

**MY SOFTWARE DEVELOPMENT INTERNSHIP EXPERIENCE AT THE
UNIVERSITY OF VIRGINIA DEVELOPMENT HUB**

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By

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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ABSTRACT

The goal of the not-for-profit University of Virginia Development Hub is to develop software that benefits the UVA community. At the same time, it gives UVA students a chance to experience a real-world software development internship to prepare them better for careers and other future internships. During my spring 2021 internship experience at the UVA Dev Hub, one of our goals was to improve an application that allows students to track buses at UVA. In the summer of 2021, due to the growing popularity of cryptocurrency, the UVA Dev Hub decided to provide students with a web application that helps them to convert their crypto and keep track of trends in the rapidly changing world of cryptocurrencies. These experiences provided me with information about skills that are essential in the modern software development industry. Also, it helped me to understand what classes and skills can increase the chances of getting hired. Future work might include other internships that could provide additional insight into the modern software development job market.

1. INTRODUCTION

A significant problem of modern computer science education is its lack of connection to the real-world job market. Despite the huge demand for software engineers and computer scientists, a certain number of computer science graduates cannot find jobs immediately after college. Sometimes it takes

them a few months; or in some cases, they must take part in boot camps or software development programs to get a necessary set of skills. Consequently, analysis of two semesters of software development internship experience at the UVA Dev Hub will help other students to determine what skills are essential and how to prepare for the modern IT job market.

2. BACKGROUND

A lot of students had a problem with getting to classes on time due to not being able to track UVA buses. To track buses, students had to download a separate application. Moreover, the UVA bus application did not notify students when the bus arrived. Also, students could not set a reminder to be notified five minutes before the bus arrived. All these aspects of the UVA bus tracking application were a motivation behind creating a Discord bot that would enable students to track buses.

In addition to the problem with the UVA bus system, there was a problem with crypto. Every day cryptocurrency becomes more and more popular. As a result, there is a demand for a useful application that enables the UVA community to convert and keep track of their crypto. Moreover, most of the available applications either have limited functionality or require users to pay a subscription fee. Additionally, many applications provide inaccurate and intentionally false information.

The UVA Dev Hub decided to create a web application that enabled students to convert their cryptocurrency and keep track of all trends in the world of crypto.

3. RELATED WORKS

Minnes, et al. (2021) researched what students value the most about their internship experience. As a research method, they used open responses from students finishing their summer internships. As a result, they were able to conclude that students value the most technical skills, networking, and being able to work on projects that can benefit others. This work helped me to compare my internship experience to the experiences of others.

Bourelle (2012) analyzed the connections between technical education and internship experience and coursework that might be very beneficial to the internship experience. The author uses ongoing research to determine the best ways to connect college education to summer internships. He devised a set of measures to bridge the gap between the technical communication classroom and the internship. This article allowed me to compare my coursework to the coursework proposed by the author.

4. PROCESS DESIGN

During my internship at the UVA Dev Hub, I had a chance to work on two separate projects that helped me to get all the necessary software development skills. At the same time, those experiences helped me to understand all aspects of working in the software development industry and reinforced my belief that I would like to pursue this career path.

4.1. Discord Bot for UVA Bus System

The first project that I worked on at the UVA Dev Hub was a discord bot for the UVA bus system. Our team decided to develop a Discord bot for two main reasons:

1. Discord is a popular messenger that a lot of students already use; and
2. There are many libraries for discord that help to simplify the development process.

I was assigned to a team of five that consisted of four interns and one project manager. The project manager performed the function of senior developer and coordinator who assigned tasks and helped interns with technical questions. Our work was based on the agile paradigm of software development, a paradigm that allows small teams to work in fast-paced environments without a lot of planning. That was my first exposure to this paradigm, and it required me to adapt very quickly to a new environment and workflow.

Additionally, my project manager decided to use GitHub to share code and Trello to track the progress of the application development. These tools play an important role in the modern software development industry and are required by most employers. Fortunately, I was able to get first-hand experience using these tools in a real-world environment.

Moreover, I had to learn a completely new to me programming language—JavaScript. Initially, I was concerned that it might be extremely hard to learn an entire programming language in such a short period of time simply by working on the project. However, my internship experience proved to me that I could learn new technologies faster by working on a real project.

As a result of our work as a team, we were able to produce a complete Discord bot that allowed students to see the locations of the buses on the map, get information about routes and nearest stops, and be notified when their bus was approaching a bus stop.

Additionally, in a very short timeframe, I was able to learn a lot about working as part of a software development team and using JavaScript.

4.2. Cryptocurrency Calculator

The second project I worked on at the Hub was a Cryptocurrency Calculator. It was my second project, and I already had some experience that was very useful for the development of this application. Our application was based on React, a JavaScript library for web applications and we used GitHub and Trello to organize our work. I was working under the paradigm of agile development in a team of four interns and one project manager, so the team structure was already familiar to me, as well.

This project also provided a lot of fundamental knowledge and practical skills. The biggest difference between my first and second projects was that now I was responsible for not only the logic of the application but also for its design and user interface. Consequently, I had to learn HTML and CSS to be able to work on the UI. These skills are extremely important in the world of modern software development and are required by most front-end positions. As a result, of my team's work, we were able to produce a fully functional cryptocurrency calculator that allowed us to convert different currencies and keep track of all news in the world of crypto.

5. RESULTS

As a result of my internship experience at the UVA Dev Hub for two semesters, I was able to participate in the production of two complete applications that were designed to benefit the UVA community. The Discord bot for the bus system enabled UVA students to simplify the process of tracking buses in order to get to classes on time. The Cryptocurrency Calculator helped UVA

students to manage and convert their cryptocurrency.

In addition to producing efficient and useful products, I gained experience working in a real-world environment. Moreover, I understood more specifically how I can use my college education in the software development industry and what classes I should take in the next two years to significantly increase my value on the job market.

6. CONCLUSION

Both of my internship projects gave an insight into modern software development techniques and practices. This experience helped me to conclude the best ways of utilizing a college education. As a result, I concluded that all students looking for a software development internship should have two different sets of skills. The first one is technical, and it should include the knowledge of all the most up-to-date programming languages or frameworks specific to the industry. This set of skills will allow potential interns to stand out because employers will not have to spend time on teaching interns these skills. At the same time, it is essential to learn about all the aspects of working in a modern software development environment. This will allow interns to communicate with their coworkers more efficiently. As a result, it will make a potential intern look more professional and significantly increase the chances of getting a return offer from the employer.

7. FUTURE WORK

As a result of what I learned from my analysis of the Hub internships, I have decided to take databases, software testing, human-computer interactions, mobile development, and cloud computing during my last two years of college. In my opinion, I was lacking knowledge in those specific

areas. By taking these classes, I will make myself a stronger candidate for my future career in the field of software engineering.

Writing. *Journal of Technical Writing and Communication*, 42(2).

8. UVA EVALUATION

There are UVA classes that provide a lot of skills that are essential in the modern software development industry.

CS 3240 Advanced Software Development Techniques helps to learn all basics of the working in a software development team. The main goal of the project is to provide students with a simulation of a real-world software development environment. As a result, this class taught me how to work in a team of other software developers.

At the same time, classes, such as CS 2150 Program and Data Representation and CS 4102 Algorithms helped me to get the necessary fundamental programming skills. These classes help to build a fundamental understanding of data structures and algorithms that are used in modern software development.

I highly recommend paying attention to these specific classes because they might help UVA Software Development students to increase their value on the job market and to find their internship faster. Additionally, it might help to make a better impression on the employer, which can help the student to get a job return offer after the internship.

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