

Problem Set 11 - Static Set

A set is a collection of distinct objects. The typical set data structure methods are listed in the *Collection* interface. Given this information, complete each of the tasks below.

Tasks:

1. Create a header file named "StaticSet.h" that defines a generic class *StaticSet* that publicly inherits the interfaces *Collection* and *Object* from the accompanying header files "Collection.h" and "Util.h", respectively.
2. Within the body of *StaticSet*, include
 - ☐ A private generic *Array* field named *data*.
 - ☐ A private long field named *size*.
3. Within the body of *StaticSet*, define
 - ☐ A public default constructor that assigns 0 to *size* and a generic *Array* object of size 30 to *data*.
 - ☐ A public overloaded constructor that takes a long parameter. It assigns a generic *Array* object that is the size of the parameter to *data* and 0 to *size* if the parameter is positive; otherwise, it assigns 0 to *size* and a generic *Array* object of size 30 to *data*.
 - ☐ a public copy constructor.
 - ☐ a public assignment overloaded.
 - ☐ a public empty destructor.
4. Within the body of *StaticSet*, define a public overridden *ToString()* method from *Object* that returns a string of the elements of the dataset as a list enclosed in curly braces.
5. Within the body of *StaticSet*, define
 - ☐ A public overridden *Size()* method from *Collection* that returns *size*.
 - ☐ A public overridden *Empty()* method from *Collection* that returns true if *size* is zero; otherwise, it returns false.
 - ☐ A public bool constant method named *Full()* that takes no parameters. It returns true if the dataset is full; otherwise, it returns false.
6. Within the body of *StaticSet*, define
 - ☐ A public overridden *Contains()* method from *Collection* that returns true if the parameter is a dataset member; otherwise, it returns false.
7. Within the body of *StaticSet*, define
 - ☐ A public overridden *Insert()* method from *Collection* that adds the parameter to the dataset if the parameter is not in the dataset and the dataset is not at capacity.
8. Within the body of *StaticSet*, define
 - ☐ A public overridden *Remove()* method from *Collection* that removes the parameter from the dataset if the dataset is not empty and the parameter is in the dataset.
9. Create a cpp file named "main.cpp" that
 - a. Declares an char *StaticSet* object with a size of 128.
 - b. Opens a file and reads the character of the file into the object.
 - c. Displays the size and content of the object.