8-2021

Transitioning from Vue 2 to Vue 3

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Recommended Citation

Kanley, Adele, "Transitioning from Vue 2 to Vue 3" (2021). *Theses/Capstones/Creative Projects*. 153.
https://digitalcommons.unomaha.edu/university_honors_program/153

Abstract

Frontend development is a field that is constantly changing because of the vast amounts of tools that are made available each year. One of the most popular frameworks being utilized to create fluid user experience is the Vue framework. Branching from the well-known Angular.js, Vue.js is an independent open-source project that is making its mark in the user interface community.

Regardless of the popularity of a framework, updates are inevitable to keep up with the innovations required by the IT Field. To ensure that UNO IS&T students are being offered opportunities to learn and develop in the most update to date technologies, I have undertaken the work to upgrade two applications built in the Full Stack Development (4900) course offered at UNO from using the Vue 2 version of Vue.js to the Vue 3 version.

Background

The world of website application creation has made leaps and bounds in recent decades. Not too long ago, classifying an IT worker as a “web developer” meant they had expertise in Hypertext Markup Language (HTML), Cascading Style Sheets (CSS), and minimal JavaScript (JS) knowledge. The HTML was used to format the content and words of the website, the CSS was used to make the site look appealing with a variety of colors and designs, and finally the JavaScript was used to add snazzy animations throughout the application. Although modern frontend applications still use these three development technologies (or development languages) at their core, simply having “minimal” JS knowledge is no longer acceptable. Demands for complex and complete webpages increased in the frontend development sphere, and this naturally resulted in more complex JavaScript.

As the complexity of the amount of JavaScript being incorporated into web application increased, so did the concept of what it means to be a web application. Not only did developers have to account for the frontend portion of a website, there now also exists a backend section that needs attention. Although there is no one dictionary definition, a common explanation for what is considered backend versus frontend is that “[Frontend] development is programming which focuses on the visual elements of a website or app that a user will interact with (the client side). [Back-end] development focuses on the side of a website users can’t see (the server side).” (Goins, 2020). When the frontend and backend portions of a website are combined into one application, the application is then deemed a “Full Stack” application. Full Stack applications require more effort to maintain than simple frontend applications, and that is where frameworks come into play.

What exactly is a framework? One way to articulate this term is to provide an illustration of something we are all familiar with, cake. When a cook decides to bake a cake, there are two diverging paths they could take. The cook could start from scratch and begin the baking process with flour, milk, eggs, etc. This options obviously would take longer than if the cook decided to simply use a cake mix and cut down on the time it takes to get their final product. So, a framework is like that cake mix; Frameworks allow developers to skip building applications from scratch. There are various frameworks for the different development paths an IT professional could take, and one of the most popular frontend frameworks being used these days is Vue.js created by Evan You.

Vue.js a framework based on the JavaScript programming language, and it allows developers to create frontend User Interfaces. Vue is known for having a shallow learning curve and a progressive implementation. Combined with a Python Django backend (which holds data), Vue allows for a comparatively easy and quick creation of reactive web applications. In September of 2020, the first version of Vue.js, Vue 2, was upgraded to Vue 3. The upgrade came with overall better performance due to a decrease in code size, as well as new formatting for how application information could be manipulated. In this thesis project, I implemented some of Vue 3 new functionality into an existing project so that the projects would be operating on up-to-date software technologies.

Transitioning from Vue.js 2 to Vue.js 3

Being that this thesis cannot showcase the true workload undertaken in the traditional paper format, I will be providing screenshots with explanations for the work I undertook. My task was to upgrade two assignments from the Full Stack Development (4900) course offered at UNO. The assignments are numbered 3 and 4 and include with connecting a backend application with a frontend user interface (UI). Currently, the frontend of the applications is run on the Vue 2 version of Vue.js. My task was to recreate the frontend portions to adopt Vue 3 and update the backend as necessary.

