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MP1 exercised use of the C language and provided an environment to work with basic C concepts. Furthermore, the MP allowed for simple machine analysis (i.e. big vs. little endian).

To begin, the EWS machines appear to be big-endian due to the manner in which the bits were accessed. In part 3 of MP1 part 1, I left-shifted a value (from the starting value of 1) to an integer where shifted_number+1 % 3 = 0 (note that this integer must be larger than sizeof(char) == 1 byte). Furthermore, I added a single bit to the shifted number. Then, for the final test, the entire integer was divisible by 3 and the char value at index 0 was equal to 1 (since char is a single byte) which shows that the machines are big-endian due to the position of the least-significant bit.

In part 2 of MP1, I had to implement a simple dictionary. I chose to implement a simple hash map using a doubly linked-list for collision handling. A benefit of using the hash map is constant time data access. Contrarily, if the hashing algorithm used is not efficient, the map could become a linked list (i.e. all entries mapped to the same index) which could cause O(n) look up since the dataset is unknown and infinitely large.

If the goal of MP1 was performance, I would most likely use the same data structure. Since data access is fast, it tends to be very efficient. However, I may take more time in selecting a better hashing algorithm to be certain the structure would not have too many collisions. Although there are potential problems with using the hash map, for most large datasets, it seems that it may be the best option for quick data access.