

**PEA Git Submission**  
**420-H40**  
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## General Program Learning Outcomes

During the first two years in the Computer Science program, I've developed a deeper awareness of myself and my coding skills, especially when it comes to object-oriented programming. I've had to learn that my limits can be pushed, and there's always more that I can do than I think.

A course that pushed me to improve as a developer and become more aware of my abilities is the Programming III course. Throughout that semester, I was introduced to more complex and big-picture concepts in development, like recursion, data structures and algorithm efficiencies. I often needed to consider scalability and efficiency in the overall structure of a program, instead of simply making it work. I was given more independence when it came to choosing how and when to implement inheritance, polymorphism, interfaces, APIs, and which data structures to use to save memory. All these new considerations were challenging, as they weren't necessary for my application to work, but would improve my code in significant ways. There was less handholding and more freedom, which made me more conscientious of the possibilities. During that semester, I became aware that I could settle for the bare minimum and get a decent grade, or I could push myself, since we learn the most when we struggle to solve new problems.

The project that caused me to improve the most was the third assignment in the Programming III course, where I was tasked with developing a game of Hangman<sup>1</sup> by using Android Studio. Not only did I have to learn Android development – a whole new world of code – but I also had to learn to use ADTs I had never worked with. It was challenging, but incredibly rewarding once I realized that I had improved my programming skills.

As I look ahead, I'm excited to face further challenges, as the difficult nature of that experience has equipped me with newfound confidence. I'm ready to tackle whatever obstacles come my way, knowing that each challenge presents an opportunity to push myself further and grow.

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<sup>1</sup> [https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/Hangman\\_App](https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/Hangman_App)

## Second-Year Learning Outcomes

Within the second year of the Computer Science program, I learned to solve complex problems using advanced web technologies, graduating from the basic web technologies covered in the first year (HTML, CSS, JavaScript). In this year's Web Programming courses, I had the opportunity to develop applications using various frameworks and techniques that are popular among software engineers today.

For example, in Web Programming III, I created a client-server application<sup>2</sup> using a combination of React and Node/Express that displays a list of movies from a JSON file through a proxy. A user can search for and add movies to the list. These front-end and back-end frameworks are more advanced, as they build on the foundation laid with the languages learned in the first year.

In the Web Programming V course, I spent the entire semester building a pet kennel reservation system called Happy Valley Kennel<sup>3</sup> (HVK) as part of a team while using the C# ASP.NET Core Framework. For this project, we needed to consider the Model-View-Controller (MVC) software design pattern, which we used to build this larger-scale application. Using this framework and pattern helped my team and I to deliver a product that was efficient and well-constructed to our fictional clients.

In the Web Programming IV course, I was able to learn how to attack and defend my applications to make them more secure against malicious users if they were ever to be public. In one of my assignments<sup>4</sup>, I implemented defence techniques against common attacks like Cross-Site Scripting (XSS), Cross-Site Request Forgery (CSRF), Clickjacking and more. Becoming aware of tricky hacking tactics has been very useful in helping me improve my code by making it robust and unbreakable.

I'm looking forward to putting into practice the knowledge I've gained in these courses in my co-op role as a software developer. For this role, I will be diving into new frameworks (like Spring for Java) and using some of the ones I've learned in my second year (like .NET for C#). I'm also excited for the opportunity to learn more about security in the IT Security course in the 3<sup>rd</sup> year.

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<sup>2</sup> [https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/React\\_Movie\\_List](https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/React_Movie_List)

<sup>3</sup> \* will be added Apr 30<sup>th</sup>

<sup>4</sup> [https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/Stardey\\_Valley\\_Player\\_List](https://github.com/HeritageCollegeClassroom/2022-program-exit-assessment-sabrinatoch/tree/master/2ndYear/Stardey_Valley_Player_List)