

# CS19101 PDS laboratory

## Assignment 10

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Write your program in a file named `A10_1.<machine number>.<Roll no.>.c` (without the '<' and '>'). Put the file into a compressed directory named `A10.<machine number>.<Roll no.>.zip` and submit it.

**Example:** If your roll number is 19DEP99999 and your machine number is 99, then the names of your file should be `A10_1_99_19DEP99999.c`.

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1. Create an integer stack using linked-list. Write functions **Push** and **Pop** with the appropriate prototype and expected functionality. The **Push** function should take in an integer and a pointer to the top node of the queue, create a node (by dynamic memory allocation), put the integer inside it and push it onto the stack. The return type of **Push** should be void. The return type of the function **Pop** should be an integer, and the function should return the integer at the top of the stack. In `main()`, create an empty stack. Then print:

Enter 1 Push,

Enter 2 to Pop,

Enter 3 to Exit,

If the user chooses 1, ask the user for an integer and push it onto the stack, and print

Enter 1 Push,

Enter 2 to Pop,

Enter 3 to Exit,

If the user chooses 2, pop the stack, or return -1 and print "Stack empty" if the stack is empty. Print

Enter 1 Push,

Enter 2 to Pop,

Enter 3 to Exit,

If the user chooses 3, print all the elements of the stack in sequence starting with the top element by repeatedly calling the Pop function, as a comma-separated sequence. Then exit the program.

Use only functions **Push** and **Pop** to access the stack.

[10 marks]

2. In this part do not use arrays. Do not use dynamic memory allocation except inside the **Push** function. Ask the user for an integer. After she enters an integer ask her to indicate if she wants to enter more integers by pressing 1 or 0. Let her enter integers as long as she wants. After that print the sequence of integers entered in reverse, as a comma-separated sequence. Do it using the stack functions of part 1. Access the stack only through functions **Push** and **Pop**.

[10 marks]