Project Assignment

Create an application tool for a user to handle IEEE 754 floating point numbers (Refer to the specification from 1985 and the Project PPT shown in class).

A. The app should convert a decimal (single precision 32bit floating point) number so it can display all of the following:

1. Decimal, 2. Sign Exponent Mantissa display of (binary) bits, 3. Hexadecimal display

B. The app should be a simple calculator that allows it to operate on two input numbers and generate a correct result with the following operators:

1. Addition, 2. Subtraction, 3. Multiplication

C. The app should be able to display the input values and the result in all three display formats listed in A. above.

D. The app should be able to identify the following characteristic of inputs and result as follows:

1. Normalized Floating-Point Number

2. Denormalized Floating Point Number

3. Not a number (NaN)

4. Zero

Graphical user interface, text, application

Description automatically generated

**Friday, 10/08/2021 – Prototype version 1 demo**

We demoed the following as part of prototype 1 demo:

1. The user enters a decimal value, and we displayed the value entered in hex, binary, and decimal formats.
2. User enters two values and selects either addition, multiplication, and subtraction operation to be performed on those two values and he is then displayed the result in all the three formats.

**Suggestions/Comments provided by the stakeholder to consider for prototype2:**

1. The user should be given the flexibility to enter the input value in any format and he will be displayed the result in all the three formats.
2. The sign bit, mantissa and exponent bits should be clearly identified and shown to the user.
3. The user can enter the two values in any one of the three formats and perform either addition, subtraction or multiplication operation and he is then displayed the output in any of the three formats.
4. The user is shown a message if he enters an invalid value (zero, NaN).
5. The output is also shown in normalized floating point number format.