CS 301 Data Structures and Algorithms

Homework 3

In this Homework, you are going to write a program that implements a **_sorted_** list using **_dynamic allocated arrays_**.

DataFile.txt contains the information of poker cards.

1. C: clubs (lowest), D: diamonds, H: hearts, S: spades (highest)
2. 2 (lowest), 3, 4, 5, 6, 7, 8, 9, 10, J, Q, K, A
3. No Joker cards
4. Any C cards are lower than any D cards.

DataFile Content (You can write the file specification into your program.):

H4,C8,HJ,C9,D10,D5,DK,D2,S7,DJ,HJ,H3,H6,S10,HK,DQ,C2,CJ,C4,CQ,D8,C3,SA,S2,HQ,S8,C6,D9,S3, SQ,C5,S4,H5,SJ,D3,H8,CK,S6,D7,S9,H2,CA,C7,H7,DA,D4,H9,D6,HA,H10,S5,C10

H4, D5, HK, D2

H4, HK, SK

C9,C10

For examples, DJ means J of Diamonds; H7 means 7 of hearts.

Your job

1. Create a list by dynamic allocated array and set the size to 20
2. Read the first 20 **_different_** cards in the first line of the file, then put them one by one into the list by implementing and using **_putItem()_**. Do not insert the card that are already in the list again. The list must be kept sorted in **_ascending_** order.
   Then print out all the cards in the list in one line separating by commas.

3. Then delete the cards indicated in the second line of the file by using **_deleteItem()_**
   Then print out all the cards in the list in one line separating by commas.

4. Then put the items in the third line in to the list. Must use **_putItem()_**
   Then print out all the cards in the list in one line separating by commas.
5. Search the current list for the elements in the list.
   Then output the result as the follows. Yes or No depends on whether the card exists in the current list. Must implement and use **_getItem()_**
   C9 NO, C10 YES
6. A **_printAll()_** function should be defined and called in order to output all the contents in the list.

7. A ***compareTo()*** function must be defined and used to compare which card is greater, less, or equal.

Requirements:

1. ***[will be 0 if it does not compile or crash]*** The homework must be done in C++ and compatible to C++11. It is ***REQUIRED*** to use g++ and provided Makefile to compile and ***run*** the code. Your submission must be in a .zip or a .tar.gz file that includes the source file hw2.cpp, hw2.h, and the datafile. You are NOT allowed to use Standard Template Library to create the linked list. You are ***NOT*** allowed to make any modifications to the Makefile or the data file. It is ***REQUIRED*** to use an ItemType class and a NodeType struct to solve this homework.
2. [5%] The Following identification information must be included at the beginning of your cpp file.
//Name: XXXXXXX
//NetID: ab1234
//Email: XXXX@csueastbay.edu
3. [16%*5] correct implementation and use of the five functions
4. [5%] Correct Output Format to command line
5. [10%] Correct I/O of the data file