

University of Arkansas – CSCE Department
Capstone II – Preliminary Proposal – Fall 2022

“JB Hunt - Intern Hub”

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Abstract

Our goal is to implement a web application that assists in the management of interns at the internship program at JB Hunt. In a way, it could be described as an in-house LinkedIn website with less emphasis on social media components. Rather, its primary purpose is to be a convenient resource used to promote/sell current interns to full-time teams.

Each intern will be provided with an editable account. These accounts will provide elements such as a profile picture, basic information, current team, assets in possession, work tasks completed, skillset, long-term goals, and of course, a standard resume. Additional features will include a search/filtering system and possibly a notification system to flag students who are encountering roadblocks in their work.

1.0 Problem

JB Hunt internship sessions can consist of over 100 interns, especially during the summer. All students come from various education levels, experience levels, and locations and have a range of career goals. Typically, all the metrics listed above can be managed through traditional or external means. For example, resumes could be stored as a set of documents in a custom folder, and an excel spreadsheet could easily be used to record an intern's current tasks, skills, and goals. However, by condensing all these external tools into a centralized and easy-to-use database, it will in turn streamline the internship management process.

Per the purpose of any internship program, its aim is to create a pipeline of interns who will eventually make it to full-time positions. JB Hunt is a vast company with several application teams and avenues. It would be convenient to have a resource that not only narrows down which interns will be appropriate for a given team but also be used to advertise them.

2.0 Objective

The objective of this project is to create a website to house useful information about the former and current Engineering and Technology interns at JB Hunt. It will in turn assist the members of leadership to make informed decisions in regard to company hires. This convenient application will display the skills that interns have gained throughout their JB Hunt journey in order to complement a smooth transition to a full-time team.

3.0 Background

3.1 Key Concepts

Azure DevOps is a suite of tools that support the software development process. It includes requirements management, project management, testing features, and automated integration/deployment. However, its primary use will be version control. Dev Ops offers git-based version control that allows developers to make their own branch and push changes to the main codebase. It also provides means of reverting the code to any previous state if needed. Subscriptions are free for up to 5 users.

Visual Studio Code is a popular IDE with debugging, auto-code completion and git functionality. A variety of plugins are available that complement or enhance its features.

Angular is a web application framework that uses typescript, HTML, and CSS. A typical angular app is built with custom “components.” These components are comprised of a template(HTML), class(typescript/), and styles(CSS). Rather than having several web pages per a usual website, an angular application builds upon the main component. The user essentially views the same web page the entire time. The changes the user sees correspond to the swapping and manipulation of individual components.

PostgreSQL is an open-source object-relational database system. It supports both SQL and JSON querying. It is used as a primary database for many web applications. It supports the most popular programming languages such as Python, Java, C++, Javascript, and many more. The system allows the user to define their own data type, index types, functional languages, etc.

Node.js is an open-source, cross-platform, back-end JavaScript runtime environment that runs on a JavaScript Engine and executes JavaScript code outside a web browser, which was designed to build scalable network applications.

3.2 Related Work

As mentioned above, this application will serve a similar purpose as existing websites such as LinkedIn, minus the social media component. Frankly, the concept of a platform used to house a large number of individual resumes is not an original idea. However, this application will become a proprietary asset to JB Hunt Transport Services. It could be modified freely to meet company needs. If proven to be successful, expansions/customizations could append any functionalities mainstream resume websites currently possess.

