

Quiz 5



Sample

This quiz consists of 2 questions. You have 7 minutes.

Assume the ArmLab/gcc217 environment unless otherwise stated in a problem.

Do all of your work on these pages. This quiz is preprocessed by computer, so for your final answers to be scored you must write them inside the designated spaces. Please make text answers dark and neat.

Name: NetID:

This is a closed-book, closed-note quiz. Please place items that you will not need out of view in your bag or under your working space at this time. Electronic devices such as cell phones, laptops, smartwatches except to check the time, etc. may not be used during this quiz.

This quiz is administered under the Princeton University Honor Code. All suspected violations of the Honor Code must be reported to honor@princeton.edu.

In the box below, copy **and** sign the Honor Code pledge before turning in your quiz:
"I pledge my honor that I have not violated the Honor Code during this examination."

X _____

The questions are on the back page. Do not turn this page over until instructed to begin.

Recall the struct `BigInt` and the `BigInt_T` opaque pointer from Assignment 5:

```
struct BigInt {
    /* The number of used digits in the BigInt object */
    long lLength;

    /* The digits comprising the BigInt object.
       aulDigits[0] stores the least significant digit.
       Unused digits are set to 0. */
    unsigned long aulDigits[MAX_DIGITS];
};

typedef struct BigInt *BigInt_T;
```

Consider this given declaration of a function that prints the digit at index `i` of `oB->aulDigits` :

```
void BigInt_printDigit(BigInt_T oB, unsigned long i);
```

Question 1 (5 points)

In the box below, write the assembly language instructions to set up and make a function call to print the most significant non-0 digit of a `BigInt_T` whose reference is stored on the stack at offset +8 from the stack pointer. To print the appropriate digit, `oB->lLength - 1` should be passed as the second argument, and you may assume `oB->lLength` is not 0.

Hint: you can set up and complete the function call with exactly 4 instructions.

```
// BigInt_printDigit(oB, oB->lLength - 1);
```

Question 2 (2 points)

In the box below, describe (in English or with the alternate code) what must change in the answer to Question 1 if the `BigInt_T` reference were in the BSS section instead of the stack.