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Internship Final Report

Internships are professional learning experiences that offer students hands-on practice and knowledge on their desired field before being exposed to the real world. Through the process of my internship at PathGroup, I have been offered the opportunity to work hands-on in a professional work environment to gain experience and knowledge on diverse topics in computer science. Through this summer long internship, I was exposed to the software development field and given the opportunity to work on a project of creating a multifunctional website for PathGroup. This project had been a challenge for me in the beginning and required prodigious knowledge in web development and SQL in which I greatly lacked. Through the course of the internship I had learned new technologies, encountered challenges, and resolved these challenges through hard work.

PathGroup uses many different technologies for the development and modification of different applications. Some of these different technologies that I used at PathGroup to aid in completing my project were Visual Studio, Visual Studio Team Services, and SQL Server Management Studio. PathGroup also uses C# and C++ as the main two languages for developing software. As I was assigned my project, I was given the choice of using ASP.NET Web API with Entity Framework 6 on Microsoft Visual Studio to create the web application. Entity Framework is a great tool that many developers use to access and store data in any database. In this case, I used Entity Framework to access one of the development, or test, databases of PathGroup.

While these different technologies I used aided in the development of the web application, I came across many challenges that helped me gain more knowledge and experience.

On the second day of the internship, my supervisor, Andrew Bush, assigned the project and introduced to me the different functionalities of the website. These functionalities include creating a search page to search for Clients of PathGroup through one of the databases of PathGroup and return the information of that client to be displayed on a separate page. The search page was to allow the user to either search by name or by account number of a client. If the user searches by the name of the client, more than one result is returned and displayed on an HTML table. The user would also be able to search for individual doctors that belong to clients as well within that search page.

After a couple of weeks, I was asked to add more features to the website. In addition to the search page, a custom panels page was to be included as well. Custom Panels are panels that include groups of different laboratory tests that clients, such as hospitals, purchase in order to use with various patients. These Custom Panels are annually renewed; therefore, a page, Renewals Due, was to be created to display all the accounts that are due for renewal. Along with the Renewals Due page, there should be another page, Renewal Form, that displays all the panels for the client, since a client can have more than one panel, and display a renewal form to be printed and sent to the client to sign agreeing to renew the panels.

As I began working on the project, I did not know web development nor the tools used to develop any web application. I was unfamiliar with many concepts regarding web development and the basics such as clients, servers, requests, responses, CSS, JavaScript, and HTML. For the first two weeks, I spent my time doing rigorous research. I was unfamiliar with Entity Framework on visual studio and ASP.NET Web API. I spent one week researching and trying to familiarize myself with Web API and Entity Framework. I watched a couple of tutorial videos on Lynda.com to assist me in my research process. These tutorials guided me in building a very

simple single page web application using these tools. Thus, I began by simply building the website as a single page web application. It made since at the time to create the website as a single page application and go on from there to add more pages when needed.

During the first two weeks, I was not given access to the database, therefore, I had to hard code one client with the information that I was given about the client. This process required me to learn how to seed a database through entity framework, create models which are classes that define database entities, create a controller that supports CRUD (create, read, update, delete) operations, learn KnockoutJS, and understand the concept of HTTP GET request. Entity framework uses the models to create database tables and controllers use entity framework to communicate with the database layer. Knockout was used to display the information from the models onto the view (HTML) of the page. Knockout creates view model objects in JavaScript that hold the database models, and from these view model objects, they can be directly used in the HTML view to display the information from the database. After spending some time learning HTML and CSS as well, I began to display the information of the hard-coded client on the view. I used collapsible panels that contained tables within them to display the information of the client.

Later, as I met with Mr. Bush, I was given access to the Database and learned a new concept called Code First Migration from existing database. This feature allows the database schema to be updated if any change takes place in the database. By enabling Code First Migrations, data models were automatically created from the existing Client table within the database. That step in the process of my project had helped me move forward to take on more tasks. For about two weeks, I worked on developing the layout of the search page by adding tab content that allows the user to choose to search for either a client or doctor and creating functions

within JavaScript that control the input from the search bar to determine if it is an account number, client name, doctor name, or doctor code. Also, I worked on altering the view of the client page and doctor page to display the data formatted in either tables or panels.

Later, I was given the task of creating the custom panels to display renewal forms and renewals due; However, both renewal forms and renewals due were not tables in the database inside SQL Server that I could access. With the help of Mr. Bush, I was able to create a table in the database that contained information on custom panel profiles and create three stored procedures that query the database and merge three and four different tables from the database to retrieve the results for the renewals due and the renewal forms. Since I had access to the database through entity framework, I used the stored procedure within the dbcontext class. The dbcontext class bridges my entity model classes with the database giving me access to the stored procedures I had created. This task took me about two weeks to complete and through this process, I learned how to pass multiple parameters to a stored procedure in SQL Server and Entity Framework, create multiple MVC views, SQL, and many aspects of Entity Framework.

Through PathGroup, I became exposed to a very professional environment. I got the chance to see how software developers, project test coordinators (QA), and business analysts all work as a team to produce many applications for the company and prevent any problems from occurring when an application goes live. For the last few weeks of the internship, I was invited to attend different meetings with the developers and project test coordinators (QA) to discuss current sprints. There were also stand-up meetings every Monday, Wednesday, and Friday in which everyone had the opportunity to discuss their progress and any problems encountered. In addition, I had a one-on-one meeting with my supervisor once a week to discuss my progress and

any difficulties that I encounter. These meetings made me realize how important team work is and the responsibilities each individual contributes to the team.

When taking a subject in school, students often depend on the professor to explain different subjects and be a guide through different projects. Being dependent on the professor to explain certain materials and not depend on my own skills and ability to research due to the lack of time I was given during the semester made me struggle when I was put in the position where there was no professor to ask what a certain concept meant. Most of the challenges that I encountered were in the first couple of weeks of my internship. Having no knowledge of HTML, CSS, JavaScript, SQL, and Entity Framework were the biggest challenges to overcome. Before I started the internship, I lacked the ability to research efficiently since I always requested help from my professors. Being put in the situation where I had no other choice but to research and learn everything on my own was very stressful. I felt hopeless every time I encountered a problem, but through hard work and research, I achieved great results and would have never imagined myself where I am now.

Supervisor Signature: _____ Date: 8/8/2017