**Link=**[**https://www.youtube.com/watch?v=ZDPfrODtbvM&list=PLoa\_roVVsxA1CJu4DsOljb9d7FJkMCynM&index=12**](https://www.youtube.com/watch?v=ZDPfrODtbvM&list=PLoa_roVVsxA1CJu4DsOljb9d7FJkMCynM&index=12)

**[L1]Class - 12 ( Almost everything about Queue, Deque & Practice problems ) [Bangla]**

Class Video link :

[https://youtu.be/ZDPfrODtbvM](https://youtu.be/ZDPfrODtbvM?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

Discussed topics :

1) STL Queue

2) Queue Push & Pop ( Geeks for Geeks )

Link : [https://practice.geeksforgeeks.org/problems/queue-designer/1](https://practice.geeksforgeeks.org/problems/queue-designer/1?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

My Code : [https://paste.ubuntu.com/p/nGTJvMHCHX/](https://paste.ubuntu.com/p/nGTJvMHCHX/?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

3) Reverse First K elements of Queue ( Geeks for Geeks )

Link : [https://practice.geeksforgeeks.org/problems/reverse-first-k-elements-of-queue/1](https://practice.geeksforgeeks.org/problems/reverse-first-k-elements-of-queue/1?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

My Code :[https://paste.ubuntu.com/p/SvV5RzQrFC/](https://l.facebook.com/l.php?u=https%3A%2F%2Fpaste.ubuntu.com%2Fp%2FSvV5RzQrFC%2F%3Ffbclid%3DIwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw&h=AT0PZRwbV0ndmXKRiad62BNxCvVL8FWW8bgfXjCUPfWuLFgL93qjz4QdGf0H4965kFVUUVPgIZ_Oz9U1xVHc6JMukv1ZTdBuNvZPG0u9B0OrCC5O8yzwL-qsBidE&__tn__=-UK-R&c%5B0%5D=AT1VvylOAQfyXaiIBhVYMtvmZSW4znX5pg4woLwY-0sVbtfXdpBzrbG6kkNcIsjtFSc4NrE4T_pyo09GiDk2E3t5T-wJaWA4F7xAeGi505FI4rGG7rQb-vLxT-xVsOgt1OGtWMa5jW0cVhWFgPWEAIUsxef5mT5yCs_Wu8U-XrFHjoDY7CuUohL-NQ)

4) Queue Reversal ( Geeks for Geeks )

Link :[https://practice.geeksforgeeks.org/problems/queue-reversal/1](https://practice.geeksforgeeks.org/problems/queue-reversal/1?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

My Code : [https://paste.ubuntu.com/p/SfJcrbvwqN/](https://l.facebook.com/l.php?u=https%3A%2F%2Fpaste.ubuntu.com%2Fp%2FSfJcrbvwqN%2F%3Ffbclid%3DIwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw&h=AT0TH__L_lEbNzwUOPGe1U0mt2TXnfKYqIlu3-G5ygbz8a9Q4ZKh0PtzXCBxiLtbSzBNWWRnunuaY0DdyS45AmxbPbRPx3glqQS0nrAUGEiJkoI5O7zfU0Ysizf6&__tn__=-UK-R&c%5B0%5D=AT1VvylOAQfyXaiIBhVYMtvmZSW4znX5pg4woLwY-0sVbtfXdpBzrbG6kkNcIsjtFSc4NrE4T_pyo09GiDk2E3t5T-wJaWA4F7xAeGi505FI4rGG7rQb-vLxT-xVsOgt1OGtWMa5jW0cVhWFgPWEAIUsxef5mT5yCs_Wu8U-XrFHjoDY7CuUohL-NQ)

5 ) Deque

6) Deque Implementations ( Geeks for Geeks )

Link : [https://practice.geeksforgeeks.org/problems/deque-implementations/1/](https://practice.geeksforgeeks.org/problems/deque-implementations/1/?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

My Code : [https://paste.ubuntu.com/p/kDmTzh7HTN/](https://paste.ubuntu.com/p/kDmTzh7HTN/?fbclid=IwAR3_AVk3GIc7_ThVoeZVeIHHlPuFIrb_HTpaFD_WHsJbrQy4rKmhmr9BfFw)

Class Tasks :

All the problems discussed in class are class tasks.

**Queue**

***#include <bits/stdc++.h>***

**using namespace std;**

***#define endl '\n'***

***#define optimeze() ios\_base::sync\_with\_stdio(0);cin.tie(0);cout.tie(0);***

**int main()**

**{**

**optimeze();**

**queue<int>q;**

**q.push(1);**

**q.push(2);**

**q.push(3);**

**q.push(4);**

**q.push(5);**

**cout<<q.front()<<endl;//1**

**q.pop();**

**cout<<q.front()<<endl<<endl;//2**

**cout<<"Queue size:"<<q.size()<<endl<<endl;//4**

**cout<<"Queue all element print:"<<endl;**

**while (!q.empty()){**

**cout<<q.front()<<endl;**

**q.pop();**

**}**

**cout<<endl<<endl;**

**/\***

**2**

**3**

**4**

**5**

**\*/**

**return 0;**

**}**

**"C:\Users\Md.Hamid Hosen\CLionProjects\untitled\cmake-build-debug\untitled.exe"**

**1**

**2**

**Queue size:4**

**Queue all element print:**

**2**

**3**

**4**

**5**

**Process finished with exit code 0**

**problem link=**[**https://practice.geeksforgeeks.org/problems/queue-designer/1**](https://practice.geeksforgeeks.org/problems/queue-designer/1)

