Assignment 2-DSA

Stack and Queue, Deadline: 31-07 EOD
MM:100(20 x 5) marks
Bonus: 20 marks

Instructions:

1. Plagiarism is not allowed. Also copying code from the internet or any other source is not allowed. If found, you will be given zero marks.
2. Submit all code in a single zip file with your roll number as file name. Example: MP19CS001.zip
3. Inside the zip, every file should be named as illustrated below:
    a. <roll_number>_<question_number>.<file_type>
    b. Example: If your roll number is MP19CS001 and the solution is for question 1, then file name will be : MP19CS001_Q1.py
4. Include a readme file.
5. You are only allowed to code in C, C++, and python.

Questions:

1. WAP to implement stack using a single queue and show all the basic operations.
2. WAP to implement an expression using stack. For example:
    a. Input: str = “1 3 3 * + 9 -“
    b. Output: 1
    c. Explanation: If the expression is converted into an infix expression, it will be 1 + (3 * 3) – 9 = 10 – 9 = 1
3. Implement stack using doubly linked list and show all the operations of stack.
4. Implement a queue using a circular linked list and show all the operations of the queue.

5. WAP to implement a queue using stacks and show all the basic operations.
6. (Bonus Question) WAP to implement a special kind of stack that supports finding minimum element in the stack along with the basic operations of the stack. Note that all the stack operations must take O(1) time and space complexity.