Reflection: Integer Convert: Arnav Krishnan

1. Through this project I learned about 3 different number systems: Binary, decimal, and Hexadecimal, and how to "translate" between them. I learned how to convert binary/hex strings into bytes and ints, and how to convert bytes and ints into binary/hex strings. I learned about signed vs. unsigned representation of numbers in two's complement form, and how it relates to signed vs. unsigned right shift. To that extent, I learned about different bitwise operations: AND, OR, XOR, L-Shift, etc., and how we can use these operations as a mask to manipulate or "clear" a series of bits. I also learned about how to detect/throw Exceptions and how to use it in a project to ensure that the code can handle incorrectly formatted, or simply wrong input without crashing.

2. While doing this project I encountered many issues. The most confusing aspect of this project is the number systems, as in previous CS classes, as well as math classes, I had predominantly used only the decimal system. Although I was familiar with binary and hexadecimal it was also confusing to see them used in the context of conversion into certain data types (int, byte). From a coding aspect, the most difficult part, by far, in my opinion, was converting into Hex Strings from integers. Binary is easier because of its simplistic nature, having only 2 options, but hexadecimal was much more difficult for me. It took a lot of thinking, and trying to apply strategies from other methods, to get it to work.

3. I wonder why it is important for developers and engineers to be able to convert between different data types. And whether it is preferable to see certain number systems for different applications.