

Software Development Fundamentals-II (15B11CI211)

Tutorial-6 [CO2]

Topic: Queue

1. The five items: A, B, C, D, and E are pushed in a stack, one after other starting from A. The stack is popped four items and each element is inserted in a queue. The two elements are deleted from the queue and pushed back on the stack. Now one item is popped from the stack. The popped item is?
2. How many stacks are needed to implement a queue? Consider the situation where no other data structure like arrays, linked list is available to you.
3. How many queues are needed to implement a stack? Consider the situation where no other data structure like arrays, linked list is available to you.
4. WAP to reverse the first K elements of a Queue
Example: Input: Q = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100] and k = 5
Output: Q = [50, 40, 30, 20, 10, 60, 70, 80, 90, 100]
5. WAP to reverse a queue using another Queue.
Example: Input: { 1, 2, 3, 4, 5} Output: 5 4 3 2 1
6. WAP to interleave the first half of the queue with second half.
Examples: Input: 1 2 3 4 Output: 1 3 2 4
Input: 11 12 13 14 15 16 17 18 19 20 Output: 11 16 12 17 13 18 14 19 15 20
7. Suppose there is a circle. There are n petrol pumps on that circle. You are given two sets of data;
 - a. The amount of petrol that every petrol pump has.
 - b. Distance from that petrol pump to the next petrol pump.Calculate the first point from where a truck will be able to complete the circle (The truck will stop at each petrol pump and it has infinite capacity). Assume for 1-litre petrol, the truck can go 1 unit of distance.
Example, let there be 4 petrol pumps with amount of petrol and distance to next petrol pump value pairs as {4, 8}, {6, 5}, {7, 3} and {4, 5}.
Output: The first point from where the truck can make a circular tour is 2nd petrol pump. Therefore, answer should be “start = 1” (index of 2nd petrol pump).