Heaven's Light is Our Guide
Rajshahi University of Engineering & Technology
Department of Computer Science & Engineering

Lab Manual

Course Code: **CSE 1204 (Sec A)**
Course Title: Sessional based on CSE 1203
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Module 7 [Advanced Topics with STL]: (for Week 8)

Topic 1 [STL: stack class]

Problem statement: Write a program to create the following menu and manipulate Stack using **`stack`** class. Use the following methods to write the program. Also display appropriate message when required.

i) **`push()`** -method to push data
ii) **`pop()`** -method to pop data
iii) **`top()`** -method to display top element
iv) **`empty()`** -method to check whether stack is empty or not

```
**** Stack Menu ****
   1. Push
   2. Pop
   3. Display
   4. Exit
      Enter your option:
```

```
#include <bits/stdc++.h>
#include <iostream.h>
using namespace std;
class Stack{
  stack<int>ax;
  public:
  //Write Methods for push, pop
  //And display
};
//Write Menu function
```

```
int main(){
 Stack s;
 //call Menu function
 //call appropriate method
 //using s
return 0;
}
```

Topic 2 [STL: queue class]

Problem statement: Write a program to create the following menu to manipulate Queue using queue class. Use the following methods to write the program. Also display appropriate message when required.

i) **push()** -method to push data
ii) **pop()** -method to pop data
iii) **front()** -method to display front element
iv) **back()** -method to display rear element
v) **empty()** -method to check whether queue is empty or not

```
**** Queue Menu ****
  1. Enqueue
  2. Dequeue
  3. Display
  4. Exit
      Enter your option:
```

```
#include <bits/stdc++.h>
#include <iostream.h>
using namespace std;
class Queue{
  queue<int>ax;
  public:
  //Write Methods for Enqueue,
//Dequeue and Display
};
//Write Menu function
```

```
int main(){
 Queue q;
 //call Menu function
 //call appropriate method
 //using q
return 0;
}
```

Topic 3 [STL: deque class]

Problem statement: Extend the above menu with more features using **deque** class. Use the methods to given in the lecture note for **deque** class.

Topic 4 [STL: list class]

Problem statement: Write a program to create and manipulate linked list using **`list`** class and its following methods to

i) insert 8 integers using **`push_back()`** method
ii) insert two elements using **`push_front()`** method
iii) display all the elements of the list in forward direction with user-defined Display() method using **`begin()`** and **`end()`** methods and iterator
iv) display all the elements of the list in reverse direction with a user-defined DisplayRev() method using **`rbegin()`** and rend() method and iterator
v) display front element using **`front()`** method
vi) display back element using **`back()`** method
vii) delete front element using **`pop_back()`** method
viii) delete front element using **`pop_front()`** method
ix) search an element **`x`** using **`find()`** method
x) insert a new element **`x`** before an existing element **`y`** using **`insert()`** method
xi) insert a new element **`x`** after an existing element **`y`** using **`insert()`** method
xii) count a particular element **`x`**
xiii) count a elements with condition using predicate function
xiv) delete a particular element **`x`** with **`erase()`** method
xv) delete first 4 elements with **`erase()`** method
xvi) delete a particular element **`x`** with **`remove()`** method
xvii) delete a elements with condition using **`remove_if()`** method using predicate function
xviii) assign elements from another list using **`assign()`** method
xix) assign elements from an array using **`assign()`** method
xx) sort the list using **`sort()`** method
xxi) Delete consecutive similar elements using **`unique()`** method