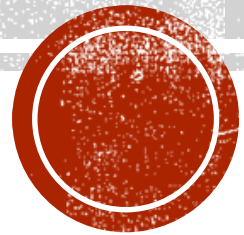
QUEUE AND STACK



Sutherland Programming Club

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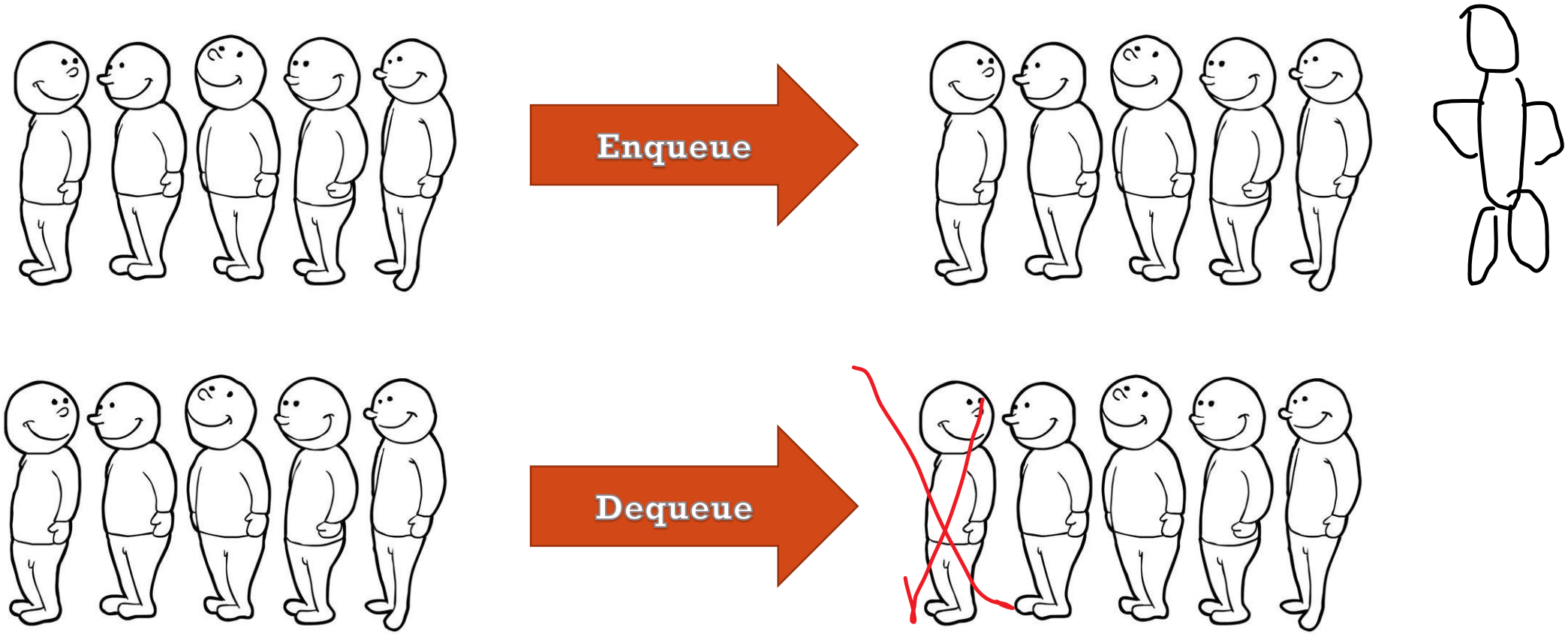
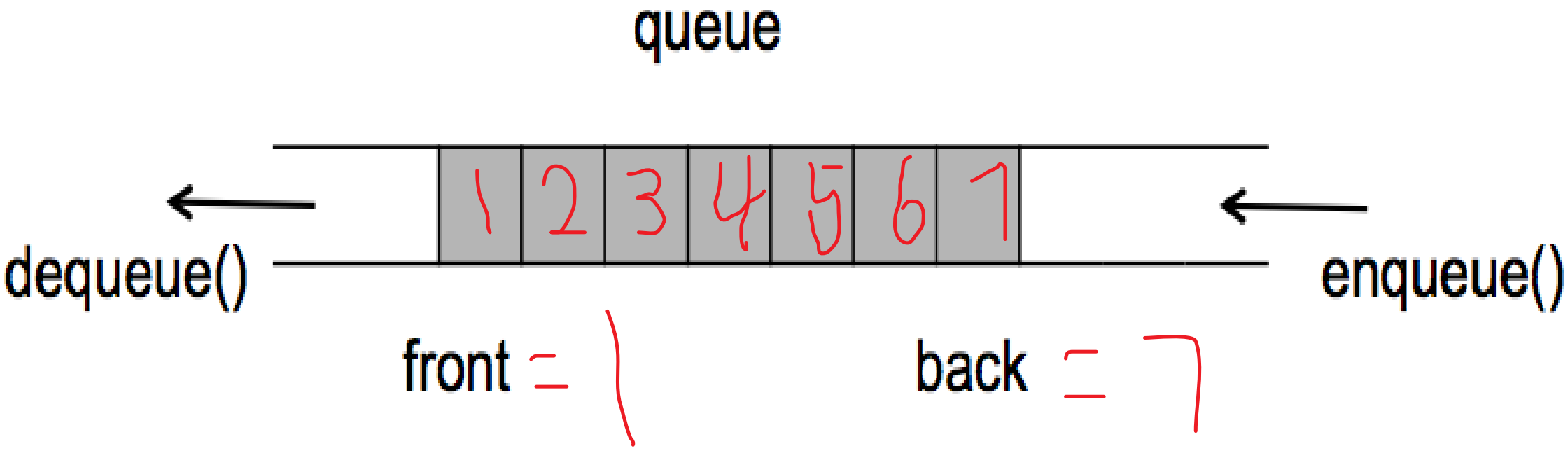
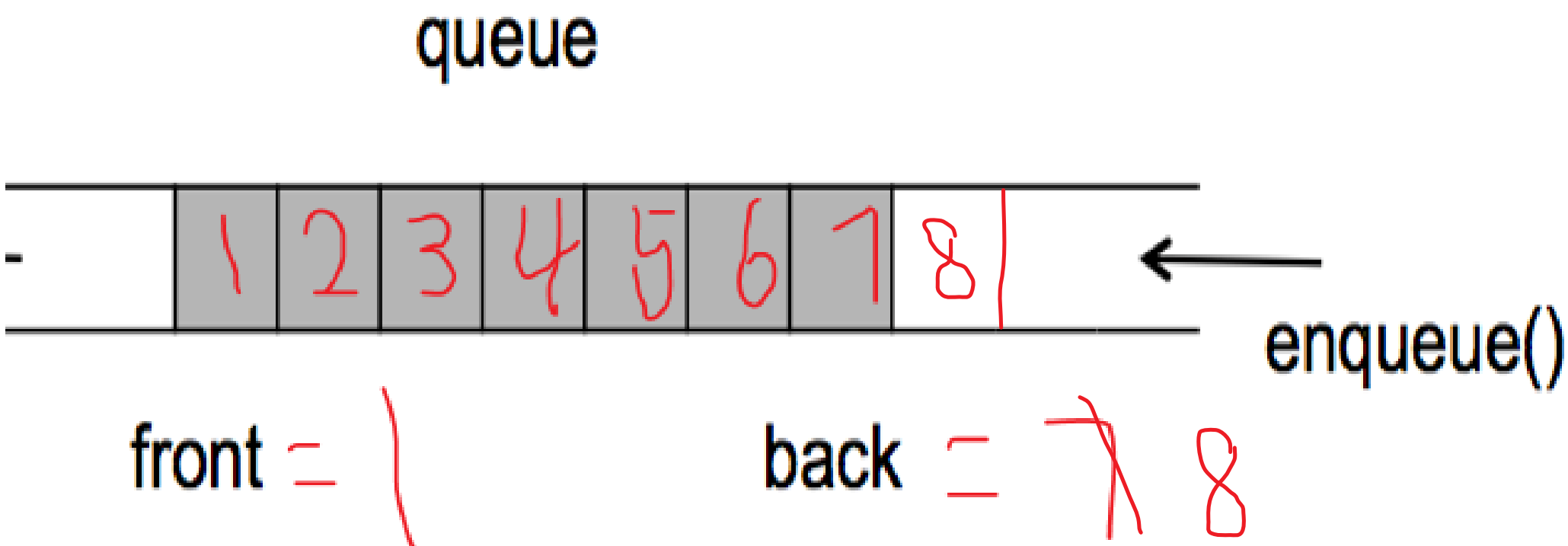
REVIEW: WHAT'S A QUEUE?



