Web Programming

AJAX and Vue.js

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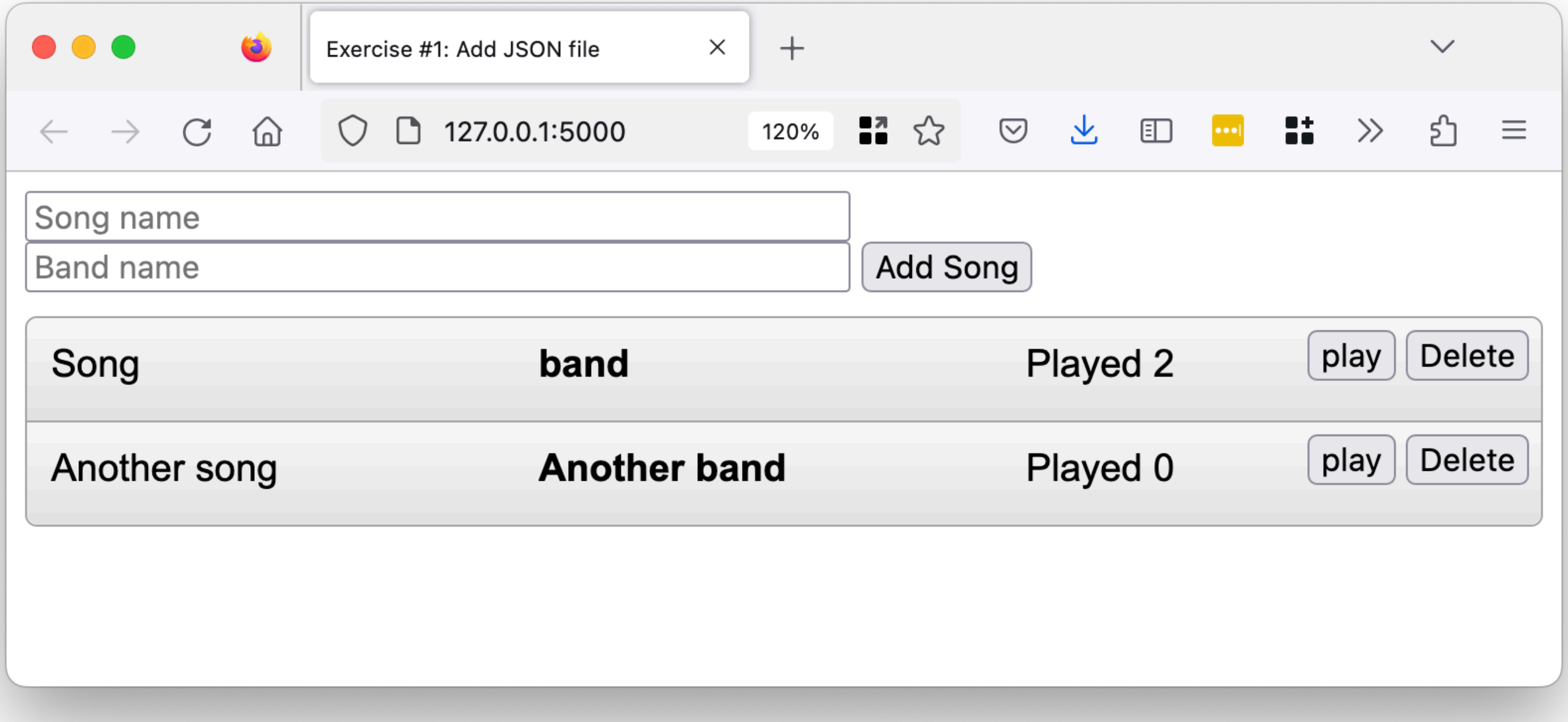
AJAX Recap

Example

examples/ajax/no_ajax



Song name

Band name

Add Song

Song	**band**	Played 2	play Delete
Another song	**Another band**	Played 0	play Delete

