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# Software Development Milestone

For my final project I wanted to create a program that would relate to what I plan on majoring in. At first I began to think of doing a text encryption software that would encrypt and decrypt text files. After doing some research on this topic and how I would be able to do it I came across a type of hand written encryption techniques known as “Ciphers.” These ciphers have been around for centuries and have been used in times of war to get across secret messages. There are a large variety of ciphers, some much simpler that others. After my interest had been peaked by this subject I knew that this is what I wanted to to my project on.

The particular cipher that I used in my program is known as the “Playfair Cipher.” This cipher was created nearly 175 years ago and was popularized my Lord Playfair. Of all ciphers, this one is the easiest so I thought it would be a good cipher to use. The cipher follows several rules that are easy to follow and to program, which is why I chose this is particular.

When I began to write my code I thought it would be easiest to make four separate classes, one class would read the user's keyword, read the user’s message, and create the square with the alphabet. The other three classes would take care of each of the scenarios depending on the position of each of the letters in relation to each other. However, after implementing this technique, I came across a much simpler alternative where I could just make it an if statement with each scenario depending upon where the letters are in relation to each other.

When I began working on my program I tried to develop an efficient x and y positioning system. After much trial and error, I began to do some research on alternatives and I found another playfair cipher encryptor that used a type of java import that helped keep track of all of the x and y values. Not being too sure how it worked or the syntax of it, I did some research on the java.awt.point and I figured it out. This helped reduce the amount of code from the past x and y systems that I had attempted to develop. In order to fit the alphabet into a 5 by 5 square the Playfair Cipher required you to either replace the letter J with I, or omit Q. As a result I had to allow the user to choose one of these options. Along with asking the user for a keyword and their message, I also created a scanner asking the user if they'd like to replace J with I. If yes then the user would enter 'yes' and all other answers would omit q.

There are many things that I wish I got the chance to add to my program. These include displaying the five by five square with the alphabet and automatically deciding whether or not to replace j with i or omitting the q. I feel that these would have proven to be a major challenge for me. In my original design for the program I had planned on displaying the square however, early in development I had major difficulty lining up all of the letters effectively. I stopped development on this portion thinking that I would work on it later in the process, however I never got around to it. I found that it became easier not to bother with this because of the way I used the newly imported java.awt.point.

When I had completed this program I thought the next step was to automatically decide whether to replace j and i or omit q. After a lot of trial and error, it became clear to me that finding certain letters in the keyword and message was somewhat subjective to decide whether or

not to use them. So I simply stuck with the scanner that asked the user if they'd like to use replace the letter J with the letter I.

Overall, I found that I had learned a lot from this experience. I learned how to use certain types of java imports and most importantly how to manage my time. I found it difficult breaking up the work I was doing over a month period however, with a bit of discipline I was able to manage my time and complete my project in a timely manner.