



**Gebze Institute of Technology**  
**Department of Computer Engineering**  
**CSE 241/505**  
**Object Oriented Programming**  
**Fall 2014**  
**Homework # 8**

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**111044043**

```

template<class T>
class Container
{
public:
//      Container();
/* container a eleman ekleme fonksiyonu */
virtual void add(T elm) = 0;
/* container dan eleman cikarma fonksiyonu */
virtual void remove(T elm) = 0;
/* container da eleman arama fonksiyonu */
virtual int search(T elm) = 0;
/* container in ilk elemanini dondurur */
virtual T first() = 0;
/* container in sonraki elemanini dondurur */
virtual T next() = 0;
/* return the container size */
virtual int contSize() const = 0;
/* print */
void print();
/* other Container i member Container a ekler */
void addAll(const Container& other);
/* Container in butun elemanlarini siler */
void removeAll();
/* container in vectorunu return eder */
vector<T> toVector() const;
/* container elemanlarini siralayan fonksiyon */
void sort();
/* swap fonksiyonu */
void swapValues( T& variable1, T& variable2);
/* sorted object kontrolu icin gerekli fonksiyon */
bool SortedObject() const {return isSortedObject;}
/* set object kontrolu icin gerekli fonksiyon */
bool SetObject() const {return isSetObject;}
/* get vector */
vector<T> getElemsVect() const {return elems;}
protected:
vector<T> elems; // elements
bool isSortedObject; /* obje Sorted classlarindan birine mi ait */
bool isSetObject; /* obje Set classlarindan birine mi ait */
int nextCount; /* next fonksiyonu icin gerekli counter. */

};

/* return the number of sorted container object elements */
template <typename T>
int numOfSortCont(const Container<T>& other);

template<class T>

```

```

class SetContainer : public Container<T>
{
public:
    SetContainer(); /* Constructor */
    /* container a eleman ekleme fonksiyonu */
    void add(T elm);
    /* container dan eleman cikarma fonksiyonu */
    void remove(T elm);
    /* container da eleman arama fonksiyonu */
    int search(T elm);
    /* container in ilk elemanini dondurur */
    T first();
    /* container in sonraki elemanini dondurur */
    T next();
    /* return the container size */
    int contSize() const;
};

```

```

template<class T>
class SortedContainer : public Container<T>
{
public:
    SortedContainer(); /* Constructor */
    /* container a eleman ekleme fonksiyonu */
    void add(T elm);
    /* container dan eleman cikarma fonksiyonu */
    void remove(T elm);
    /* container da eleman arama fonksiyonu */
    int search(T elm);
    /* container in ilk elemanini dondurur */
    T first();
    /* container in sonraki elemanini dondurur */
    T next();
    /* return the container size */
    int contSize() const;
};

```

```

template<class T>
class SortedSetContainer : public Container<T>
{
public:
    SortedSetContainer();
    /* container a eleman ekleme fonksiyonu */
    void add(T elm);
    /* container dan eleman cikarma fonksiyonu */
    void remove(T elm);
    /* container da eleman arama fonksiyonu */
    int search(T elm);
};

```

```

        /* container in ilk elemanini dondurur */
        T first();
        /* container in sonraki elemanini dondurur */
        T next();
        /* return the container size */
        int contSize() const;
};

```

### Ödevin içeriği:

Abstract bir Container classı ve bu class dan türeyen SortedContainer, SetContainer ve SortedSetContainer classları vardır.

### Ödevin Çalıştırılma Şekli:

```

g++ -c HW08_111044043_Container.cpp HW08_111044043_SetContainer.cpp
HW08_111044043_SortedContainer.cpp HW08_111044043_SortedSetContainer.cpp HW08_111044043_Test.cpp
g++ -o hw08 HW08_111044043_Container.o HW08_111044043_SetContainer.o
HW08_111044043_SortedContainer.o HW08_111044043_SortedSetContainer.o HW08_111044043_Test.o
./hw08

```

Ya da Makefile çalıştırabilirsiniz.

(Dosyanın bulunduğu klasöre girip, Terminale **make** yazmanız yeterli olacaktır.)

### Ekran Görüntüleri:

```

./hw08
***** char *****
mySetContainer contains: g e a c d b h
'b' is 5. elements in container.

mySortedSetContainer contains: a b c d e g h
'b' is 1. elements in container.

mySortedContainer contains: a a b c d d e g h j
'b' is 2. elements in container.

Number of SortedSetContainer Object Elements: 7
Number of SortedContainer Object Elements: 10

Sorted Set Container first element: a
Sorted Set Container next element: b
Sorted Set Container next element: c

mySetContainer.addAll(mySortedContainer): g e a c d b h j
mySortedContainer.addAll(mySetContainer): a a a b b c c d d d e e g g h h j j
mySortedSetContainer.toVector(): a b c d e g h
mySortedSetContainer.removeAll():

***** int *****
mySetContainer contains: 6 7 9 8 2 1 4 5 24
'2' is 4. elements in container.

mySortedSetContainer contains: 1 2 4 6 7 8 9 11 15
'2' is 1. elements in container.

mySortedContainer contains: 1 1 2 2 4 4 5 6 7 8 8 9 12 19
Exception: SortedContainer::search(T elm): element not found
murat@murat-ASUS:~/Desktop/HW08$

```