

Jury Lookup/Eric Chavez

CST489/499 Meta

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Executive Summary

The goal of this project is to create a web application that serves as a lookup and scheduler for individuals requested to serve as jurors for the Superior Court of California, Monterey Bay. For completion of the CST489/499 Online Capstone Project, David Debow, Alonso Vega, Yavik Kapadia, and Layla Gallez will develop a frontend user interface that is responsive on mobile devices and a backend service with a non-relational database.

Jurors should be able to retrieve juror status by inputting their badge number and pin code. Jurors should also be able to postpone to a future date if eligible. Additionally, jurors should be able to change locations from either Salinas, Monterey, King City or Marina.

The intended outcome of this project is to have the frontend service using the Next.js framework, the backend service using the Node.js framework, and a non-relational database using MongoDB connected, tested, and hosted. This project will serve as a prototype to improve the Superior Court of California, Monterey Bay's current code stack by utilizing modern frameworks. Additionally, this will serve as a real-world learning experience for our team, where we will learn new technologies and industry practices and receive mentorship from industry professionals.

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Introduction/Background

Project name and description

The Superior Court of California, Monterey Bay, has allowed our team to create a new Jury Duty Status Lookup web application prototype. Moving forward, we will refer to this project as a Jury Lookup. This web application will be a reference for future iterations and updates of the existing Jury Duty Status web application for the Information Technology team of the Superior Court of California, Monterey Bay. Eric Chavez is our immediate client and point of contact with the Superior Court of California, Monterey Bay. Eric has requested a web application that is responsive on mobile, has a decoupled frontend and backend, has a frontend that uses Angular, React, or Vue, and a backend built using Dotnet or NodeJS. It could utilize a relational or NoSQL database. This web application will allow summoned jurors of the Superior Court of California, Monterey Bay, to enter their badge number and pin to check their summon status. Upon entering valid information, summoned jurors can see their status, such as where and when to report to the court. Jurors should be able to postpone to a future date if eligible, and jurors should be able to change locations from either Salinas, Monterey, King City, or Marina.

Problem and/or issue in technology

This project aims to provide the Information Technology department with a comprehensive solution that will serve as a model for future implementation. The current Jury Duty Status Lookup web application utilizes Angular for the frontend, which has been identified as an obvious issue. The steep learning curve of Angular is one of its main drawbacks. It can be challenging for developers new to Angular to understand its complex ideas and recommended

practices. This complexity could impede the onboarding process for new team members and limit the flexibility of the development team.

Additionally, Angular is renowned for being resource-intensive. It imposes particular development patterns and structures and majorly demands system resources. While doing so can guarantee a consistent and manageable codebase, the development process is also more complex and time-consuming. The performance of the current Angular frontend implementation is another disadvantage. This is primarily attributable to the lengthy load times caused by Angular's enormous bundle sizes. As a result, customers with slower internet connections can experience issues downloading or using the online application dependably. The user experience may need to be improved and improved as a result of this performance constraint.

Solution to the problem and/or issue in technology

Our team suggests a solution that addresses the issues raised earlier, which is switching the current Angular frontend with React, a well-liked JavaScript toolkit for creating user interfaces. In order to further improve the frontend implementation, we also advise using the React meta-framework Next.js, which is suggested in React's developer guide. By making these adjustments, we can make use of everything React and Next.js have to offer, creating a web application that is quicker and more responsive. React's ability to virtualize the Document Object Model (DOM) results in high-performance user interfaces with few re-renders, which is one of its main advantages.

React effectively manages and updates the virtual DOM, which guarantees a more responsive and fluid user experience. When working with intricate and interactive components, this functionality is beneficial because React automatically updates only the required elements of the interface, cutting down on extra computations and enhancing efficiency. Additionally, we can

significantly reduce the learning curve for future engineers by integrating React and Next.js into the project. React offers a sizable and active community and a sizable ecosystem of reusable parts and libraries. By using these existing tools, developers may adopt and use pre-built components more quickly, saving time and effort. Because developers can rely on tried-and-true React components, this also encourages code reuse and maintainability.

Next.js, the suggested React meta-framework, streamlines page routing with a file directory-based router. Compared to React's initial router, this technique provides a substantial advantage because it allows developers to organize routes based on their directory structure. This directory-based routing system improves the overall development experience and promotes a cleaner codebase, making it easier to maintain and navigate between different pages. Finally, Next.js automatically divides the JavaScript code into smaller bits based on the page, loading only the required code. This method, known as code splitting, increases the application's initial loading time and overall performance. Next.js lowers the amount of code that must be loaded before users can interact with the online application, resulting in a faster and more engaging experience.

