```cpp
template<typename T>
class drow_queue_v3
{
public:
    drow_queue_v3 (size_t capacity_)
        : capacity (capacity_)
    {}

    bool try_push (const T&);
    bool try_pop (T&);

private:
    size_t capacity = 0;
    std::vector<T> data { std::vector<T> (capacity) };
    std::atomic<size_t> head { 0 }, tail { 0 };

    size_t next_index (size_t current) const
    {
        return (current + 1) % capacity;
    }
};
```

```
bool try_push (const T& v)
{
    size_t current_tail = tail.load(std::memory_order_relaxed);
    size_t next_tail = next_index (current_tail);

    if (next_tail == head.load (std::memory_order_acquire))
        return false;

    data[current_tail] = v;
    tail.store (next_tail, std::memory_order_release);
    return true;
}
```

```
bool try_pop (T& v)
{
    size_t current_head = head.load(std::memory_order_relaxed);

    if (current_head == tail.load(std::memory_order_acquire))
        return false;

    v = data[current_head];
    head.store (next_index(current_head), std::memory_order_release);
    return true;
}
```

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private:
    size_t capacity = 0;
    std::vector<T> data { std::vector<T> (capacity) };
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    size_t next_index (size_t current) const
    {
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```cpp
bool try_push (const T& v)
{
    size_t current_tail = tail.load(std::memory_order_relaxed);
    size_t next_tail = next_index (current_tail);

    if (next_tail == head.load (std::memory_order_acquire))
        return false;

    data[current_tail] = v;
    tail.store (next_tail, std::memory_order_release);
    return true;
}
```

```cpp
bool try_pop (T& v)
{
    size_t current_head = head.load(std::memory_order_relaxed);

    if (current_head == tail.load(std::memory_order_acquire))
        return false;

    v = data[current_head];
    head.store (next_index(current_head), std::memory_order_release);
    return true;
}
```

5.00E+08
4.00E+08
3.00E+08
2.00E+08
1.00E+08
0.00E+00
mutex_queue
realtime_mutex_queue
drow_spsc_v1
drow_spsc_v2
drow_spsc_v3