Instructions

The next step to the recruitment process is technical evaluation. To qualify for a technical interview, you must upload your take on this practical exercise to your Github account. If you don't have a Github account, please sign-up for one and push your code to it.

This technical evaluation allows us to evaluate your ability to work in a remote setting independently. You will be evaluated for the following:

- Your discipline in keeping code up-to-date.
- Your ability to learn a new framework.
- Your level of comprehension when understanding written requirements
- Your programming aptitude:
    - The ability to use the correct looping and control structures to achieve an objective;
    - The ability to identify limitations of your approach (when and why it won't work); and
    - The ability to craft the best solutions to address most (if not all) cases and being able to defend why it is good enough knowing the trade-offs that you considered.
- Your work ethic:
    - How you ask questions (and the quality of questions that you ask)
    - Your relentless pursuit for a solution to meet deadlines at all costs, your unwavering diligence in learning new things on your own.

Upon completion, kindly reply to this e-mail together with the link to your Github repository of your code where we can clone it. You have 72 hours from the receipt of this e-mail to finish the exercise and to push your code to Github. If personal circumstances won't allow you to submit on time, please let us know so we can extend the deadline for you.

Requirements

Using the web development framework of your choice, use an empty starter development template. If the default template includes any controllers, please delete them.

Basically, there are two pages that you'll need to implement:

- A login page, that consumes an external API to validate the account credentials from a standard HTML form submission
- A home page, that is only accessible when a valid user is logged in. If the user attempts to go to this page directly without logging in, the user must be redirected to the login page.

Objectives

- Authenticate users with a login page by consuming an external JSON API endpoint from server side using a Javascript server-side framework that is designed to run in the edge.
- Restrict unauthenticated users from accessing the home page
- The home page must show a hierarchical tree of regions, cities and barangays, data can be pulled from an external JSON API. Note that the order in which the list of territories is received is not guaranteed and IDs of each record do not relate in any way to other records.

External Dependencies

Aside from your framework-specific server-side (and possibly client-side) dependencies, you'll need to consume an external JSON API endpoint to accomplish the objectives.

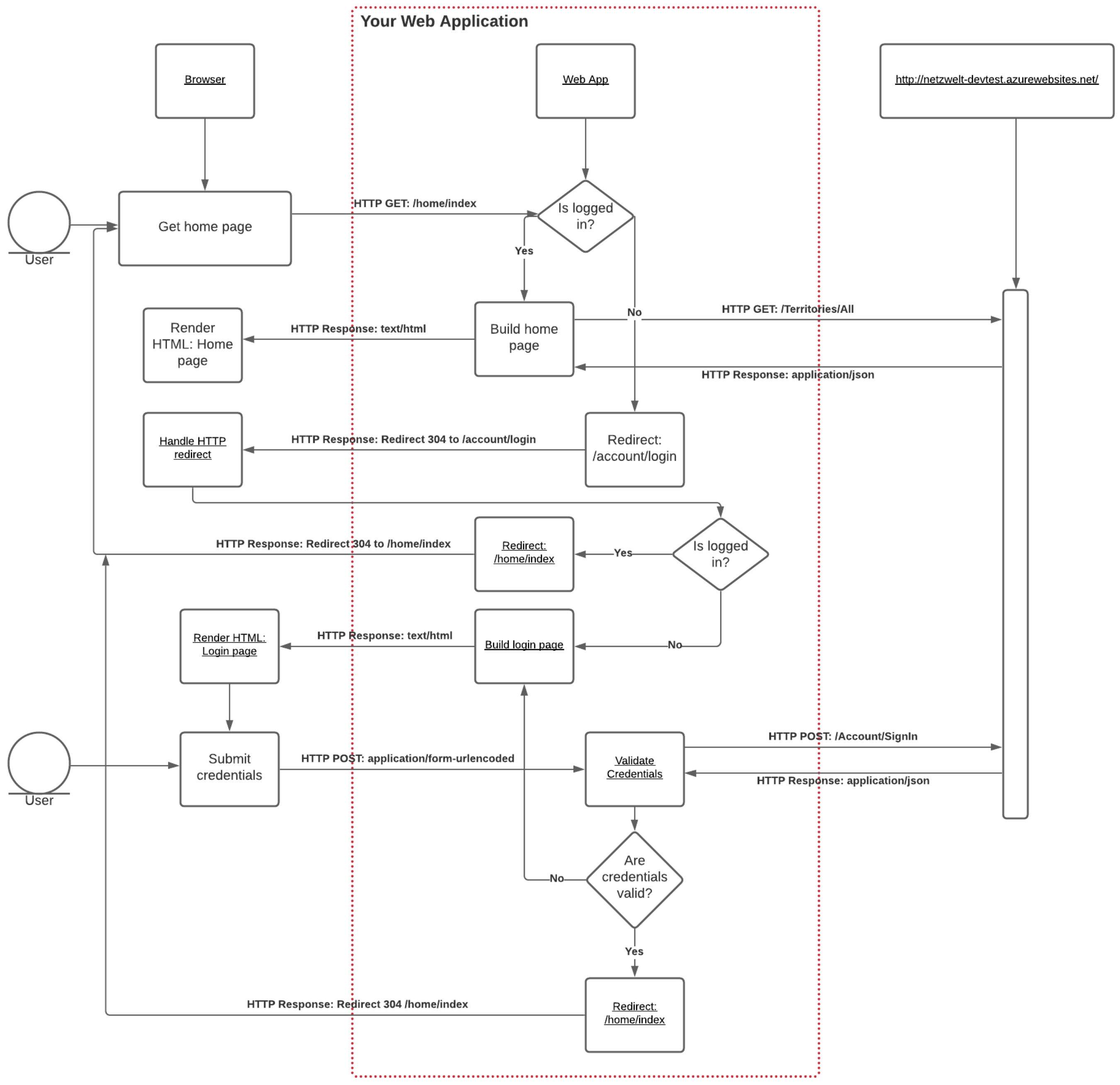
Basically, there are two API endpoints on https://netzwelt-devtest.azurewebsites.net :

