CS213M: Assignment 2

Problem 2: Implementation of a Queue

Due Date: 04/02/2015

In this problem, you have to implement the queue data structure twice, once using lists and once using STL vectors. Accordingly, we have provided you with two header fils **`queue_list.hpp`** and **`queue_vector.hpp`**. You have to submit two files **`queue_vector.cpp`** and **`queue_list.cpp`**. Both the files will have the same set of functions defined. Also, you have to a submit a **`readme.txt`** file where you describe your experiences with using vectors and lists. Feel free to include any numbers or experimental data while comparing the two.

The functions you need to define in both the cases are the same and are reproduced below for quick reference. Again, we want to define a template class for our queue.

Note: Do not modify the given code. Do not change the signatures of the functions below. Do not use STL queues for this problem.

Functions to be defined

1. `void queue<T>::push_back(T obj);`

   Push the object **`obj`** of type `T` at the back of the queue.

2. `int queue<T>::front(T *top_element);`

   This function sets the value of the location pointed by **`top_element`** to the object at the front on the queue. It returns a positive quantity on successful execution. If the queue is empty, it returns a negative quantity.

3. `void queue<T>::pop_front();`

   This function removes the object at the front of the queue. It does nothing if called on an empty queue.

4. `int queue<T>::size();`

   This functions returns the number of elements in the queue.

Note: In the above, `T` is the template type.

Don't forget to read the comments in the given header file.