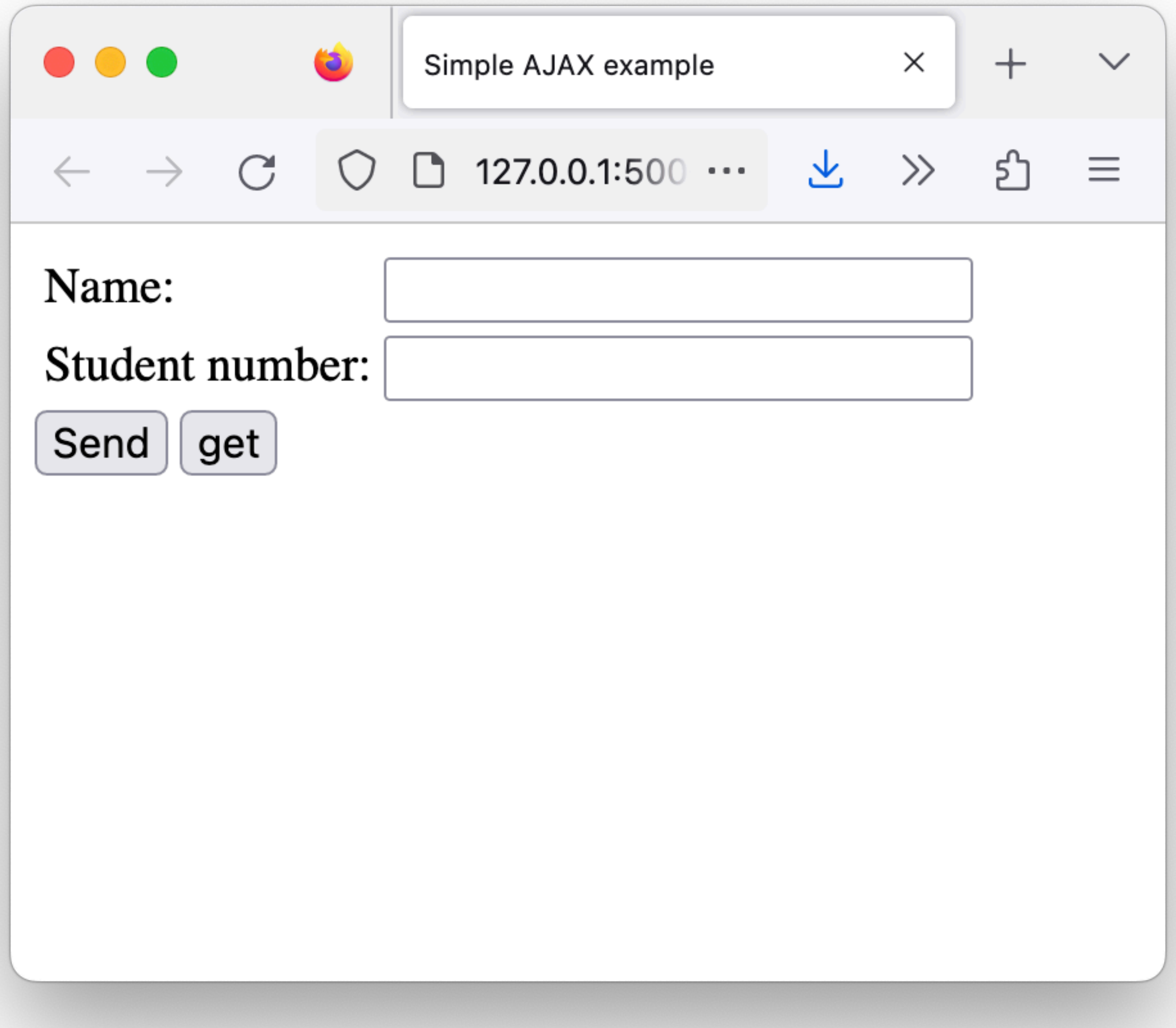
Example

https://github.com/dat310-2023/info/tree/master/

examples/ajax/json/student

Example

examples/ajax/json/student



Simple AJAX example

127.0.0.1:500

Name:

Student number:

static/index.html

```
<input type="button" value="Send" onclick="sendStudent();"/>
<input type="button" value="get" onclick="getStudent();"/>
```

Example

examples/ajax/json/student

student.js

```
async function getStudent(){
    let reply = await fetch("/get_data");
    if (reply.status == 200){
        let result = await reply.json();
 ...
```

Send GET request using fetch

student.js

```
async function sendStudent(){
    let student = { name: name, student_no: student_no };

    let reply = await fetch("/post_data",{
        method: "POST",
        headers: {
            "Content-Type": "application/json",
        },
        body: JSON.stringify(student)
    });
   ...
}
```

Send POST request

Example

examples/ajax/json/student

app.py

```python
@app.route("/get_data", methods=["GET"])
def check_license():
    DATA = {
        "name":"John Doe",
        "student_no": 111111
    }
    return json.dumps(DATA)

@app.route("/post_data", methods=["POST"])
def print_data():
    print(request.get_json())
    return "OK"
```

Reply with json data.

