

# CS 241 Data Organization using C

## Lab 3: getbits

Spring 2016

### 1 Description

Section 2.9 of Kernighan and Ritchie provides the `getbits` function. Write a C program that reads records from the standard input stream, passes the data in each valid record to `getbits` and displays the result.

For this program, a record is a sequence of comma delimited numeric characters terminated with a newline. A valid record has the form: `x,p,n` where  $x$ ,  $p$ , and  $n$  correspond to the `x`, `p`, and `n` in `getbits` and where each of these values is within the range usable by `getbits` on a machine (such as `moons.cs.unm.edu`), where an `unsigned int` is 4 bytes.

For each valid input record, you will print a line with the arguments to and the result from calling `getbits`. For each error record, output an error message. There will be sample input and output files for testing on the course web site.

### 2 Turning in your assignment

Attach your program file `getbits.c` into the Lab 3 assignment in UNM Learn.

### 3 Grading Rubric (total of 20 points)

- [-2 points]: The program does not start with a comment stating the students first and last name and/or the source file is not named correctly.
- [-2 points]: Program compiles with warnings on `moons.cs.unm.edu` machine using `/usr/bin/gcc` with the **-Wall -ansi -pedantic** options
- [4 points]: Code follows the CS-241 Coding Standard
- [16 points]: Passes 16 unknown test cases. For each error case, print the appropriate error message. For each valid test case, print a record of the form:

```
getbits(x=127, p=3, n=4) = 15
```

As before, your program's output will be compared to the expected output using the `diff` utility. Make sure your output matches exactly. Punctuation, capitalization, and whitespace all matter here!