CS 335-0 Exam 2 Review Sheet Version 0.94

Disclaimer: This sheet is <u>intended</u> to be a representative review for the exam. However, you are responsible for all material that we have covered and all the assigned readings, whether or not they are explicitly referenced here or not.

Vectors
- member functions
- implementation/performance issues

STL list
- member functions
- implementation/performance issues

Templates
- classes
- functions

Exception Handing
- try-throw-catch

Algorithms
- binary Search
- stable_sort
- quicksort
- Complexity and timing

Review questions.

See the end-of-section checkpoint questions and review questions at the end of chapters.
Also the following from the Programming Challenges sections.

Ch16. Page 1024. # 1,2,3,4,6,9

See also:
- Quizzes, Homework
- Programming assignment 3 & 4
- Class notes

Additional review questions.

1. What are the Big-oh complexities for the principal member functions for the container classes we have studied?
2. What is the point of creating templated classes/functions?
3. What do templates have to do with the STL?
4. Describe two uses of iterators in the STL container classes we have studied.
5. Describe the STL notion of a "ghost" element that marks the end of a list.
6. What are some issues that need to be considered in doing timing experiments to compute algorithm complexity?

7.
8. A programmer uses the code segment below to determine the time required (on average) for the STL list::sort algorithm to sort a list of 10,000 random numbers. What is the main error in the code segment?

```
list<int> alist;
// fill alist with data
listTimer.start();
for (int i=0; i < 100; i++) {
     alist.sort();
}
listTimer.stop();
```

9. A programmer wishes to determine the time required (on average) for the STL list::sort algorithm to sort a list of 10,000 random numbers. What is the main error in the following code segment?

```
list<int> alist;
listTimer.start();
for (int i=0; i < 100; i++) {
     // fill list with data
     for (int j=0; j< 10000; j++ ) {
          num = random();
          alist.push_back(  num );
     }
     alist.sort();
}
listTimer.stop();
```

10. The team rosters (player names) for all the teams in a local sports league are stored in the variable rosters, declared as:

```
list< vector<string> >  rosters;
```

Write functions for each of the following:

a. print the total number of players in the league:
   `cout << totalStudents( rosters ) << endl;`
b. determine which team has the most players
c. Determine which team (if any) “Jim Smith” plays on.
d. Print alphabetized team rosters.
e. Print an alphabetized *league* roster.

11. Repeat question 6 using the following:

list < list<string> > rosters;

12. Consider the following declarations:

```
class Player {
private:
```

```
        string Name;
        list<ints> ptsPerGame;  // number of points scored in each game played
public:
        //   standard getters/setters
}

list < Player >  leagueStats;
```

write functions for each of the following:
Print each player's average points-per-game.
Determine which player(s) have:
- the maximum single game score
- the maximum total-points scored.