Environmental Scan/Literature Review

Our project will bring new features and different designs to the current jury duty portal. My team and I are working on an update that will change the user interference and it will be even more friendly to users. Our application will be different to the current system; we are bringing the newest technology and a better performance where users will get a response faster from the system. According to our mentor, Eric Chavez. He is the Information Technology manager for Monterey County Superior Court. He stated that this type of service or project has been already done before on previous Capstone projects for the Superior Court in Monterey. The courts'

Information Technology department has used and will continue to use students' capstone projects to integrate updates on their current system. The current system for their website jury duty portal consists of a single case(number search field), party search(requires first and last name input fields), business search(business name field), and filing date search(field for start/end date and courthouse). The previous capstone projects were taken into consideration to be part of an update to what the jury duty system looks like and works now and our project will do the same by learning from previous designs, implementation, and development. A potential benefit that our project could bring to the courts' service is a different design and authentication functionality.

Stakeholders

Our project has multiple stakeholders, each one is affected positively and negatively depending on the outcome of our project. The first stakeholder is the court's Information Technology department and engineers. They are responsible for providing jury duty service to the residents and making sure that the system is up to date, meeting all the requirements and needs of the public. Without jury duty registration software the court would have an extensive amount of work writing and sending letters to local residents about jury duty participation status. The second stakeholder is the county residents who are summoned for jury duty as these residents can check on the status of the duty. Information is provided to them whether they must participate or not. Last stakeholders are staff members that rely on the service for making sure the right individuals are canceled or summoned for service. Without this application that provides updates for summoned residents, the community and the court would have chaos each day when staff checks in an enormous amount of people at the court entrance. Also, canceling jury duty could result in frustration for residents who may have missed work or other important obligations to attend a canceled service.

Ethical Considerations

Ethical considerations include the right to privacy and accessibility regardless of the native language. These ethical considerations affect all stakeholders. The considerations directly affect the county residents but can have consequences for the court and staff members. Jury Lookup has the potential to harm through access of the address, names, and phone numbers of prospective jurors. Jury Lookup will use mock database data to protect the personal identifying information of potential jurors. Once the portal is in production, only trained state employees can access personal information.

Many people in the United States do not speak English proficiently, and there is no official language in the United States. There is an ethical accessibility concern targeting Monterey County employees and the Monterey Court to provide equal access to the legal process of jury duty to residents of Monterey County. All three groups of people are stakeholders. The Jury Lookup portal can incorporate Google Translate to translate the pages into numerous languages. The Jury Lookup portal will implement Google Translate after the completion of the project. Jury Lookup will include as many languages as possible in the translation feature for all users.

Legal Considerations

Multiple legal considerations affect the stakeholders. These issues include copyright, software licenses, and the Americans with Disabilities Act (ADA). These issues are not deal breakers for a portfolio or a student lead project. Still, for a professional project directed towards the residents of Monterey County, then the Monterey Court and court staff members take on risk by supporting Jury Lookup.

Posting other people's and businesses' copyrighted images on the site violates copyright law. The government, Monterey Court, needs to utilize open-source images or photos where they control the rights. There are royalty-free image repositories available for website use that can be utilized. Concerning software, the software licenses must be current and legally registered while working on the project. Jury Lookup can use the school technology officer for guidance on licenses or use open-source resources. The ADA protects Americans who have disabilities by providing equal access to resources. Jury Lookup must utilize accessibility checkers in the web design and research what an ADA website entails. The plan will not have to be designed exclusively for looks but take into consideration accessibility.

Project Goals and Objectives

Goals

The goal is for Jurors to look at a safe, easygoing, and responsive website. The website aims to allow potential Jurors to fulfill their civic duty. The user can access the website regardless of their disability. Using a different language will not stop them from postponing or acknowledging a jury summons. Overall, Jury Lookup wants to create a functional website that is accessible to everyone and makes Jury duty as seamless as possible. The Monterey Courthouse will not use the final project, but it will serve as inspiration for a live Jury Duty lookup portal.

