

C++ Programming

STL Practice #1

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Teaching, Training and Coaching since more than a decade!

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Practice: Sum of last K numbers (stream)

```
struct last_k_numbers_sum_stream {
    int k;

    last_k_numbers_sum_stream(int _k) {
        k = _k;
    }

    int next(int new_num) {
        // Compute and return sum of last K numbers sent so far
        return 0;
    }
};

int main() {
    last_k_numbers_sum_stream processor(4);

    int num;
    while(cin>>num)
        cout<<processor.next(num)<<"\n";

    return 0;
}
```

- This struct will receive stream of numbers, each time return sum of last k numbers
- E.g. if k = 4
- Stream: 1 2 3 4 5 6 7 8 9
- Returns: 1, 1+2, 1+2+3, 1+2+3+4, 2+3+4+5, 3+4+5+6, ..
 - That is for 6 \Rightarrow 18
- Don't store more than $\sim K$ numbers

Practice: Sum of last K numbers (stream)

```
int sum = 0;
queue<int> q;

last_k_numbers_sum_stream(int _k) {
    k = _k;

    int next(int new_num) {
        // Compute and return sum of last K
        q.push(new_num);
        sum += new_num;

        if((int)q.size() > k) {
            sum -= q.front();
            q.pop();
        }

        return sum;
    }
}
```

- Use queue to keep only the last k numbers
- Adding/removing in q, adjust sum variable
- This way we only keep ~k values

“Acquire knowledge and impart it to the people.”

“Seek knowledge from the Cradle to the Grave.”