Theory Assignment 02

1. Between array based stack implementation and linked-list based stack implementation which is better when I need random access in the stack? Explain the reasons. **15**

2. What is the time complexity of push, pop and top operations in a stack? **10**

3. Suppose you need a stack of characters, a stack of integers and a stack of real numbers. How will you implement this scenario using a single stack? **15**

4. What is a postfix expression and why do we need it? How is it evaluated using a stack for the below example? You need to show all the steps. **15**

   abc*+de*+

5. Simulate balanced parentheses check using stack for the below example. You need to show all the steps. **15**

   (([ ][ ]{ ( ) }))

6. Sort a stack of integers using another stack for the below example. You need to show all the steps. **15**

   Stack -> [3,4,6,2,5]

7. Convert the infix expression to postfix expression using a stack. You need to show all the steps. **15**

   a+b*c+d*e