Objectives

Contributing to reliability, the backend will operate on NodeJS. Limiting access to United States IP numbers will protect the website and MongoDB database. IPs outside the United States will be banned. There will be a captcha to prevent brute-force access to the database. The

website will be easygoing, using complimentary colors and Monterey court branding. Thanks to React JS, it will be coded to feel responsive. The website will allow potential Jurors to postpone their Jury duty or check in for their duty. It will be a highly accessible website, so people with different languages or ability levels can use and access the site. It will have a translation drop-down menu and be American Disability Association, ADA, compliant. Compliance means Jury Lookup will run the site through an accessibility checker. The Jury Lookup team will address all accessibility errors. The website's construction will be supervised through agile sprints weekly by the Monterey Court.

Final Deliverables

The final deliverables are code for a Jury lookup web portal, and a MongoDB Database hosted on a cloud server. The website will be live and fully hosted on the internet. The website stack will consist of a ReactJS frontend and NodeJS backend. Accessibility options will be included and integrated into the website. Jury Lookup will include directions on creating the necessary accounts for the required API keys. Finally, the Monterey Courthouse approval of the website will be acquired by Jury Lookup before delivering the deliverables.

Approach/Methodology

During our approach and methodology stage, my team and I will use a comprehensive approach to determine and complete different processes such as deep research and Agile development process. By using this methodology my team and I will be able to work successfully in the project while making and adapting new changes to our project. Our first step will conclude research where all of my team will be searching for information that will help us understand our project better. This will include meetings with our mentors where we will ask

specific questions on what type of product and features they are looking for. We will further explore similar website services to gather information and make possible changes and upgrades to today's society's needs. Then our team will continue to other stakeholders where we will offer surveys to gather valuable information. Our next step after collecting all the information is to finally set project features, requirements, problems that we might encounter, and possible solutions. During this stage, we will be using Agile to break the project down into small tasks and this way we will be able to complete, review, approve, and disapprove. During the completion of each milestone, reviews will be conducted from our clients and team members. By following these processes we will successfully fulfill our client needs and the completion of our project.

Timeline/Resource

This timeline is subject to change as priorities and project scope and requirements become clearer.

	TASK NAME	START DATE	END DATE
Sprint 1 Project Initialization			
	Setup up project Infrastructure	5/31	6/6
	Define Project Scope, requirements, and user stories	5/31	6/6
	Create wireframes or prototypes for the frontend	5/31	6/6
	Initialize basic frontend structure	5/31	6/6
	Set up basic backend structure and database	5/31	6/6
Sprint 2 Backend Iteration 1			
	Implement basic backend APIS and services	6/7	6/13
	Setup database connectivity and schema	6/7	6/13

	Develop core backend functionality to support frontend	6/7	6/13
	Write basic unit tests	6/7	6/13
	Deploy backend to AWS to test functionality	6/7	6/13
Sprint 3 Frontend Iteration 1 (Milestone 1 - Frontend + Backend Communication Successful)			
	Implement basic frontend structure and layout	6/14	6/20
	Develop core frontend functionality and user interface components	6/14	6/20
	Integrate with API data for testing purposes	6/14	6/20
	Create project theme/color scheme	6/14	6/20
	Deploy frontend to AWS to test integration of frontend and backend over the cloud	6/14	6/20
Sprint 4 Backend Iteration 2			
	Refine backend API and services based on feedback	6/21	6/27
	Implement additional backend features and business logic.	6/21	6/27
	Optimize database queries and performance	6/21	6/27
	Push updated code to AWS to test integration	6/21	6/27
Sprint 5 Frontend Iteration 2			
	Refine frontend components and user interface based on feedback.	6/28	7/4
	Implement additional frontend features and interactions.	6/28	7/4
	Begin testing integration of frontend with real backend APIs for performance	6/28	7/4
Sprint 6 Backend Iteration 3 (Milestone 2 - Backend			

Completed)			
	Finalize backend functionality and perform thorough testing.	7/5	7/11
	Implement security measures	7/5	7/11
	Address any performance or scalability concerns	7/5	7/11
Sprint 7 Frontend Iteration 3 (Milestone 3 - Frontend completed)			
	Implement final frontend features and user experience enhancements i.e Accessibility features	7/12	7/18
	Improve responsiveness	7/12	7/18
	Integrate frontend with finalized backend APIS	7/12	7/18
Sprint 8 Integration and Testing (Milestone 4 - Deployed and Functioning on AWS)			
	Integrate frontend and backend components for end to end functionality	7/19	7/25
	Write and conduct thorough tests, including unit tests, integration tests, and user acceptance tests	7/19	7/25
	Fix any identified issues	7/19	7/25
Sprint 9 Integration and Testing (Milestone 5 - Project Completed)			
	Integrate frontend and backend components for end to end functionality	7/26	8/1
	Write and conduct thorough tests, including unit tests, integration tests, and user acceptance tests	7/26	8/1
	Fix any identified issues	7/26	8/1
Deployment and Fine-tuning			

