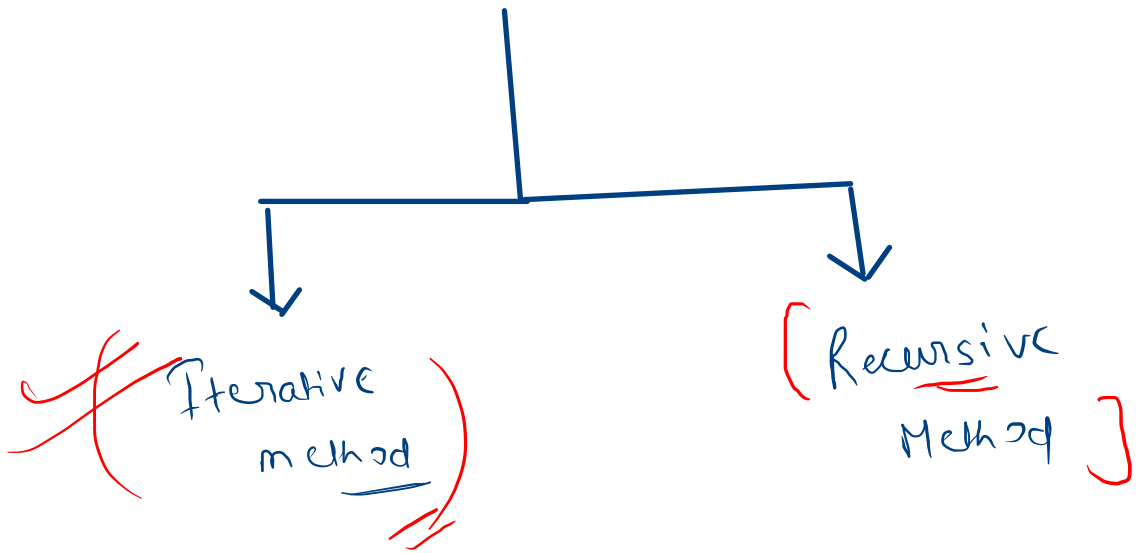
Reversing a Queue

q = { 15, 5, 20, 2 }

Reverse: q = { 2, 20, 5, 15 }



Method 1

(Iterative)

q = { 15, 5, 20, 2 }

Step 1:

St: 2, 20, 5, 15

O(N)

Step 2: q = { 2, 20, 5, 15 }

(ok)

Space: O(N)

Time: O(N)

```
void reverse ( queue<int> q)
{
    stack<int> st;
    while( !q.empty() )
    {
        st.push( q.front() );
        q.pop()
    }
    while( !st.empty() )
    {
        q.push( st.top() )
        st.pop()
    }
```

Method 2

Recursive

q = {15, 5, 20, 2}

2

Step 1: {15, 5, 20, 2}

{5, 20, 2}

reverse

Step 2: {2, 20, 5}

Step 3: {2, 20, 5, 15}

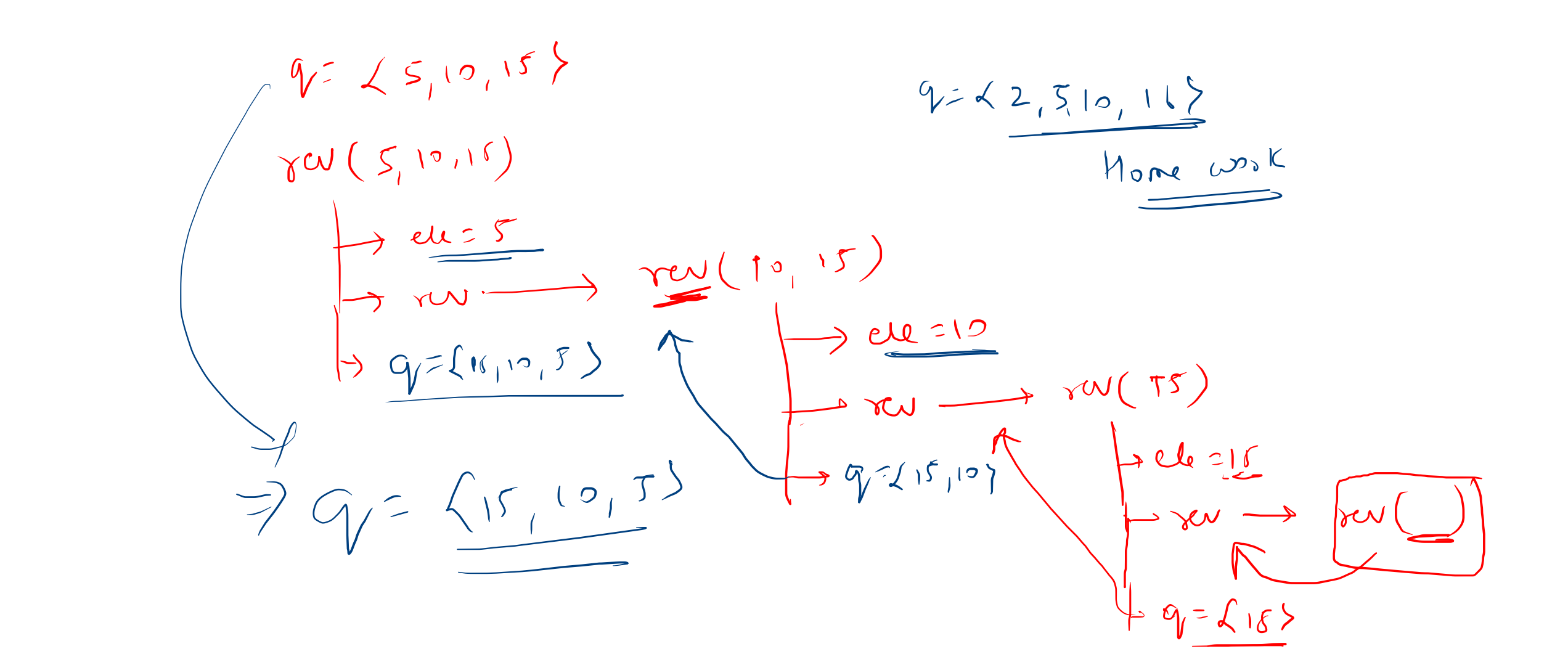
reverse

```
Void Reverse (queue<int> q)
{
    if (q.empty())
        return;

    int de = q.front();
    q.pop();
    Reverse(q);
    q.push(de);
}
```

Step 1:

recursive Step


q = < 5, 10, 15 >
rev(5, 10, 15)
ele = 5
rev
q = { 10, 10, 5 }
rev(10, 15)
ele = 10
rev
q = < 15, 10 >
rev(15)
ele = 15
rev
rev
q = < 15 >
⇒ q = { 15, 10, 5 }
q = < 2, 5, 10, 16 >
Home work