

Lab 2

Simple Stack

Data Structure and Methods for Stack:

- Provide an initializer for the stack class that will allocate an array of N empty slots.
- A routine populate (push an element) the stack.
- A routine to delete (pop an element).
- A routine to query (peek) the top element of the stack.
- A routine to query the top slot number of the stack.
- A routine to query the current size of the stack.
- A routine to query the maximum size of the stack.
- A routine to show the contents of the entire data structure.
- A routine that tests for full and empty conditons.

Testing via the Main user interface:

Write program(s) that tests each of the above methods used to manipulate the data structure:

- Construction.
- Populate the stack structure one element at a time until full, then attempt to add another.
- Pop each element off of the stack until empty, then attempt remove another element.
- Show all the elements with their respective slot numbers.
- Query the contents of the TOP slot.
- Query the slot number of the current TOP.
- Query the current stack size.
- Query the maximum stack size.
- Exit

When displaying the full structure use a loop that shows a single slot and its content one at a time.

Your program should employ a menu that repeatedly prompts the user to perform the above functions.

Show all inputs, outputs, explanation of return codes, and informational messages.