Manmeet Singh
CSC 110
Rajesh Kumar

Part 2 Report

For Part 2 of our homework assignment. We were tasked with the conversion of floating point decimals to the IEEE 32, 64, and 128-bit standards of binary floating point representation, and vice versa. For the first part, having the steps outlined and sequenced was a major help in the structuring of the functions themselves, with the example allowing us to visualize potential functions to simplify certain actions needed to be taken for the conversion to work. With that said, there was a fair number of tests, bugs, and debugs that I needed to run, including for negative numbers, and the representation of infinite decimals, for which cannot be fully represented in such a format, so it is rounded off as a crop based on the representation chosen.

Section 2 was similar, following a reverse engineering of the code that we did in the first section, including converting decimal to binary and binary to decimal functions, as seen in the code, and some differences involving conversions to binary and decimal, both taking different approaches.

In the analysis, I used 100 outputs for each binary setting, making sure to go through signed and unsigned floats. Certain numbers could be converted with 100% accuracy, such as 10.5 and 20.75, due to their direct binary representation. However, numbers like 10.1 and 8.98651 cannot be represented with 100% accuracy due to the infinitesimal nature of their storage, however, becoming more accurate as the bit length increased form 32 to 128. Overall, this segment was definitely another challenging assignment that helped me to build skills in debugging, along with building up resilience to early challenges, while also learning aspects and functions involved in python that make certain tasks more efficient and/or intuitive.