The best way to experience the work I have accomplished is to go out to the applications/websites and interact with them for yourself. The code is stored on the cloud-based platforms GitHub, PythonAnywhere, and Netlify. GitHub stores the code for the application on a virtual machine so that anyone with access can download and modify the code for themselves. PythonAnywhere provides a service that stores Python code and displays a website that holds the type of information the application requires. Netlify pulls all of this together by allowing developers to store code on a web server so that anyone with a link can interact with the application. The links are provided below on the next page.

Links

- Assignment 3 (Movie App)
  - Backend GitHub: https://github.com/adelekanley/movieList
    - Contact akanley@unomaha.edu for access to repository.
  - Frontend GitHub: https://github.com/adelekanley/movie-fe-adele-Summer-2021-
    - Contact akanley@unomaha.edu for access to repository.
  - Backend PythonAnywhere: https://adelek.pythonanywhere.com/
  - Frontend Netlify: https://keen-joliot-bdcb62.netlify.app/
    - User Login: (limited access)
      - username: guest
      - password: gomavs1a

- Assignment 4 (EFS app)
  - Backend GitHub: https://github.com/adelekanley/investmentApp-be
    - Contact akanley@unomaha.edu for access to repository.
  - Frontend GitHub: https://github.com/adelekanley/efs-fe-adele-Summer-2021
    - Contact akanley@unomaha.edu for access to repository.
  - Backend PythonAnywhere: https://akanley.pythonanywhere.com/
  - Frontend Netlify: https://elegant-fermat-4a8355.netlify.app/

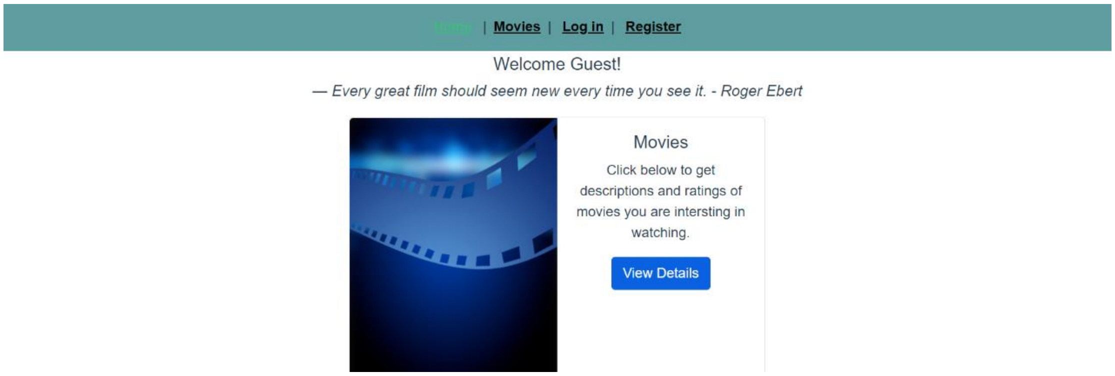
    - User Login: (limited access)
      - username: guest
      - password: gomavs1a

Screenshots

Below are descriptions and screenshots of the features included in the Assignment 3 (Movie App) update to Vue 3. Assignment 4 will not be explicitly shown since the two applications are very similar and users can interact with the application by following the Netlify links above.

1. Login

The two applications are built with a Django JW Token authentication feature. Upon connecting to the website, users will be taken to the home screen, common to most websites. From the home screen, the option "View details" is offered to users, yet if the user is not logged into the website, they will be redirected to the login screen.



Home | Movies | Log in | Register

Welcome Guest!