**code link=**[**https://paste.ubuntu.com/p/nGTJvMHCHX/**](https://paste.ubuntu.com/p/nGTJvMHCHX/)

**// { Driver Code Starts**

**//Initial Template for C++**

**//Initial Template for C++**

***#include <bits/stdc++.h>***

**using namespace std;**

**queue<int>\_push(int arr[],int n);**

**void \_pop(queue<int>s);**

**// } Driver Code Ends**

**//User function Template for C++**

**//User function Template for C++**

**queue<int>\_push(int arr[],int n)**

**{**

**//return a queue with all elements of arr inserted in it**

**queue<int>q;**

**for(int i=0;i<n;i++){**

**q.push(arr[i]);**

**}**

**return q;**

**}**

**void \_pop(queue<int>s)**

**{**

**//print front and dequeue for each element until it becomes empty**

**while(!s.empty()){**

**cout<<s.front()<<" ";**

**s.pop();**

**}**

**}**

**// { Driver Code Starts.**

**int main() {**

**int t;**

**cin>>t;**

**while(t--)**

**{**

**int n;**

**cin>>n;**

**int arr[n];**

**for(int i=0;i<n;i++)**

**cin>>arr[i];**

**queue<int>mys=\_push(arr,n);**

**\_pop(mys);**

**cout<<endl;**

**}**

**return 0;**

**}**

**// } Driver Code Ends**

**"C:\Users\Md.Hamid Hosen\CLionProjects\untitled\cmake-build-debug\untitled.exe"**

**2**

**5**

**1 2 3 4 5**

**1 2 3 4 5**

**6**

**2 4 6 7 8 9**

**2 4 6 7 8 9**

**Process finished with exit code 0**

**problem link=**[**https://practice.geeksforgeeks.org/problems/reverse-first-k-elements-of-queue/1**](https://practice.geeksforgeeks.org/problems/reverse-first-k-elements-of-queue/1)

**code link=**[**https://paste.ubuntu.com/p/SvV5RzQrFC/**](https://paste.ubuntu.com/p/SvV5RzQrFC/)

**// { Driver Code Starts**

**//Initial Template for C++**

***#include<bits/stdc++.h>***

**using namespace std;**

***#define ll long long***

**queue<ll> modifyQueue(queue<ll> q, int k);**

**int main(){**

**ll t;**

**cin>>t;**

**while(t-->0){**

**ll n,k;**

**cin>>n>>k;**

**queue<ll> q;**

**while(n-->0){**

**ll a;**

**cin>>a;**

**q.push(a);**

**}**

**queue<ll> ans=modifyQueue(q,k);**

**while(!ans.empty()){**

**int a=ans.front();**

**ans.pop();**

**cout<<a<<" ";**

**}**

**cout<<endl;**

**}**

**}// } Driver Code Ends**

**//User function Template for C++**

**queue<ll> modifyQueue(queue<ll> q, int k)**

**{**

**//add code here.**

**stack<ll> st;**

**queue<ll> r;**

**while (k--){**

**st.push(q.front());**

**q.pop();**

**}**

**while (!st.empty()){**

**r.push(st.top());**

**st.pop();**

**}**

**while (!q.empty()){**

**r.push(q.front());**

**q.pop();**

**}**

**return r;**

**}**

**5 3**

**1 2 3 4 5**

**3 2 1 4 5**

**problem link=**[**https://practice.geeksforgeeks.org/problems/queue-reversal/1**](https://practice.geeksforgeeks.org/problems/queue-reversal/1)

