HW05 - STL Vectors [50 pts]

Answer the following questions regarding STL and the vector container:
1. What is the STL? What is a vector?
2. Which vector operations change the size of a vector after its construction?
3. What is the STL *array* container and how does it differ from the built-in array and from a *vector*?
4. How does the vector member function *resize()* differ from *reserve()*?
5. What should *begin()* and *end()* do for a container?
6. Give an example of using the vector *push_back()* modifier.

Write the following program using a vector:

A common game is the lottery card. The card has numbered spots of which a certain number are selected at random. Write a *Lotto()* function that takes two arguments. The first should be the number of spots on a lottery card and the second should be the number of spots selected at random. The function should return a vector<int> object that contains, in sorted order, the numbers selected at random. Use your function as follows:

Vector<int> winners;
winners = Lotto(51,6);

HW05 - STL Vectors [50 pts]

This would assign to *winners* a vector that contains six numbers selected randomly from the range 1 through 51. Note that simply using *rand()* doesn't quite do the job because it may produce duplicate values. Suggestion: Have the function create a vector that contains all the possible values, use *random_shuffle()*, and then use the beginning of the shuffled vector to obtain the values. Also write a short program that lets you test the function.

References:
1) http://www.cplusplus.com/reference/vector/vector/
2) http://www.cplusplus.com/reference/algorithm/random_shuffle/

Use the command script to capture your interaction compiling and running the program, including all operations, as shown below:

CS1C Summer 2019 MTWTH HW05 50pts **Due: Th 6/20/2019**

```
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ script hw05.scr
Script started, file is hw05.scr
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ date
...
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ ls -l
...
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ make all
...
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ ls -l
```

HW05 - STL Vectors [50 pts]

...
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ ./hw05

... // print out the winners vector along with the formal
parameter values passed to Lotto

cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ exit
Script done, file is hw05.scr
cs1c@cs1c-VirtualBox ~/cs1c/hw/05 $ make tar

...
Submit the tar package file hw05.tar by Thursday June 20, 2019.