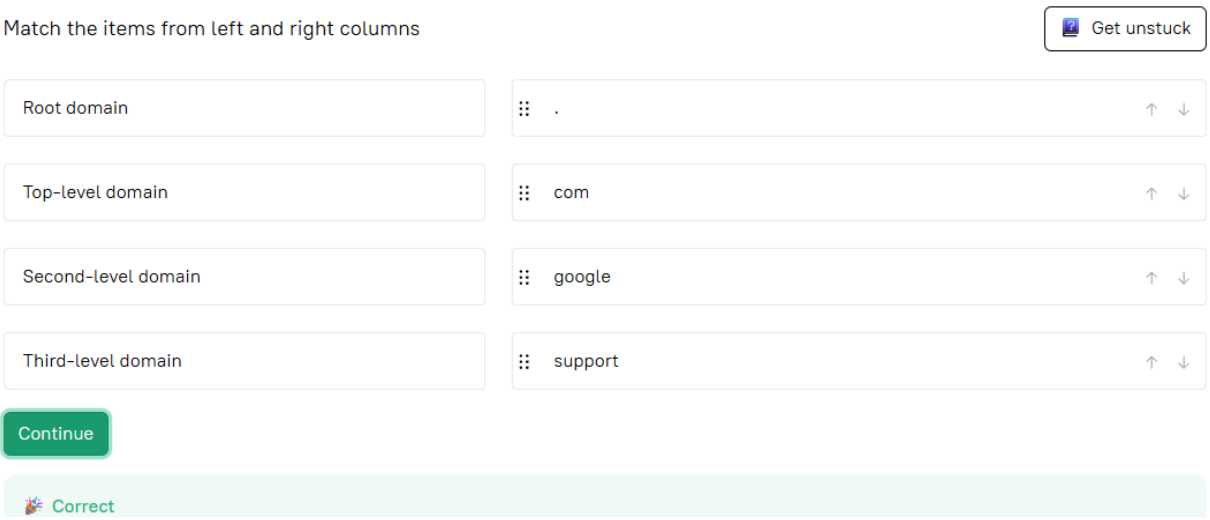
Conclusion

In summary, domain names are kind of labels associated with a specific IP address and saved in distributed databases of DNS. Domain names consist of hierarchical levels, at least two. That way it is easier for a browser to find a specific website. Those two basic levels are a top-level domain like

`.eu` or `.com` , and a second-level domain - an exclusive website name like `google` or `uber`.
Also, don't forget that localhost in the network refers to the computer you're working on.

Match the parts of the domain name to the parts of the web address:

`https://support.google.com.`



IP address

Find out which website corresponds to the IP address `157.240.11.35`

nslookup 157.240.11.35

facebook.com

A non-profit site

Come up with a domain name for a non-profit site.

nonprofit.org.

Domain names and IP

All the information about domain names and their corresponding IP addresses is stored in ...