Receive json data.

Example

examples/ajax/json/student

student.js

```
async function getStudent(){
    let reply = await fetch("/get_data");
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        let result = await reply.json();
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Receive json data.

student.js

```
async function sendStudent(){
    let student = { name: name, student_no: student_no };

    let reply = await fetch("/post_data",{
        method: "POST",
        headers: {
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        },
        body: JSON.stringify(student)
    });
    ...
}
```

Include JSON data in request

AJAX and Vuejs

- Vuejs and Flask
  - How to combine Vuejs and Flask
- AJAX calls in Components
  - Livecycle hooks and watchers
  - Pitfalls
- Cross origin requests
- Caching

Lecture example on **course-info**
examples/ajax/vue/lecture

Flask and Vuejs

- Serve JS files and index.html from /static folder.

```
@app.route("/")
def index():
    return app.send_static_file("index.html")
```

- Include /static/ for resources in index.html

```
    <!-- vuejs development version -->
    <script src="https://unpkg.com/vue@3.0.5/dist/vue.global.js"></script>

    <script src=“/static/mycomponent.js"></script>
    <link rel="stylesheet" href=“/cstatic/style.css">
```

Flask and Vuejs

- It is not recommended to use jinja templates together with
  - Should `{{ xxx }} be replaced by jinja or vue?`

AJAX and Vuejs

- Use **`created`** lifecycle hook to load data via AJAX
- Perform AJAX calls in **`methods`**
- Load data in components using **`watch`**

AJAX and Vuejs

- Use **`created`** lifecycle hook to load data via AJAX

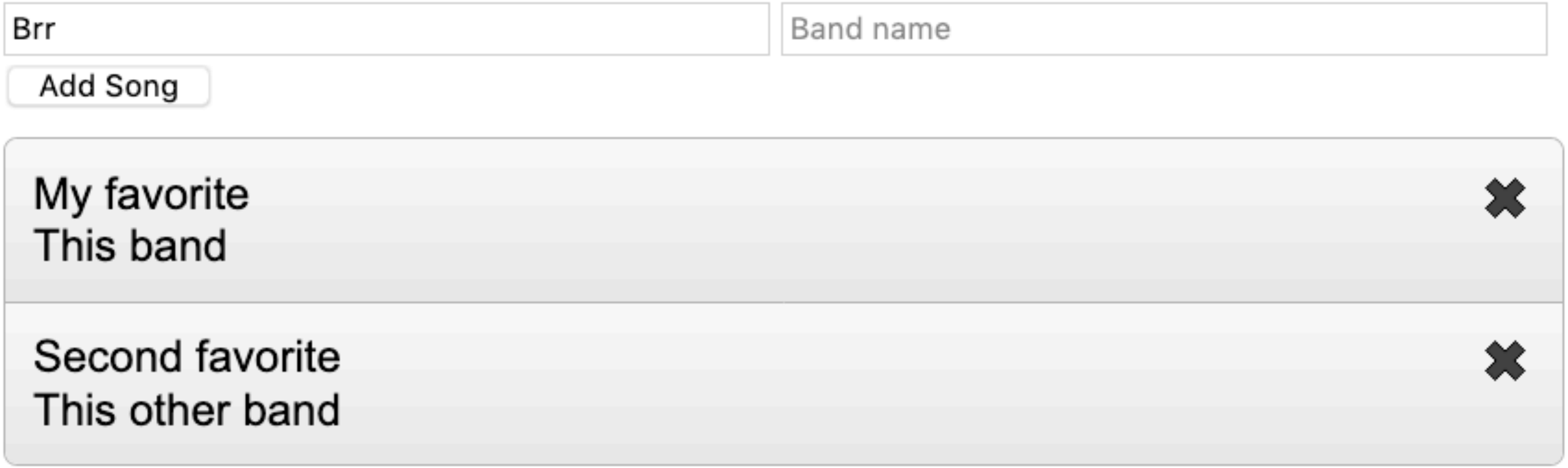
```
let app = Vue.createApp({
    data: function(){
        return {
            playlist: []
        }
    },
    created: function(){
        // function is run after component is created.
        // can access data, methods, ... but not DOM
    },
    methods: {
        ...
    }
});
```

AJAX and Vuejs

- Perform AJAX calls in **`methods`**
- Pitfalls when performing state updates:
  - AJAX requests do not happen immediately
  - AJAX request may fail
  - AJAX requests may be accidentially send twice
    - Should be idempotent

Example

examples/ajax/vue/playlist



Brr

Band name

My favorite
This band

Second favorite
This other band

Exercises #1

github.com/dat310-2024/info/tree/master/
exercises/ajax/vue

Error handling

- Fetch can fail:
  - Due to server error
  - Due to network error

Error handling

- Server error:

```
if (response.status == 200){
    song.saving = false;
    this.error = "";
} else {
    this.error = "Request failed: " + response.status + " " + response.statusText
}
```

Test by changing server route or similar.

Error handling

- Network error:

```
try {
    let response = await fetch("/add", {
        method: "POST",
        ...
}
catch (error){
    this.error = error.message;
    song.saving = false;
}
```

Test by turning server off.

AJAX and Vuejs

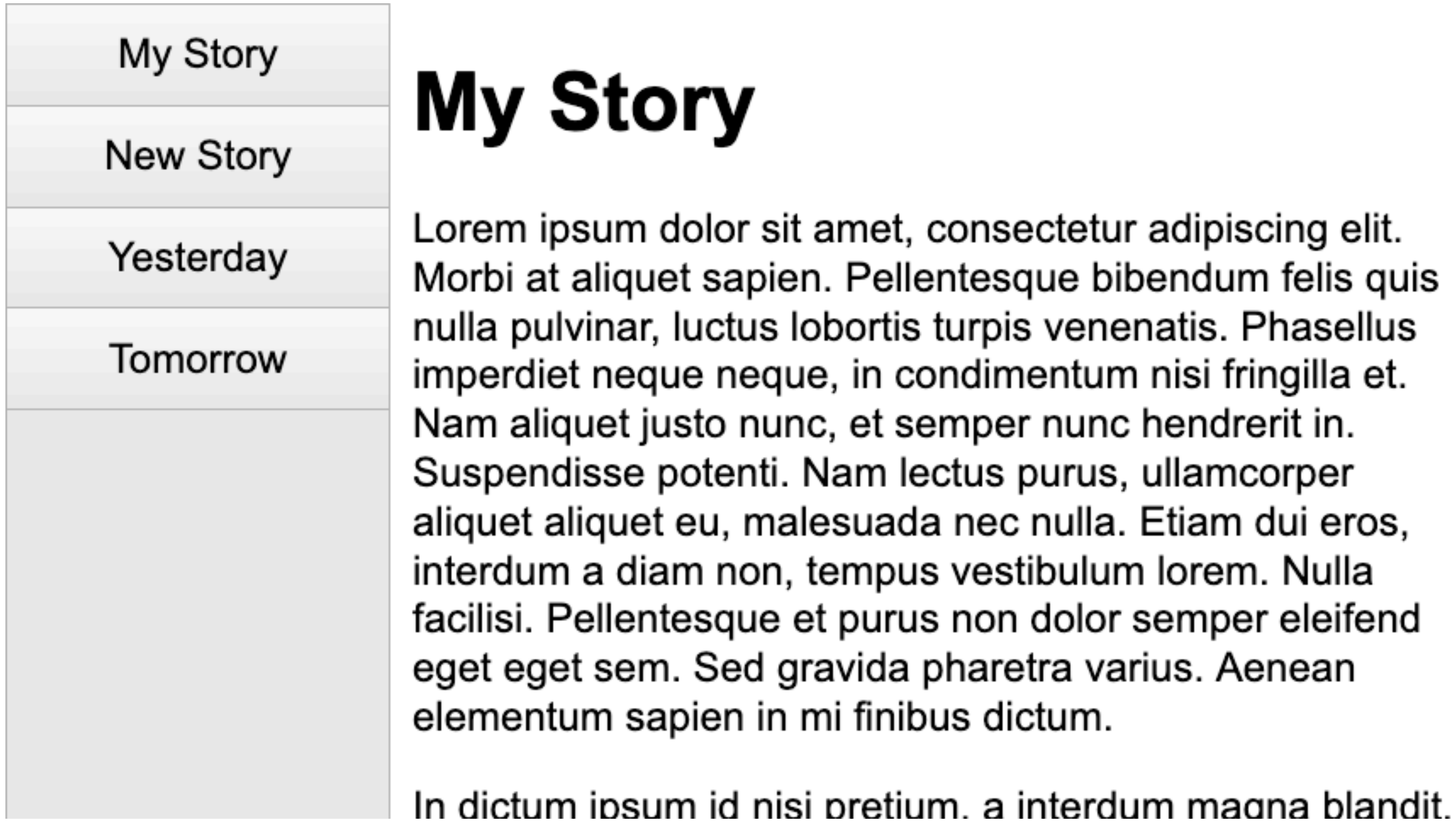
- Load data in components using **`watch`**

