Data Structure and Algorithm Analysis

COP3530 Program – Module 9

Total Points: 25

NO LATE ASSIGNMENTS WILL BE ACCEPTED!!

Objectives:

In this assignment you will use the vector class to manage a dynamic array. After completing this assignment you will be able to

- use the vector class in a C++ program;
- use iterators to move through a vector;
- use pointers to a vector;
- use member functions of the vector class.

Assignment Description:

Call your driver, "vector_test_driver.cpp", the class declaration file ,“vlist.h”, and the class implementation file, "vlist.cpp". Define the following behavior for the class vlist:

1. Implement a **default constructor**. Include the message, "**Default Constructor Invoked**" every time the function is called.

2. Implement a **copy constructor** to perform a deep copy of a vlist object. Include the message, "**Copy Constructor Invoked**" every time the function is called. The function should also print the contents of each vlist object on single separate lines.

3. Implement the **destructor**. Include the message, "**Destructor Invoked**" every time the function is called.

4. Implement the Boolean member function **isEmpty** which returns true if the vlist is empty; otherwise false. The function has no formal parameters

5. Implement the member function called "**search**" to search the vector for an item. The function will return an iterator to the location of the item in the vector if it is there; otherwise, the function should print the message, "**Item Found**" or "**Item Not Found**". Which message is printed depends on if the item was found or not found in the vector. Also, print the item (search key) you were looking for. The function has one constant string reference formal parameter, the search key.

6. Implement a void function called "**insert**" to add an item to the vector in order (alphabetical order). The function has one constant string reference formal parameter.

7. Implement a void function called "**remove**" to remove an item from the vector if it is there; otherwise prints a message stating it was not in vector; the function should use an iterator and the erase function to remove an item from the vector. The function has one constant string reference formal parameter

8. Implement the void member function called "**print**", to print every item stored in the vector. The function has no formal parameters.

Your program should test the functionality of the class on C++ strings. Remember, put the class declaration in the implementation file "**vlist.h**" and the implementation file in "**vlist.cpp**". Use the driver file "**vlist_driver.cpp**" that I have provided to test the functionality of your program. I have also included the class declaration file "vlist.h" and the class implement file "vlist.cpp" . The file, "vlisht.cpp" contains stubs only; you must provide the correct implementation and comments. Again, please remember to include the required documentation (program and function headers, etc..), and comment the driver as necessary. You may add other functions if you need; however, you may not change the function calls in the driver.

Please let us know if you have a questions or if you find any problems as soon as possible.