



Question - 1

SCORE: 20 points

Stack, Queue, Bag, ArrayList

A data buffer is a region to temporarily store data while it is being moved from one place to another. Typically, the data is stored in a buffer as it is retrieved from an input device or just before it is sent to an output device. which of the following data structure is better in this situation?

- ☐ Stack
- ☒ Queue
- ☐ Bag
- ☐ ArrayList

Question - 2

SCORE: 20 points

Stack and Queue

Suppose a,b,c,d,e,f is pushed to a stack in order. You can pop at any time (e.g. Push(a), pop (), push(b)). The result of pop will be stored in a queue(e.g. enqueue(pop())). Which of the following sequence is NOT the queue after the stack is empty(left is the first element of the queue)?

- ☐ f e d c b a
- ☐ b c a f e d
- ☐ d c e f b a
- ☒ c a b d e f

Question - 3

SCORE: 60 points

Queue

There is a deck of N cards on the desk and you are going to play a game: take out the card on the top and record it, then put the next card to the bottom of the deck. repeat this process until the deck is empty. The result is the record data.

Please implement a queue to simulate this process, the input will contain the maxsize of the queue and the order of the deck, the size of the deck is no larger than the maxsize of the queue. you should return an array which contains the record of this game.

Sample:

inut: 10, {1,2,3,4,5}

Process: {1,2,3,4,5} -> {3,4,5,2} -> {5,2,4} -> {4,2} -> {2} Queue

{1} -> {1,3} -> {1,3,5} -> {1,3,5,4} -> {1,3,5,4,2} ResultArray

output: {1,3,5,4,2}