4.0 Design

4.1 Requirements/Design Goals

- Intern Profile

- Profile Picture/basic information
- Team/Team History
- Daily/weekly goal
- Current story/task
- Completed stories/pull requests/tasks (Work History)
- Devices/assets in possession
- Notification of potential roadblocks/concerns (status meter or emoji /w description)
- Template for detailed Resume
- Skillset

- Search Feature

- Filter interns by interest, skills, team, etc... (backend/frontend, preferred languages, student classification)

4.2 [High Level / Detailed] Architecture

As stated before the goal is to implement a web application that aids in the management of interns at the internship program at JB Hunt. In a way, sort of like an in-house LinkedIn but without the social media aspect. For our proposed design, we decided to start off the website with a Login page for the interns. From there, a profile page will appear for the logged-in intern. This page will display basic information like the intern's profile picture, their current team, assets in possession, work tasks they've completed, their skillset, long-term goals, and their resumes. We also plan on having another page for the administration. This page will include a search bar with filters so that administrators/full-time employees can easily find an intern and display their current status or the current task they are working on.

Now, to accomplish all this, we decided to use Angular as the frontend as stated before, and then have Node.js as our backend. With Node.js, we are able to use one of the most popular web frameworks called Express which supports routing, middleware, and view systems for example. We also plan to use Sequelize as a promise-based Node.js Object-Relational

Mapping (ORM) that supports the dialects for PostgreSQL. This is important since for the database side, we plan on using PostgreSQL.

4.4 Tasks

1. Research/Organizing - Understand & gain knowledge on the applications being used to complete the project, and assign tasks to each member (Benjamin & Cayla- front end; Jessi & William - backend)
2. Design website - Each member outlines/designs their specific task and then as a group comes together to decide what works best or what to change.
3. Implementation of website - Each member completes their portion of the website (front end/back end components). Azure DevOps will be utilized to ensure version control.
4. Test website - Make sure all functionalities of the website are up to par via creating test profiles to verify usability
5. Document results - Report what went well and gather feedback via survey from users after using the application

4.5 Schedule –

Tasks	Dates
1. Research/Organizing - understand applications being used, assign tasks to each member	8/30-9/7
2. Design website - Each member outlines their specific task and then as a group comes together to decide what works best	9/7-9/21
3. Implementation of website - Each member completes their portion of the website (front end/back end	9/21-11/1

components). Azure DevOps will be utilized to ensure version control. Weekly meetings will be held to discuss progress thus far(in person or via teams)	
4. Test website - Make sure all functionalities of the website are up to par via creating test profiles to verify usability	11/1- 11/17
5. Document results - Report what went well and gather feedback via survey from users after using the application	11/17-12/5

4.6 Deliverables

- Design Document: Contains a listing of each major hardware and software component and layout for application
- Database side, PostgreSQL
- Node.js for the Backend
- Angular for the Frontend
- Final Report

5.0 Key Personnel

Students

Cayla Johnson is a senior Computer Science major in the Computer Science and Computer Engineering Department at the University of Arkansas. She has completed relevant courses. She has completed two out-of-state internships with Google and HSBC with varying roles in the technological and business space. In regard to this project, she is responsible for the implementation of the front-end implementation of the website.

Ben Thiele is a senior Computer Science major in the CSCE department at the University of Arkansas. He has completed a variety of relevant courses such as Database Management and

Software Engineering. He also has experience as a TA for Programming Paradigms and Programming Foundations II. Ben is currently an annual intern at J.B Hunt Transport Services, Inc. where he plans to begin his career as a software engineer. Over the course of this project, he will primarily focus on front-end web development and the general implementation strategy.

Jessi Soto is a senior Computer Engineering major in the CSCE department at the University of Arkansas. He has completed a wide range of relevant courses such as System Synthesis and Modeling, Embedded Systems, and Computer Architecture. As for the project, he will be responsible for the backend implementation of the website.

William Jackson is...

Industry champion

Reese Stanley is a director of Engineering and Technology at JB Hunt. He currently leads the application development internship program. He attended the University of Arkansas where he received a B.A. in business management and a minor in information technology. A long-time JB Hunt employee, with origins in software development.

5.0 Facilities and Equipment

The majority of this project will be accomplished remotely.

7.0 References

[1] Web page, URL

[2] Authors, "Article in Title Case," Conference or Journal, Publisher, Year