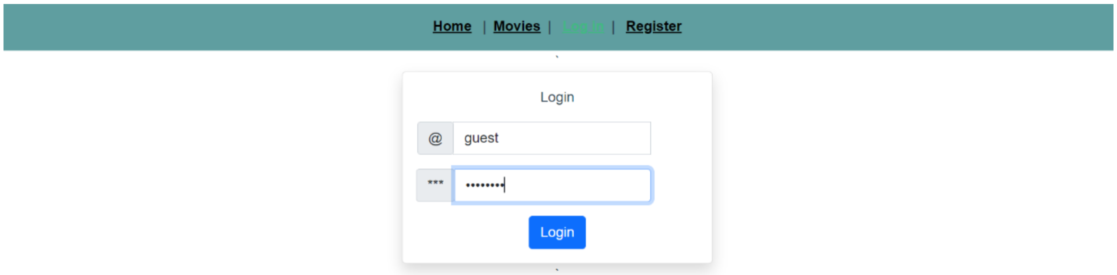
— Every great film should seem new every time you see it. - Roger Ebert

Movies

Click below to get descriptions and ratings of movies you are intersting in watching.

View Details

Image 1.1 – Home Screen, offering options to "View Details", Log in or Register



Home | Movies | Log in | Register

Login

@ guest

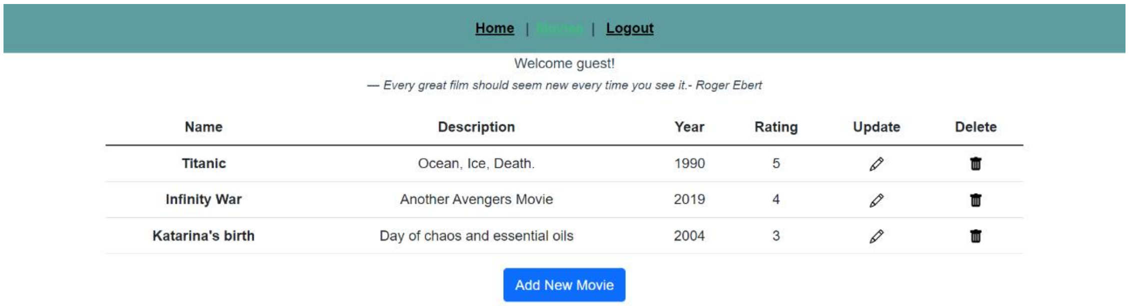
*** ••••••••

Login

Image 1.2 – Login Screen which takes credentials

2. View Movies

In addition to CSS, every page on the web application implements Bootstrap 5, which is a framework used to add responsivity to web applications as well as unique design features. This responsivity comes to play when users reshape their screen size or access application through their mobile device.



Welcome guest!

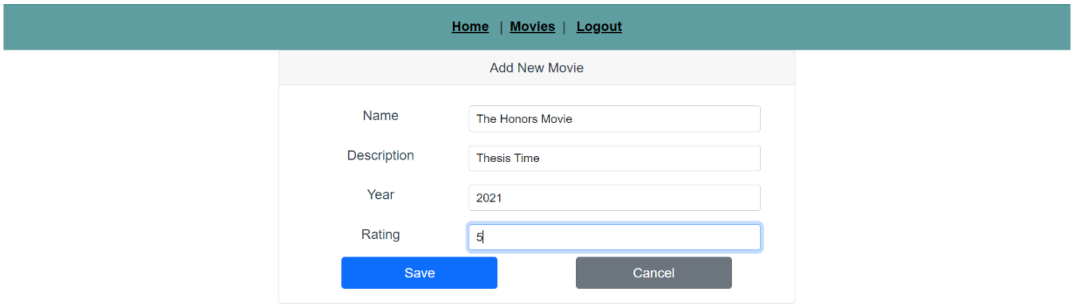
— Every great film should seem new every time you see it.- Roger Ebert

Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑

Image 2.1 – View Movies Screen displaying all movies added into the Django database

