

COMP 3050 Computer Architecture

Assignment #1 January 20, 2026

- This assignment is due no later than midnight (11:59:59 PM) of **Tuesday, February 3**
- This assignment and all other assignments and class materials can be found on the class webpage: <https://www.cs.uml.edu/~bill/cs305> Executable programs used in this course can be found on our mercury Linux server at ~bill/cs305
- Submission details will be provided in class, but you will be required to include your source code, your output and a write-up of your results described below. Please see the online file:

http://www.cs.uml.edu/~bill/cs305/Assignment_Submit_Details.pdf

- **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 you include your email address 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 ... this file will be posted when the class Teaching Assistant (TA) is determined, which may take a few days, so please, don't email me about not finding the file, it will be there in time for you to submit by the due date). 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:

https://www.cs.uml.edu/~bill/cs305/convert_float_to_bits_c.txt

and on the class directory on mercury at:

~bill/cs305/convert_float_to_bits.c

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