URL Path	**Method**	**Remarks**
/Account/SignIn	POST	Returns the authenticated user's username and set of roles
/Territories/All	GET	Returns a list of territories that need to be presented in a hierarchical tree structure

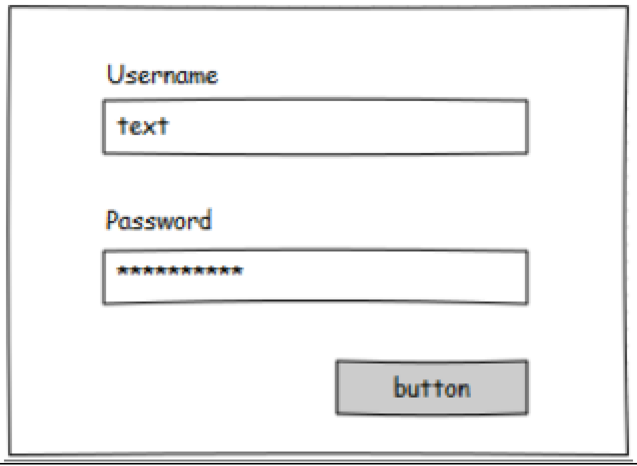
NOTE: The call to the REST API must occur on the SERVER. If you encounter CORS-related issues on the browser, you are doing it wrong. API usage documentation can be viewed online: https://netzwelt-devtest.azurewebsites.net/swagger/index.html

High-level Interaction Diagram

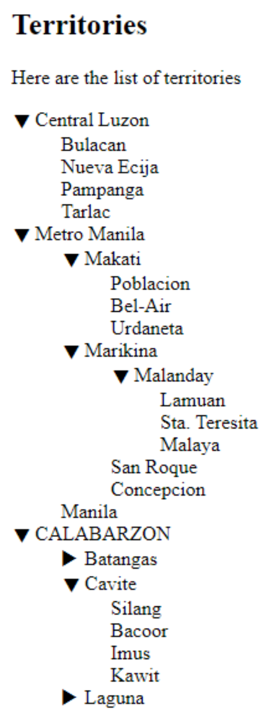
Please refer to the diagram below to see how your application is expected to interact with the user and the API endpoints that need to be consumed to achieve the objectives:



Use Cases

Use-case Name	Login
Actor	Unauthenticated User
Pre-condition	User is not logged in
Expected URL	GET http://your.webserver.host/account/login POST http://your.webserver.host/account/login
Story Details	As a user, I should be able to see the login screen where I can enter my account credentials to be authenticated by the system. The login screen should be able to accept a username and a password.
Exceptions	E1: Invalid credentials provided The login page must be shown again with the error message: “Invalid username or password” E2: User is already logged in The user must be redirected to the home page (/home/index)
UI Mockup	
Technical Requirements	Incoming credentials must be validated on the server side by consuming the API on https://netzwelt-devtest.azurewebsites.net/Account/SignIn You may use the following test credentials: U: foo P: bar Refer to the API endpoint documentation for more details.

netzwelt

Use-case Name	Home Page
Actor	Authenticated User
Pre-condition	User is logged in
Expected URL	GET http://your.webserver.host/home/index -or- GET http://your.webserver.host/ This is the default route.
Story Details	As an authenticated user, I should be able to see a home page that will show a user-friendly hierarchical list of territories.
Exceptions	E1: User attempts to go directly to the home page The user must be redirected back to the login page (/Account/Login)
UI Mockup	 **Territories** Here are the list of territories ▼ Central Luzon Bulacan Nueva Ecija Pampanga Tarlac ▼ Metro Manila ▼ Makati Poblacion Bel-Air Urdaneta ▼ Marikina ▼ Malanday Lamuan Sta. Teresita Malaya San Roque Concepcion Manila ▼ CALABARZON ▶ Batangas ▼ Cavite Silang Bacoor Imus Kawit ▶ Laguna
Technical Requirements	The list of credentials can be fetched from an external API endpoint: HTTP GET https://netzwelt-devtest.azurewebsites.net/Territories/All The API returns a flat list of territories. The application must be able to take the list and arrange it using the records' correlation between the fields "id" and "parent." Note that the depth of the hierarchy is unknown at runtime and the list is unsorted. For example: some nodes in the tree may have 10 levels, while others just 1 level. Refer to the API endpoint documentation for more details.