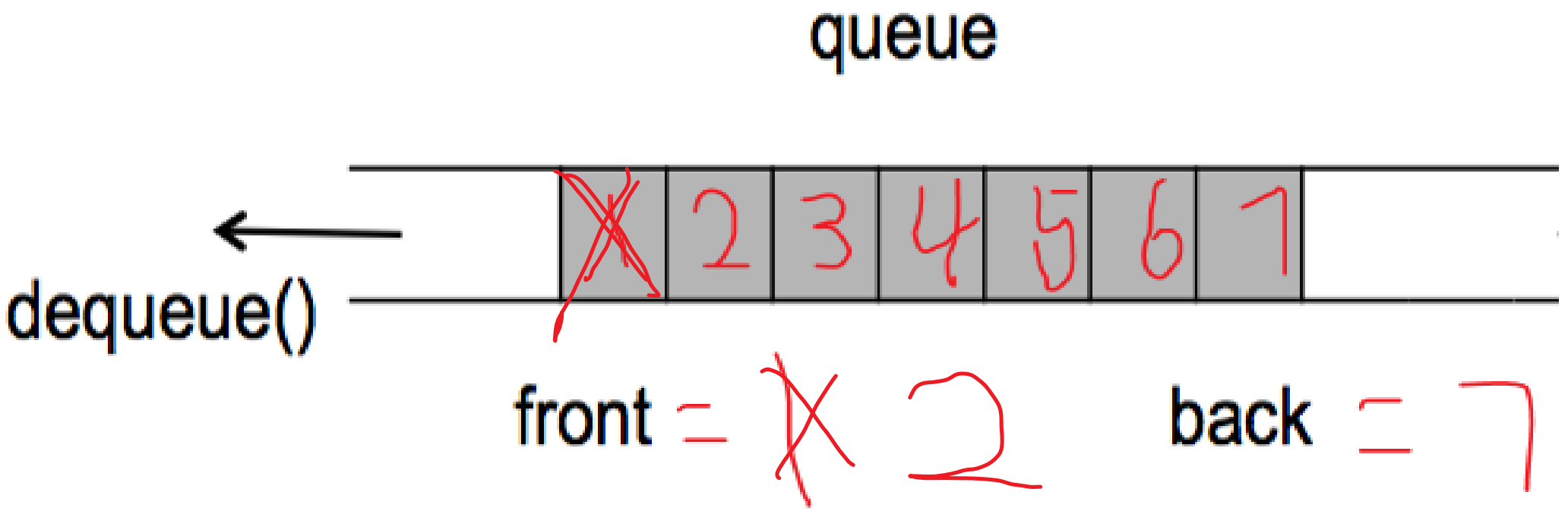
QUEUE



QUEUE



QUEUE



QUEUE

- We can use an array to save a queue;
- What are the variables we need to save?
- Front, Back, Values to save in the queue.
- Use C++ struct to make one node in the queue

DEFINE A QUEUE

- int q[size];
- int front, back;

QUEUEEZ - EASY QUEUE

SPOJ: QUEUEEZ - EASY QUEUE

- QUEUEEZ - Easy Queue
- **Problem Description:**
- You have an empty queue and your boss has some queries. These queries are queue's basic operations such as Enqueue, Dequeue, and printing some values. Now, your boss asks you to process his queries.
- **Input**
- First line contains an integer T.
- Each of the T next lines contains a query based on these formats.
- 1 n : Enqueue n to the queue.
- 2 : Dequeue an element from the queue. If the queue is empty, do nothing.
- 3 : Print the first queue's element's value (see Output).
- **Output**
- For each query 3, print the first queue's element's value. If the queue is empty, print 'Empty!' without quotes.

