

Module 4: Stack & Queue

[weightage 20% out of 60 = 12 Marks]

Stack

1. What do you mean by the LIFO structure? Support your answer with real-life examples.
2. Explain what is static & Dynamic Implementation of Stack
3. What are the basic operations that can be performed on the stack?
4. Write a python function named `is_empty()` to check a stack is an empty.

All functions should be implemented using linked list Data Structure

5. Write a python function to Push an element into the stack.
6. Write a python function to Pop an element from the stack.
7. Write a python function to Display the stack elements.
8. Write a python function to Search an element from the stack.
9. Write a python function to Sort elements from the stack.
10. Convert the following Infix expression to Postfix format in proper tabular representation
 - 1) $A+B*C/D$
 - 2) $A+B+C+D$
 - 3) $A*(B+C*D)-E/F*(G+D)$
 - 4) $(A+B)*C$
 - 5) $(A+B)*(C+D)$
 - 6) $A+(B-C*D)^E$
 - 7) $(A+B/C*(D+C))-F$

13. Convert infix to prefix form

$(a / b + c) - (d + e * f)$

$(A+B/C*(D+C))-F$

$(A+B^C)*D+E^5$

11. Evaluate following postfix expression using stack step wise

1) "234*+" 2) "2 3 1 * + 9 -"

Queue

1. Explain Characteristics of Queue data structure
2. Explain the major functions of Queue
3. Write a python function definition for `EnQueue()` using Linked List
4. Write a python function definition for `DeQueue()` using Linked List
5. What is priority Queue and Circular Queue?