Lab 5: Big Integers
Due: March 31st 11:59pm

Assignment

What do we do on a computer system if we need to support numbers that are larger than the range supported by the primitive data types? For example, what do we do on a 32-bit system if we need to compute values that are much larger than the maximum value for an unsigned 32-bit integer? Believe it or not, this is a common task and is used for important functions like encryption. This lab will explore the challenges of providing support for integers with bit-widths larger than what is supported directly by the ISA. In this assignment you will implement a C library that adds support for a new data type `big_int_t`. The new data type supports 4096-bit unsigned integers. You will need to provide an implementation for each function found in `bigint.c`. Be sure to read `bigint.h` to get information about how each function should execute as well as the underlying representation of the `big_int_t` data type. Put all of your code in `bigint.c`. Do not change `bigint.h`. The `driver.c` code is provided to help you test your code and will not be graded, so you may change it freely. The provided `makefile` will compile your code and the driver code into an executable called `bigadventure`.

Evaluation

- \+ 20 compiles and runs
- \+ 10 for each correctly implemented function