QUEUEEZ - EASY QUEUE

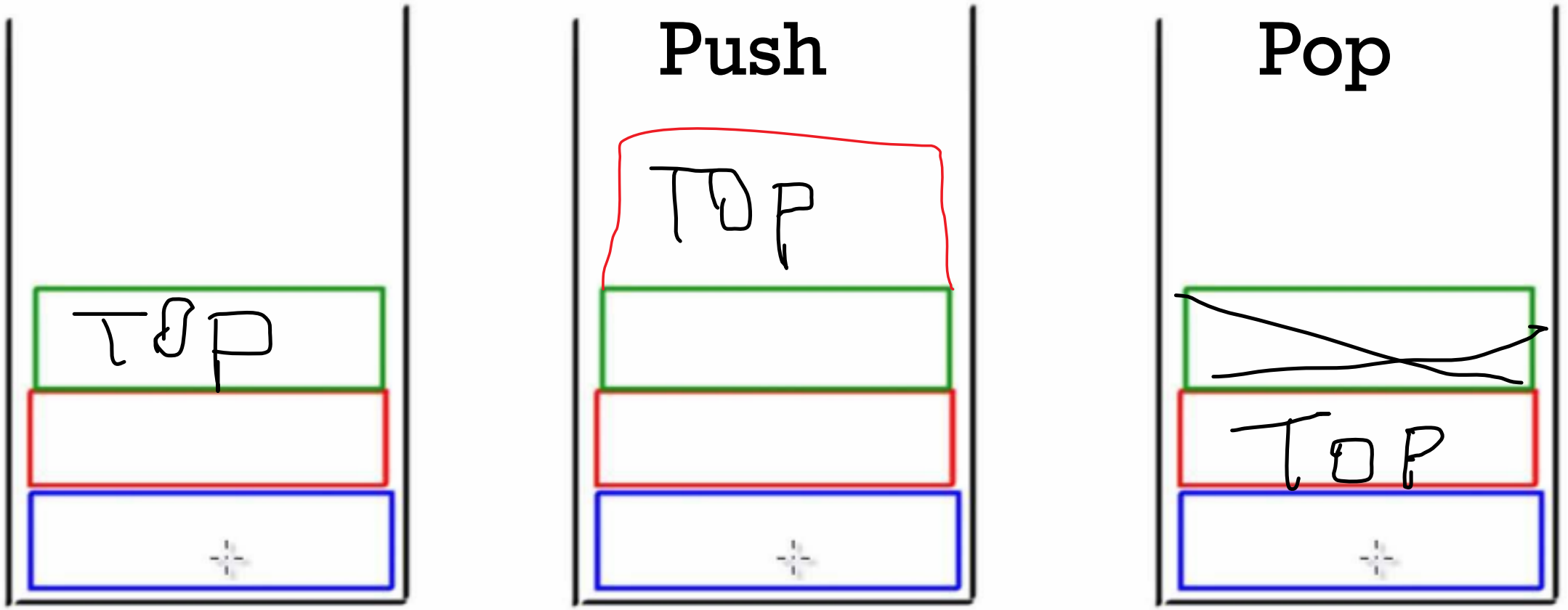
SPOJ: QUEUEEZ - EASY QUEUE

Example

```
Input:
6
1 5
1 6
2
3
2
3

Output:
6
Empty!
```

STACK



STACK

- Similar to queue, use array to save the elements
- Only need to save the “Top”

DEFINE A STACK

- int st[size];
- int top;

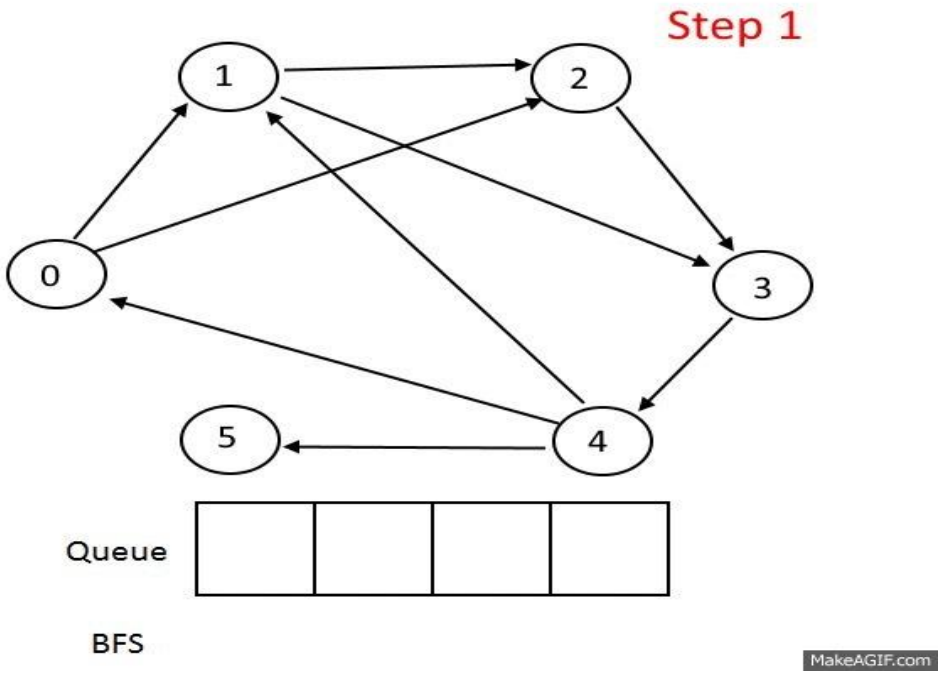
STPAR - STREET PARADE

SPOJ - STPAR - STREET PARADE

- Build a stack to save the cars leave the side street.
- Save the value of the maximum number in the ordered sequence.(ex. 1 2 3 4, then we save 4)
- Check if the top value in the stack can be added back.
- Use loop to repeat all the cars.

MORE APPLICATIONS - QUEUE

- Queue: breadth first search (BFS) to save the nodes.



MORE APPLICATIONS - STACK

- Reverse a word
- On some optimization algorithms.