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Programming Assignment #2
CS 211

Design

Four if blocks four each data type, and then three if statements inside each block to get the desired output format. Depending on the input/output format, call a function that will take the input string in the input format and convert to the given output format.

Implementation

Binary

To decimal - iterate through binary and sum the values
To hex - iterate through binary digit by digit and convert

Decimal

To binary - recursively call, passing d/2, and printing d%2 to convert to binary
To octal - Recursively call, passing d/8 each time, and print d%8, to convert to octal
To hexadecimal - divid the decimal string by 16, build result using decimal%16.

Hex

To binary - iterate through each character and switch case to convert to binary
To decimal - iterate through each character using a pointer, and switch on the pointer, using a list of hexadecimal and corresponding decimal values
To octal - iterate through and build a binary string, then convert binary to octal

Octal

To binary - iterate through octal string and switch to binary values (for 0-7 octal)
To decimal - Mod each digit by 10, divide each digit by 10 and build the result. Multiply by 8 for the place.
To hex - Divide by 10, mod by 10, multiply dividend by p*8.

Challenges

Efficiency was challenging in this assignment since C library functions like atoi are not allowed, so input strings must be converted to the proper format before converting to the desired output format.