	Finalize deployment process and environment configs	8/2	8/8
	Optimize performance, security and error handling	8/2	8/8
	Conduct final testing and address any remaining issues	8/2	8/8

Resources Needed

- Computer with the following installed
 - Node Version Manager or Node 19
 - Visual Studio Code with following extensions for speedier development
(Alternatively JetBrains Webstorm will suffice)
 - ES7+ React/Redux/React-Native snippets
 - Emmet
 - Tailwind CSS IntelliSense
 - Prettier
 - Auto rename tag
 - Git Graph
 - Github
 - Git
 - MongoDB
 - Mongosh
- AWS Account
- Github Account
- MongoDB Account

Platform

The platform that will be used to complete this project includes Next.js, a React-based framework, for the frontend, MongoDB as the database hosted on Amazon Web Services AWS,

and Node.js for the backend. Next.js was chosen as the frontend framework based on the stakeholders' desire for a React-based framework. React is one of the most popular JavaScript libraries for building user interfaces, allowing a wide range of new developers to quickly onboard and understand the code stack. Likewise, Node.js was utilized as the most efficient option for the backend. The decision to use MongoDB's NoSQL database was out of necessity as the testing dataset provided by stakeholders was non-relational. The use of AWS is intended to be cost-effective and easily maintained.

Risks and Dependencies

Risks

Events or conditions that have the potential to impact at least one of this project's objectives or milestones include a team member becoming unable to contribute or deliver within a given timeframe, or a change in one or more of the technologies used. In the unforeseen event that a team member can no longer contribute, a meeting will be held among the remaining team members to discuss the reassignment of the unavailable team member's workload. Any changes to the proposed timeline will also be addressed. The stakeholders will be notified once the team has agreed upon an amended proposal. If a team member cannot meet a specific deadline, the team will coordinate a solution internally and notify the appropriate stakeholders. If there is a change in one or more of the technologies used, such as an overrun in hosting costs, all stakeholders will be notified immediately.

Dependencies

The project's dependencies have been detailed in the timeline above. The team will utilize an agile approach, using one-week sprints. Sprint Two - the first backend iteration, and Sprint Three - the first frontend iteration depend on Sprint One, project initialization. These three sprints will conclude Milestone One, providing communication between the frontend and backend services. Sprint Four - the second backend iteration, Sprint Five - the second frontend iteration, and Sprint Six - the third backend iteration depend on Milestone One, and completion will conclude Milestone Two, completing the proposed backend workload. Sprint Seven - the third frontend iteration depends on completion of the proposed backend workload and finishes Milestone Three, completing the proposed frontend workload. Sprint Eight - Integration and Testing depend on all previous milestones, and its completion will finish Milestone Four, the project is deployed and functioning on AWS. Sprint Nine - Integration and Testing rely on completion of all other milestones and will conclude Milestone Five, completing the project.

Testing Plan

Our team's usability testing plan includes different software tools such as Postman for API testing, Protractor for end-to-end testing, React testing suite for testing React components, and headless browser testing(Selenium, Cypress) for testing various functionalities in our project. Using all these tools in our project we will be able to test our software in a real-world usage and we will collect valuable information to improve and update our code in the process. Aside from all the testing tools our team also plans to have sessions with our client to test each functionality of the product to ensure the process goes smoothly according to deadlines from Agile.

Team Members

Team Members

David Debow, Alonso Vega, Yavik Kapadia, Layla Gallez

Divisions of labor

David Debow: Fullstack development, Interact with client, organize zoom meetings, and create meeting notes.

Alonso Vega: Documentation, Fullstack development, weekly meetings and presentation.

Yavik Kapadia: Fullstack development, weekly standups, and managing AWS infrastructure.

Layla Gallez: Fullstack development and documentation. Participation in weekly standups and project organization.

References

Superior Court of Monterey. (n.d). Public Portal - Superior Court of Monterey, County of Monterey. Retrieved from <https://portal.monterey.courts.ca.gov/search>