3. Add Movies

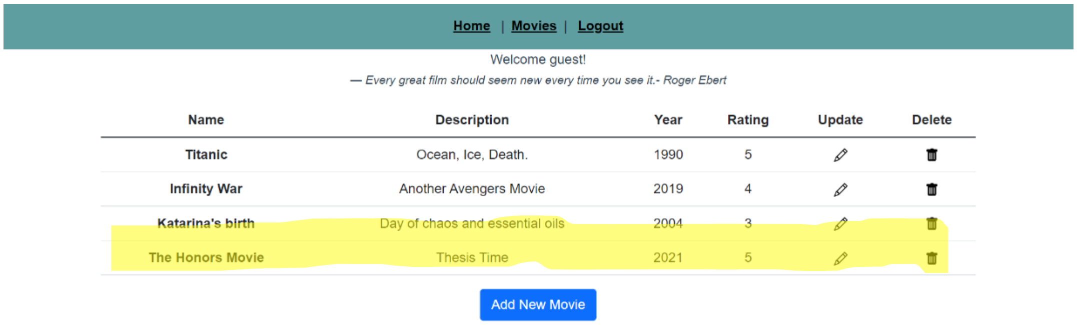
The Update and Add Movie screens make use of the “form” custom features offered in Bootstrap. These forms hold user data and then send a JSON object to the database once the user decides to save the new movie. Additionally, the v-for directive offered through the Vue.js framework allows for dynamic listing of data options from the database for users to pre-select. (This feature is not shown in the movie app, but shows up in the investment app when creating a new investment or stock)



Add New Movie

Name	The Honors Movie
Description	Thesis Time
Year	2021
Rating	5

Image 3.1 – Add New Movie Screen



Welcome guest!

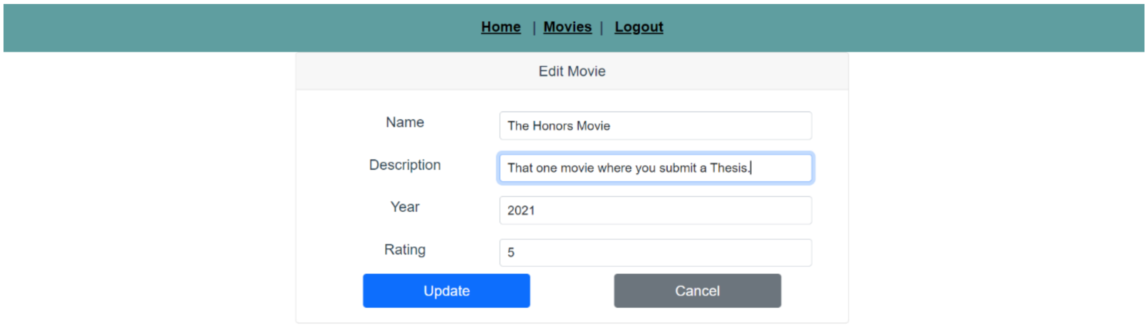
— Every great film should seem new every time you see it.- Roger Ebert

Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑
The Honors Movie	Thesis Time	2021	5	✎	🗑

Image 3.2 – New Movie “The Honors Movie” successfully added

4. Update Movies

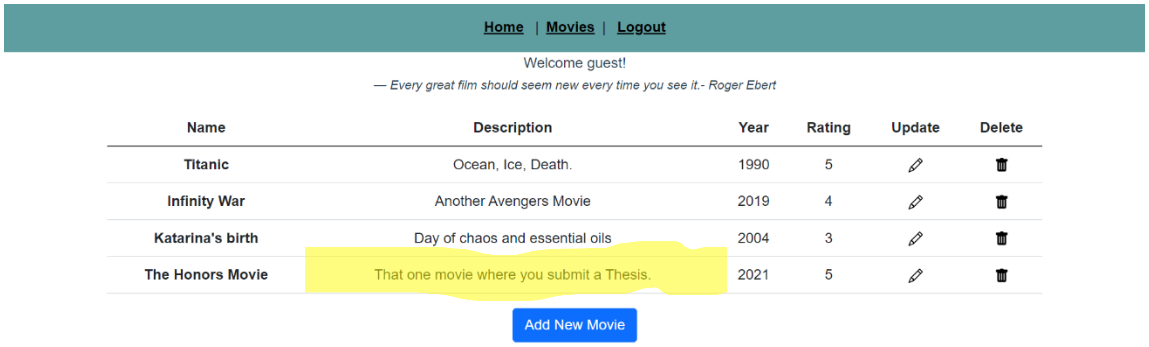
Updating movies is similar to creating a new movie except for the fact that the fields are pre-filled with information about the movie that is being updated. This is a feature offered in Vue.js in combination with the Axios library. The web app stores the updated values and resends the new version of the movie to be stored on the backend database.