**code link=**[**https://paste.ubuntu.com/p/SfJcrbvwqN/**](https://paste.ubuntu.com/p/SfJcrbvwqN/)

**// { Driver Code Starts**

**//Initial Template for C++**

***#include<bits/stdc++.h>***

**using namespace std;**

**queue<long long int> rev(queue<long long int> q);**

**int main()**

**{**

**long long int test;**

**cin>>test;**

**while(test--)**

**{**

**queue<long long int> q;**

**long long int n, var;**

**cin>>n;**

**while(n--)**

**{**

**cin>>var;**

**q.push(var);**

**}**

**queue<long long int> a=rev(q);**

**while(!a.empty())**

**{**

**cout<<a.front()<<" ";**

**a.pop();**

**}**

**cout<<endl;**

**}**

**}// } Driver Code Ends**

**//function Template for C++**

**queue<long long int> rev(queue<long long int> q)**

**{**

**// add code here.**

**stack<long long >st;**

**queue<long long >z;**

**while (!q.empty()){**

**st.push(q.front());**

**q.pop();**

**}**

**while (!st.empty()){**

**z.push(st.top());**

**st.pop();**

**}**

**return z;**

**}**

**5**

**1 2 3 4 5**

**5 4 3 2 1**

**Deque**

***#include<bits/stdc++.h>***

**using namespace std;**

***#define hamid() ios\_base::sync\_with\_stdio(0);cin.tie(0);cout.tie(0);***

***#define endl '\n';***

**int main()**

**{**

**hamid();**

**deque<int>d;**

**d.push\_front(1);**

**d.push\_front(2);**

**d.push\_back(3);**

**d.push\_front(4);**

**d.push\_back(5);**

**cout<<d.front()<<" "<<d.back()<<endl;//4 5**

**cout<<"pop front:";**

**d.pop\_front();**

**for(auto u:d){**

**cout<<d.front()<<" ";**

**d.pop\_front();**

**}//2 1 3 5**

**cout<<endl;**

**cout<<endl;**

**d.push\_front(1);**

**d.push\_front(2);**

**d.push\_back(3);**

**d.push\_front(4);**

**d.push\_back(5);**

**cout<<"pop back:";**

**d.pop\_back();**

**for(auto u:d){**

**cout<<d.back()<<" ";**

**d.pop\_back();**

**}//3 1 2 4**

**cout<<endl;**

**d.push\_front(1);**

**d.push\_front(2);**

**d.push\_front(3);**

**d.push\_back(4);**

**d.push\_back(5);**

**cout<<d.front()<<" "<<d.back()<<endl;//3 5**

**d.pop\_front();**

**cout<<d.front()<<" "<<d.back()<<endl;// 2 5**

**d.pop\_back();**

**cout<<d.front()<<" "<<d.back()<<endl;// 2 4**

**cout<<d.size()<<endl;//3**

**cout<<d.empty()<<endl;//0**

**cout<<d.size()<<endl;**

**return 0;**

**}**

**"C:\Users\Md.Hamid Hosen\CLionProjects\untitled2\cmake-build-debug\untitled2.exe"**

**4 5**

**pop front:2 1 3 5**

**pop back:3 1 2 4**

**3 5**

**2 5**

**2 4**

**3**

**0**

**3**

**Process finished with exit code 0**

**problem link=**[**https://practice.geeksforgeeks.org/problems/deque-implementations/1/**](https://practice.geeksforgeeks.org/problems/deque-implementations/1/)

**code link=**[**https://paste.ubuntu.com/p/kDmTzh7HTN/**](https://paste.ubuntu.com/p/kDmTzh7HTN/)

**//Initial Template for C++**

**// CPP code to implement dequeue functions**

***#include <bits/stdc++.h>***

**using namespace std;**

**// } Driver Code Ends**

**//User function Template for C++**

**/\* Function to push element to front**

**\* dq : dqueue in which element is to be pushed**

**\* x : element to be pushed**

**\*/**

**void push\_back\_pb(deque<int> &dq, int x){**

**dq.push\_back(x);**

**}**

**/\* Function to pop element from back**

**\* dq : dqueue From which element is to be popped**

**\*/**

**void pop\_back\_ppb(deque<int> &dq){**

**if(!dq.empty()) dq.pop\_back();**

**return;**

**}**

**/\* Function to return element from front**

**\* dq : dqueue from which element is to be returned**

**\*/**

**int front\_dq(deque<int> &dq){**

**if(!dq.empty()) return dq.front();**

**else return -1;**

**}**

**/\* Function to push element to front**

**\* dq : dqueue in which element is to be pushed**

**\* x : element to be pushed**

**\*/**

**void push\_front\_pf(deque<int> &dq, int x){**

**dq.push\_front(x);**

**}**

**// { Driver Code Starts.**

**// Driver code**

**int main() {**

**int testcase;**

**cin >> testcase;**

**// declaring deque**

**deque<int> dq;**

**while(testcase--){**

**int queries;**

**cin >> queries;**

**while(queries--){**

**string s;**

**cin >> s;**

**// if query is to push back**

**if(s == "pb"){**

**int x;**

**cin >> x;**

**push\_back\_pb(dq, x);**

**cout << dq.back() << endl;**

**}**

**// if query is to push front**

**if(s == "pf"){**

**int x;**

**cin >> x;**

**push\_front\_pf(dq, x);**

**cout << dq.front() << endl;**

**}**

**// if query is to pop back**

**if(s == "pp\_b"){**

**pop\_back\_ppb(dq);**

**cout << dq.size() << endl;**

**}**

**// if query is to return front**

**if(s == "f"){**

**int x = front\_dq(dq);**

**cout << x << endl;**

**}**

**}**

**dq.clear();**

**}**

**return 0;**

**} // } Driver Code Ends**

**For Input:**

**5**

**pf 5**

**pf 10**

**pb 6**

**f**

**pp\_b**

**your output is:**

**5**

**10**

**6**

**10**

**2**