```
props: ['title'],
    watch: {
        title: function(){
            // executed every time title changes
            this.load();
        }
    },
```

Example

examples/ajax/vue/blog

- Retrieve blog text only when opened.



My Story

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi at aliquet sapien. Pellentesque bibendum felis quis nulla pulvinar, luctus lobortis turpis venenatis. Phasellus imperdiet neque neque, in condimentum nisi fringilla et. Nam aliquet justo nunc, et semper nunc hendrerit in. Suspendisse potenti. Nam lectus purus, ullamcorper aliquet aliquet eu, malesuada nec nulla. Etiam dui eros, interdum a diam non, tempus vestibulum lorem. Nulla facilisi. Pellentesque et purus non dolor semper eleifend eget eget sem. Sed gravida pharetra varius. Aenean elementum sapien in mi finibus dictum.

In dictum ipsum id nisi pretium, a interdum magna blandit.

SPA

Single Page Application

- Only loads a single HTML document
- All dynamic contenct is retrieved using AJAX and displayed using JS
- Can use different routes, e.g. using Vue Router

Flask and Vite decoupled

- It is also possible to run a Vite application independently.
  - I.e. open index.html or run development server, (live server VSCode extension)
- Send AJAX requests using full URL

```
let response = await fetch("http://127.0.0.1:5000/playlist");
```

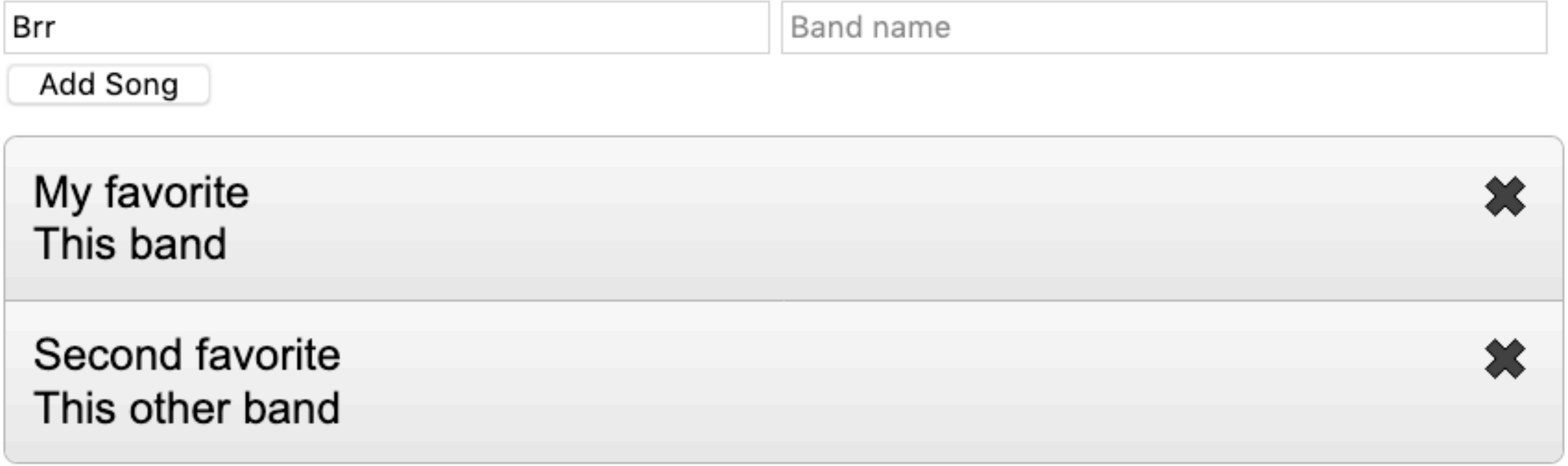
- Need to enable cross origin requests in Flask:

```
from flask import Flask, request
from flask_cors import CORS

app = Flask(__name__)
CORS(app)
```

Example

examples/ajax/vue/playlist-cors



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Band name

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References

- Vue livecycle hooks
  https://alligator.io/vuejs/component-lifecycle/
- Cros origin requests
  https://developer.mozilla.org/en-US/docs/Web/HTTP/CORS
- Some free loading gifs
  http://ajaxload.info/