Edit Movie

Name	The Honors Movie
Description	That one movie where you submit a Thesis.
Year	2021
Rating	5

Image 4.1 – Update Movie Screen



Welcome guest!

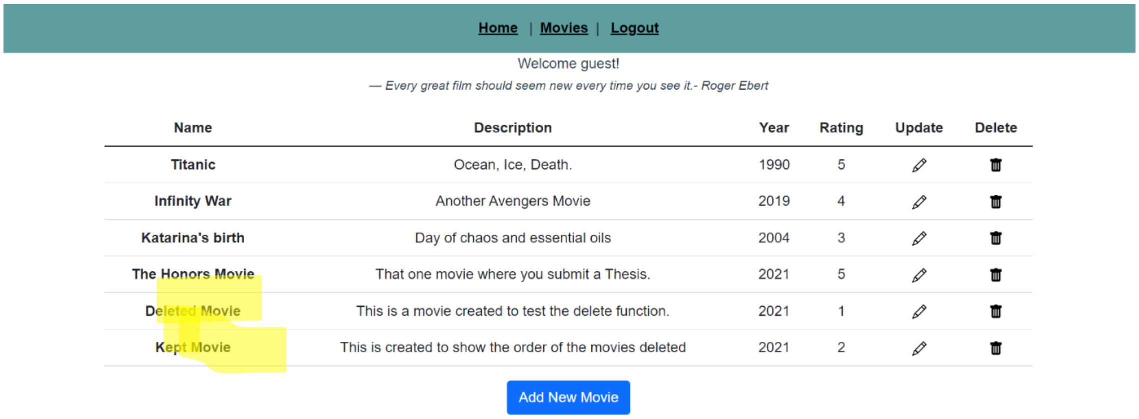
— Every great film should seem new every time you see it.- Roger Ebert

Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑
The Honors Movie	That one movie where you submit a Thesis.	2021	5	✎	🗑

Image 4.1 – Description for “The Honors Movie” successfully updated.

5. Delete Movies

The Bootstrap 5 framework comes into play when deleting a movie by offering user-friendly icons that make it obvious for users how to delete a movie. The delete buttons sends a request to the backend database to remove a movie completely.

