**Implementation Of Queue Using Stack:**

Question: Implement a function to reverse the elements of a queue using a stack.

Solution:

// CPP program to reverse a Queue

#include <bits/stdc++.h>

using namespace std;

// Utility function to print the queue

void Print(queue<int>& Queue)

{

while (!Queue.empty()) {

cout << Queue.front() << " ";

Queue.pop();

}

}

// Function to reverse the queue

void reverseQueue(queue<int>& Queue)

{

stack<int> Stack;

while (!Queue.empty()) {

Stack.push(Queue.front());

Queue.pop();

}

while (!Stack.empty()) {

Queue.push(Stack.top());

Stack.pop();

}

}

// Driver code

int main()

{

queue<int> Queue;

Queue.push(10);

Queue.push(20);

Queue.push(30);

Queue.push(40);

Queue.push(50);

Queue.push(60);

Queue.push(70);

Queue.push(80);

Queue.push(90);

Queue.push(100);

reverseQueue(Queue);

Print(Queue);

}

**Some API’s:**

#include <iostream>

#include <list>

int main() {

// Create a list

std::list<int> myList;

// Insert elements at the end

myList.push\_back(10);

myList.push\_back(20);

myList.push\_back(30);

// Insert elements at the front

myList.push\_front(5);

myList.push\_front(1);

// Display elements

std::cout << "List after push\_back and push\_front: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Insert element at a specific position

auto it = myList.begin();

std::advance(it, 2);

myList.insert(it, 15);

std::cout << "List after insert: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Erase element at a specific position

it = myList.begin();

std::advance(it, 3);

myList.erase(it);

std::cout << "List after erase: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Remove elements by value

myList.remove(10);

std::cout << "List after remove: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Remove elements based on a condition

myList.remove\_if([](int n) { return n < 10; });

std::cout << "List after remove\_if: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Sorting the list

myList.sort();

std::cout << "List after sort: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Reversing the list

myList.reverse();

std::cout << "List after reverse: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Merging two lists

std::list<int> otherList = {40, 50, 60};

myList.merge(otherList);

std::cout << "List after merge: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Clearing the list

myList.clear();

std::cout << "List after clear: ";

for (int val : myList) {

std::cout << val << " ";

}

std::cout << std::endl;

// Checking if the list is empty

if (myList.empty()) {

std::cout << "List is empty." << std::endl;

}

// Adding elements again

myList.push\_back(100);

myList.push\_back(200);

// Accessing front and back elements

std::cout << "Front element: " << myList.front() << std::endl;

std::cout << "Back element: " << myList.back() << std::endl;

return 0;

}