COMP 3050 Computer Architecture

Assignment #1 January 26, 2021

- This assignment is due no later than midnight (11:59:59 PM) of **Tuesday, February 9**.

- **All** of your submissions must include a minimum of **four** separate files:

  - **File 1:** A short **write-up** that **first** specifies what you think your **degree of success** with a project is (**from 0% to 100%**), followed by a brief discussion of your approach to the project along with a **detailed description** of any problems that you were **not** able to resolve for this project. **Failure to specifically provide this information will result in a 0 grade** on your assignment. If you do **not disclose** problems in your write-up and problems are detected when your program is tested, you will receive a grade of 0. **Make sure that <u>you include your email address</u> in your write-up so that the corrector can email you your grade.**

  - **File(s) 2(a, b, c, …)**: Your **complete source code**, in one or more **.c** and/or **.h** files

  - **File 3**: A **make file** to build your assignment. This file must be named **Makefile**.

  - **File 4:** A file that includes your **resulting output** run(s) from your project. This is a simple text file that shows your output, but make sure that you annotate it so that it is self descriptive and that all detailed output is well identified.

- The files described above should be the only files placed in one of your subdirectories, and this subdirectory should be the target of your submit command (see the on-line file **Assignment_Submit_Details.pdf** for specific directions … these files will be posted when the class Teaching Assistants (TAs) are determined).

- The problem you must solve has been described in class and is formalized as follows:

- The problem requires you to scan in floating point numbers from the keyboard to a 32 bit memory location and process each as follows:

    1. You must take each number entered and print the following output:

```
the floating value for INPUT_NUMBER is broken out as:
   mantissa: 0x400000   or:             100 0000 0000 0000 0000 0000
   exponent: 0x81       or:   1000 0001
       sign: 0          or: 0
 in base 10: 6.000000   or: 0 1000 0001 100 0000 0000 0000 0000 0000
```

    2. You will need to scan the floating point numbers into a union which allows access to the mantissa, exponent and sign components as shown in class.

    3. You must show output for 10 floating point numbers, including the following 5 and 5 more of your choosing:

```
                237.75
                 -.0000005126
-92457321.670245
                 6.023E+23
                 1.67339E-40
```

- You can find the reference code that we reviewed in class on the class web-site at:
  http://www.cs.uml.edu/~bill/cs305/convert_float_to_bits_c.txt

  You are welcome to cut-and-paste this code into your assignment solution.