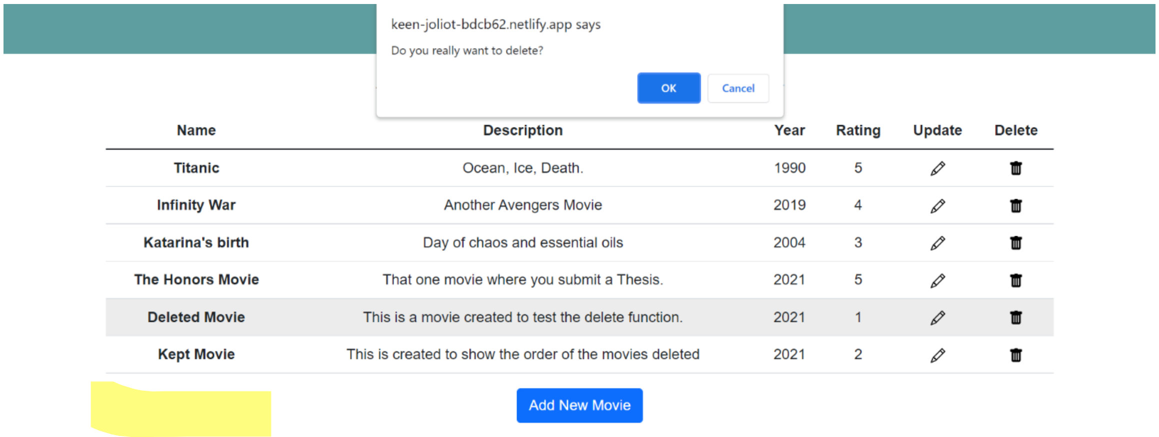


Welcome guest!

— Every great film should seem new every time you see it.- Roger Ebert

Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑
The Honors Movie	That one movie where you submit a Thesis.	2021	5	✎	🗑
Deleted Movie	This is a movie created to test the delete function.	2021	1	✎	🗑
Kept Movie	This is created to show the order of the movies deleted	2021	2	✎	🗑

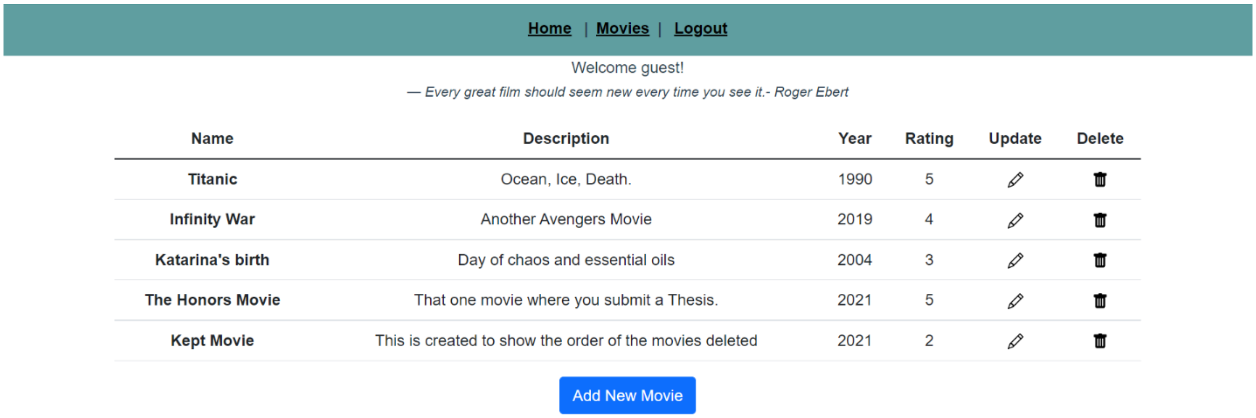
Image 5.1 – Two new Movies added (1) Deleted Movie and (2) Kept Movie


keen-joliot-bdcb62.netlify.app says

Do you really want to delete?

Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑
The Honors Movie	That one movie where you submit a Thesis.	2021	5	✎	🗑
Deleted Movie	This is a movie created to test the delete function.	2021	1	✎	🗑
Kept Movie	This is created to show the order of the movies deleted	2021	2	✎	🗑

Image 5.2 – Website prompts if user wants to delete "Deleted Movie".



Welcome guest!

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Name	Description	Year	Rating	Update	Delete
Titanic	Ocean, Ice, Death.	1990	5	✎	🗑
Infinity War	Another Avengers Movie	2019	4	✎	🗑
Katarina's birth	Day of chaos and essential oils	2004	3	✎	🗑
The Honors Movie	That one movie where you submit a Thesis.	2021	5	✎	🗑
Kept Movie	This is created to show the order of the movies deleted	2021	2	✎	🗑

Image 5.3 – "Deleted Movie" is successfully removed.

References

Goins, A. (2020, August 14). *Front end vs. back end: What's the difference?* Kenzie Academy. https://www.kenzie.academy/blog/front-end-vs-back-end-whats-the-difference/.