Sample code listing: Simple Treeview in HTML, CSS and Javascript

To show the data in hierarchical form, it must be presented in a tree-like structure. There are many ways to achieve this but here’s a very rudimentary approach for reference:

```
<!DOCTYPE html>
<html>
<head>
<meta name="viewport" content="width=device-width, initial-scale=1">
<style>
ul, #myUL {
  list-style-type: none;
}

#myUL {
  margin: 0;
  padding: 0;
}

.caret {
  cursor: pointer;
  -webkit-user-select: none; /* Safari 3.1+ */
  -moz-user-select: none; /* Firefox 2+ */
  -ms-user-select: none; /* IE 10+ */
  user-select: none;
}

.caret::before {
  content: "\25B6";
  color: black;
  display: inline-block;
  margin-right: 6px;
}

.caret-down::before {
  -ms-transform: rotate(90deg); /* IE 9 */
  -webkit-transform: rotate(90deg); /* Safari */'
  transform: rotate(90deg);
}

.nested {
  display: none;
}

.active {
  display: block;
}
</style>
</head>
<body>

<h2>Territories</h2>
<p>Here are the list of territories</p>

<ul id="myUL">
       <li>
       <span class="caret">Central Luzon</span>
        <ul class="nested">
            <li>Bulacan</li>
            <li>Nueva Ecija</li>
            <li>Pampanga</li>
            <li>Tarlac</li>
        </ul>
    </li>
       <li>
        <span class="caret">Metro Manila</span>
        <ul class="nested">
```

```
               <li>
               <span class="caret">Makati</span>
                <ul class="nested">
                    <li>Poblacion</li>
                    <li>Bel-Air</li>
                    <li>Urdaneta</li>
                </ul>
            </li>
            <li>
               <span class="caret">Marikina</span>
                <ul class="nested">
                      <li>
                      <span class="caret">Malanday</span>
                        <ul class="nested">
                            <li>Lamuan</li>
                            <li>Sta. Teresita</li>
                            <li>Malaya</li>
                        </ul>
                    </li>
                    <li>San Roque</li>
                    <li>Concepcion</li>
                </ul>
            </li>
            <li>Manila</li>
        </ul>
    </li>
    <li>
       <span class="caret">CALABARZON</span>
        <ul class="nested">
               <li>
               <span class="caret">Batangas</span>
                <ul class="nested">
                    <li>Lipa</li>
                    <li>Bauan</li>
                    <li>Sto. Tomas</li>
                </ul>
            </li>
            <li>
               <span class="caret">Cavite</span>
                <ul class="nested">
                    <li>Silang</li>
                    <li>Bacoor</li>
                    <li>Imus</li>
                    <li>Kawit</li>
                </ul>
            </li>
            <li>
               <span class="caret">Laguna</span>
                <ul class="nested">
                    <li>Calamba</li>
                    <li>Sta. Rosa</li>
                    <li>San Pedro</li>
                </ul>
             </li>
        </ul>
    </li>
</ul>

<script>
var toggler = document.getElementsByClassName("caret");
var i;

for (i = 0; i < toggler.length; i++) {
  toggler[i].addEventListener("click", function() {
    this.parentElement.querySelector(".nested").classList.toggle("active");
    this.classList.toggle("caret-down");
  });
}
</script>

</body>
</html>
```

Technical Requirements

You will be shortlisted for an interview if you used the following technologies:

- A server-side Javascript framework of your choice that will run on edge computing platforms such as:
    - NextJS (https://nextjs.org/)
    - SvelteKit (https://kit.svelte.dev/)
    - Nuxt (https://nuxt.com/)
    - Hono.js (https://github.com/honojs/hono)
    - Elysia (https://elysiajs.com/)
- Source code control: Github
- Hosting: You need to host your code in one of the following edge computing platforms (free tier available)
    - Cloudflare Workers (preferred)
    - Vercel
    - Fly.io
    - Netlify
    - Azure AppService

Plus points if:

- Your UI design is visually appealing.
- You used Tailwind CSS
- You used PostCSS to build proper CSS classes with Tailwind's utility classes
- You wrote clean and semantic HTML code

You will be wait-listed if you used the following:

- Any other traditional server-side framework such as (but not limited to):
    - Python (Django, Flask)
    - Ruby (Rails, Sinatra)
    - PHP (Laravel, Symfony, Codeigniter, native PHP)
    - Java (Spring Boot)
    - C# (MVC, Web API, Webforms)
    - Javascript (Express, vanilla NodeJS)
- Hosting: Optional. Plus points if hosted in a publicly accessible provider that supports your stack.

We understand that you may not know how to use any of these technologies at this time. However, we need you to demonstrate how quickly you can acquire a new stack and this exercise will help us evaluate your ability to learn. You are not expected to write clean and elegant code. We don't care if your solution is performant or production ready. All we want to see your hacker's spirit and get-it-done attitude.