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Convert.c

Design

double BinToDec(char*)is the function that takes in a binary character string and returns a double representation of that in decimal. It is very similar to **AnyBaseToDecimal,** but without the extra cases. I thought about just getting rd of it all together and just using ConvertDecimalToDecBinOctHex, but thought that It would be more efficient for binary.

char* HexadecimalToBinary(char*) is the function that takes in a hexadecimal character string and returns a binary character string. Its just a simple switch statement that concatenates the binary representation of a hex digit to the representation string until there are no more hex characters to convert. From HexToBinary it is very easy to go to Decimal

This function is O(n) depending on the number of hex characters entered. The switch statement inside of the function is O(1) linear.

char* OctalToBinary(char* octValue) is the function that takes in an octal value in character format and returns an octal string representation of the binary string entered. It works much like the HexadecimalToBinary function. After calling this function, it is easy to go from binary to any base with my AnyBaseToDecimal function.

This function is O(n) depending on the number of octal characters entered. The switch statement inside of the function is O(1) linear.

double AnyBaseToDecimal(char* decimalValue, **int** baseNum) is the function that converts any base character string to a base 10. It needs to know the string that you want the decimal value of along with the base that it is currently in. It uses the horner's algorithm discussed in class and recitation. This comes in really handy since we can receive a string of any base and got to a decimal value. Once we get that decimal value, we can convert back to a character string by peeling away the 10's places with the division mod algorithm in **ConvertDecimalToDecBinOctHex**

This function is O(n) depending on the number of characters of the input string.

char* ConvertDecimalToDecBinOctHex(double numberToConvert, **int** base) is the function that converts a base 10 double number to a character string representation in any base including from decimal to decimal. It is based on the division mod algorithm we did in class. This comes in handy since we were not allowed to print out anything but strings and it returns a string. In addition to that, it converts from decimal to any base, which is good to use to get a character representation in any base.

int isValidInput(**char*** inputString) is the function that checks for valid input. It runs through and checks for the numbers of decimal points. If the number of decimal points is greater than 1 it causes there error flag.

This function is O(n) depending on the number of characters in the input string.

Errata:

Please note, that in

char* **ConvertDecimalToDecBinOctHex**(**double** numberToConvert, **int** base), due to the weird precision **I was not able to tell if a number was unrepresentable.** If the decimalPart was >=1 I told it to explicitly break and it wouldn't do so, which only tells me that c has some quirks with the numbers of different types and rounding of numbers.