### **Main Menu**

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### Convert a decimal number to any other base:

- User input decimal number
  - o Error check decimal input function
- User input base value
  - o Error check base input *function*
- Convert input string to a list
  - String to list *function*
- Calculate number of digits for creating an empty list
  - o Digit calculating *function*
- Calculate each final digit using modulus and an accumulating sum
  - o Calculate each new base digit *function*
- Digit to alphabet conversion
  - o Digit to alphabet *function*
- Print output

## Convert a number from any base to a decimal number

- User input base value
  - Error check base input *function*
- User input number in any base
  - o Error check baseN number function
- Convert input string to a list *function*
- Convert each digit to a decimal number through expansion (including alphabetical characters)
  - Alphabetical to digit *function* (under an if statement)
- Print output

## Convert a decimal number (-128 to 127) to a signed byte

- Choice between entering a byte or a decimal number
  - o If decimal:
    - Strip negative with if statement and store negative value
    - Error check between -128 and 127 *function*
    - Convert to binary
      - Convert input string to a list
        - String to list *function*
      - Calculate number of digits for creating an empty list
        - o Digit calculating *function*
      - Calculate each final digit using modulus and an accumulating sum
        - o Calculate each new base digit *function*
  - o If byte:
    - Store user input value
    - Convert to decimal with expansion *function* 
      - Error check between -128 and 127
- Convert binary to a byte
  - o Check length for current number
    - Concatenate zeros to the left to fill a byte
- Loop over string to convert zeros to ones and vice versa
- Convert to decimal
  - Convert each digit to a decimal number through expansion (including alphabetical characters) <u>function</u>
- Add 1
- Convert to binary
  - Convert input string to a list
    - String to list *function*
  - Calculate number of digits for creating an empty list
    - Digit calculating *function*
  - Calculate each final digit using modulus and an accumulating sum
    - Calculate each new base digit *function*
  - Digit to alphabet conversion
    - Digit to alphabet *function*

- Convert into a byte
  - o Check length for current number
    - Concatenate zeros to the left to fill a byte
- Print output

# Convert color hex code to respective RGB values

- User input hex value
  - o Check for length of input
  - Send to error checking for baseN number *function*
- Convert input string to a list *function*
- Convert each digit to a decimal number through expansion (including alphabetical characters)
  - Alphabetical to digit *function* (under an if statement)
- Splice list to calculate the color values for each color
  - o Calculate color *function*
- Print formatted output