Tutorial and Assignment Sheet – ODD 2021

15B11CI311 – Data Structures

Week 3

Topics: STL, Stack and Queue using STL

Q.1. Write a program using the stack STL to implement the following :

Input : `push(1), push(2), push(4), push(5), pop, pop`

Q2) Write a program using the Queue STL to find the sum of the all the integers for a given queue of integers.

Input : 3, 7, 4, 5, 1

Output : 20

Q.3. write a program using stack STL to swap the content of one stack with another stack of same type

```
Input  : stack1 = {41, 33, 20, 11}
         stack2 = {90, 75 ,58, 35}
Output : stack1 =  90, 75, 58, 35
         stack2 =  41, 33, 20, 11
```

Q4) Predict the output of the following program.

```
template <class T>
class Test
{  private:
   T val;
  public:
   static int count;
   Test() {   count++;   }
};
template<class T>
int Test<T>::count = 0;
```

```
int main()
{
   Test<int> a;
   Test<int> b;
   Test<double> c;
   cout << Test<int>::count   << endl;
   cout << Test<double>::count << endl;
   return 0;
}
```

Q5) What will the given function fun() do?

```
void fun(Queue *Q)
{
   Stack S;  // Say it creates an empty stack S

   // Run while Q is not empty
   while (!isEmpty(Q))
   {
      // deQueue an item from Q and push the dequeued item to S
      push(&S, deQueue(Q));
```

```
    }

    // Run while Stack S is not empty
    while (!isEmpty(&S))
    {
      // Pop an item from S and enqueue the poppped item to Q
      enQueue(Q, pop(&S));
    }
}
```

Q.6. What will be the output of the following program

```
#include <iostream>

#include <queue>

using namespace std;

int main()

{

        queue<int> myqueue;

        queuem.push(34);

        queuem.push(41);

        queuem.push(15);

        queuem.push(76);

        cout << queuem.front();

        cout <<queuem.back();

        return 0;

}
```