Select one option from the list

- 0-level domain
- .net
- www
- DNS
- https

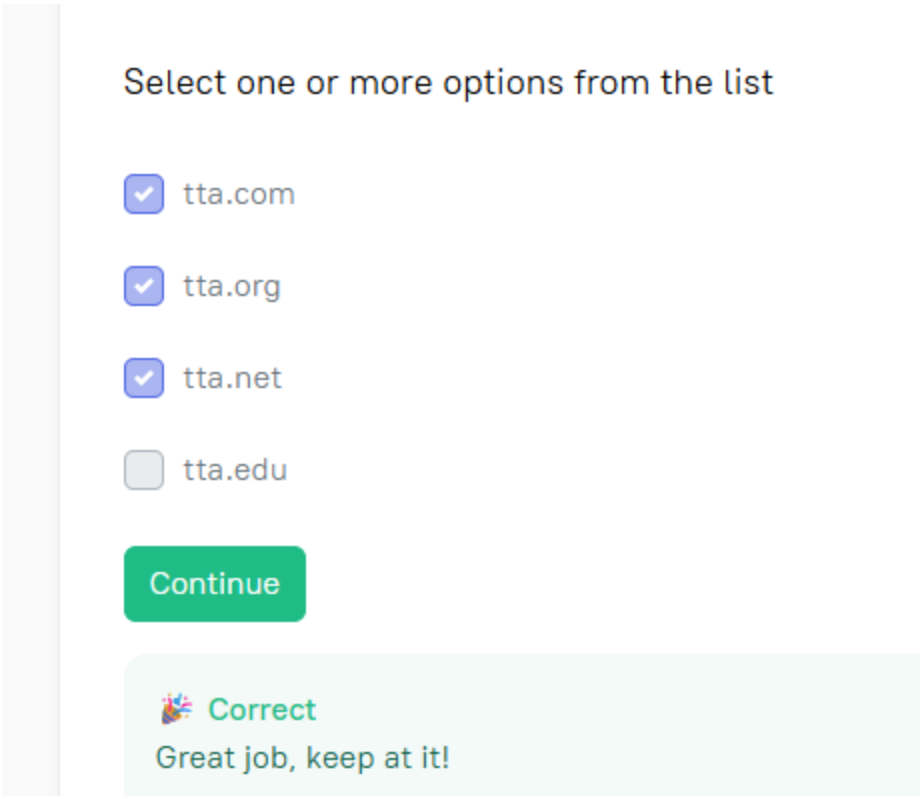
Enter the domain name of a site consisting of two levels (you can come up with your own).
google.com

Come up with a domain name for a commercial site.
james.com

The TTA company

Suppose you have a network company named TTA.

Select all domains you could use without restrictions.



Visiting MIT

Suppose there is a site of Massachusetts Institute of Technology:

http://www.mit.edu

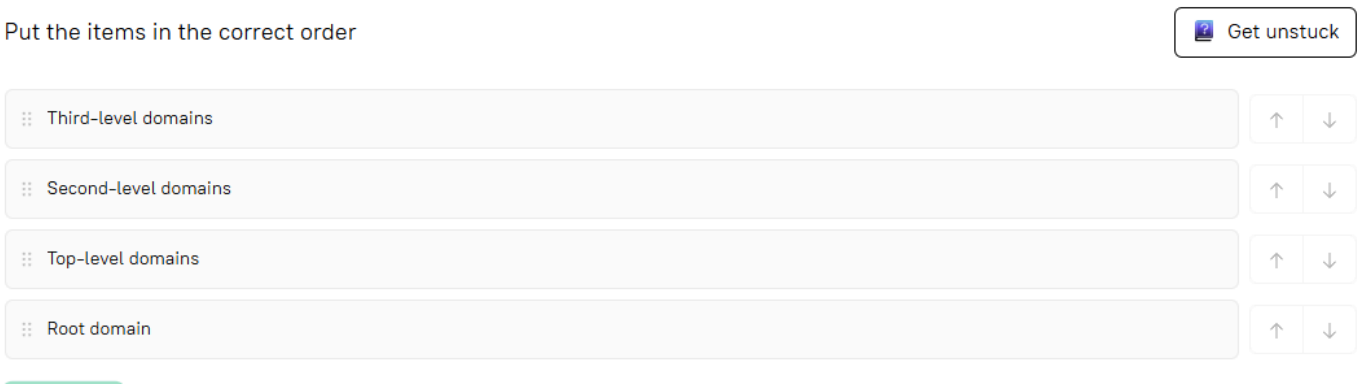
Enter the second-level domain of this site.

Mit

Domain name levels

Order the levels of the domain name in the way they are written in the address bar.

The leftmost domain should be on top.



bottom (leftmost first), the order is:

1. **Third-level domain (e.g., `www`)**
2. **Second-level domain (e.g., `example`)**
3. **Top-level domain (e.g., `.com`)**
4. **Root domain (implicit `.` at the end)**

Example: `www.example.com.`

- **`www` → third-level**
- **`example` → second-level**
- **`com` → top-level**
- **`.` (root) → rarely shown in browsers but part of DNS structure**

What is a domain name?

A unique name of a web resource on the Internet and an easier way to record an IP address