Question-9 (20 points)

- Which type of queue can be used as a queue or a stack?
  Double-ended queue
- Which construct is used by regular queues
  first-in, first-out
- Which method retrieves and removes the first element from a deque?
  removeFirst()
- Consider the following operation performed on a stack of size 5. Push(1), Pop(), Push(2), Push(3), Pop(), Push(4), Pop(), Pop(), Push(5). After the completion of all operation, the number of elements present on stack are
  1
- What method is used to add an element to a Queue?
  enqueue()
- Conversion of infix arithmetic expression to postfix expression uses:
  Queue
- The following circular queue can accommodate a maximum six elements with the following data

front = 2 rear = 4

		A	B	C	

What will happen after inserting D and E operations take place?

Answer: front = 2, rear = 0

E		**A**	**B**	**C**	**D**

- Explain the functionality of below recursive functions.

```
def fun1(n):
i = 0
if (n > 1):
fun1(n - 1)
for i in range(n):
print(" * ",end="")


# Driver code
    a = 3
    fun1(a)
```

Answer: ******

- Predict the output of the following program:

```
def fun(x):
if(x > 0):
x -= 1
fun(x)
print(x , end=" ")
x -= 1
fun(x)

# Driver code
fun(4)
```

Answer: 0 1 2 0 3 0 1

- Predict the output of the following program:

```
def fun( a, n):
if n == 1:
return a[0]
else:
x = fun(a, n - 1)
if x > a[n - 1]:
return x
else:
return a[n - 1]

# Driver code
arr = [12, 10, 30, 50, 100]
print(fun(arr, 5))
```

Answer: 100

- Assume the structure of a Linked List node is as follows

```
class Node:
def __init__(self, data):
self.data = data
self.next = None
```

What does the following function do for a given Linked List?

```
def fun1(head):
if head == None:
return
fun1(head.next)
print(head.data, end = " ")
```

Assume this the current linked list as follows:

1→2→3→4→5

Answer: 5 4 3 2 1