Final Report

**Goals**

The goal of this project was to utilize the idea of Attribute-Based Encryption to provide authentication and a secure communication to a cloud environment.

**Tools**

In this project, we used:

* Java Programming Language to write our program
* Eclipse IDE to debug, build, and run our program
* AWS DynamoDB for a database
* AWS Toolkit for Eclipse to allow program to access data from the database
* Open-Source CP-ABE Library found [here](https://junwei.co/cpabe/)

**Challenges**

Some challenges that we faced while doing our project included:

* Deciding which programming language to use. We originally wanted to use Python, but the Open-Source library that we found for Python did not work correctly. So, we decided to go with the one that worked, which was written in Java.
* Using the CP-ABE library was a challenge as well, since we had to learn and understand what all the functions did.
* The GUI was very tedious and difficult to make due to Java’s implementation of several different layouts.
* Programming the output was difficult, since retrieving data from DynamoDB was stored as a hashmap, and all we wanted were strings.

**Assigned Tasks**

Each team member was assigned to do research on the topic.

* Sunny was responsible for making a connection to the DynamoDB to access the data from the database as well as reformat the data so it was legible.
* Smit was responsible for creating the GUI and implementing all the functionality required to display the output.
* Gustavo was responsible for learning and understanding the CP-ABE library and using all the functions provided by the library to securely access specific data from the database.

**Final Thoughts**

In the end, we were able to achieve our goal regardless of the challenges we faced. We were able to meet our expectations for this project. For the future, we can continue the project by making improvements in the GUI and implementing the application in a real-world scenario to expand on it further.