

## Project 12, Program Design

3. (Extra Credit: 20 points) Modify the stack program (Download on Canvas>Files>Week 15>Examples and Exercises>stack) to add a `roll` function.

1) This extra credit problem assumes that you have completed the second in-class exercise of Week15\_ch17\_3\_19, i.e., the `pop` and `make_empty` functions for the stack program implemented using a linked list.

2) Add a `roll` function to `stack.c`. This function will have a parameter of type `struct node*` and a return type `struct node *`. When called, it rolls the top three items on the stack. For example, if the stack has 5 elements from top to bottom: 8, 3, 9, 4, 7. After calling the `roll` function, the stack will be 9, 8, 3, 4, 7. You can assume that the stack has three items or more when it calls the `roll` function. The function returns the head of the linked list.

3) To test the `roll` function: in the main function of `stack_client.c`, after all the elements are pushed in `stack1` and `print_stack` function was called, call the `roll` function on `stack1`. Then call `print_stack` again to display `stack1` after rolling.

Before you submit:

1. Compile with `makefile`. Be sure it compiles on *circe* with no errors and no warnings.
2. Your source files should be read & write protected. Change file permission on Unix using `chmod 600`.
3. Submit all the source files, header files, and `makefile` in a separate zipped folder under project 12 submission.