**Write a program that has a class with a dynamically allocated character array as its data member. One object should contain "Engineers are" and another should contain " Creatures of logic". Member function join() should concatenate two strings by passing two objects as arguments. Display the concatenated string through a member function. Use constructors to allocate and initialize the data member. Also, write a destructor to free the allocated memory for the character array. Make your own function for concatenation of two strings.**

**#include <iostream>**

**#define SUCCESS 0**

**using namespace std;**

**class String**

**{**

**private:**

**char \*data;**

**public:**

**String(){data = NULL;}**

**String(const char\* s)**

**{**

**data = NULL;**

**set(s);**

**}**

**// setters**

**void set(const char\* s)**

**{**

**if (data != NULL)**

**{**

**delete []data;**

**data = NULL;**

**}**

**size\_t size = len(s)+1;**

**data = new char[size];**

**concatenate(data,s);**

**}**

**// getters**

**char\* get()**

**{**

**return data;**

**}**

**static char \*concatenate(char \*dest, const char \*src)**

**{**

**char\* ptrDest = dest;**

**char\* ptrSrc = (char \*)src;**

**do**

**{**

**\*ptrDest = \*ptrSrc;**

**ptrDest++;**

**ptrSrc++;**

**}**

**while (\*ptrSrc != '\0');**

**\*ptrDest = '\0';**

**return dest;**

**}**

**static size\_t len(const char \*data)**

**{**

**char\* ptr= (char \*)data;**

**while (\*(ptr) != '\0')ptr++;**

**return ptr-data;**

**}**

**static String \*join(String a,String b)**

**{**

**String \*n = new String;**

**size\_t totalChar= len(a.get())+len(b.get())+1;**

**char d[totalChar];**

**concatenate(d, a.get());**

**concatenate(d+len(d), b.get());**

**n->set(d);**

**return n;**

**}**

**void display()**

**{**

**cout << data;**

**}**

**~String()**

**{**

**if (data != NULL)**

**{**

**delete []data;**

**}**

**}**

**};**

**int main()**

**{**

**String a("Engineers are"), b(" creatures of logic");**

**cout << "a is ";**

**a.display();**

**cout << endl;**

**cout << "b is ";**

**b.display();**

**cout << endl;**

**String \*c = String::join(a,b);**

**cout << "c is ";**

**c->display();**

**delete c;**

**return SUCCESS;**

**}**

**#include<iostream>//or**

**#include<cstring>**

**using namespace std;**

**class str**

**{**

**char \*sent;**

**int length;**

**public:**

**str()**

**{**

**length=0;**

**sent=new char[length+1];**

**}**

**str(char s[])**

**{**

**length=strlen(s);**

**sent=new char[length+1];**

**strcpy(sent,s);**

**}**

**void join(str &s1,str &s2)**

**{**

**length=s1.length+s2.length;**

**delete sent;**

**sent= new char[length+1];**

**strcpy(sent,s1.sent);**

**strcat(sent,s2.sent);**

**}**

**void display()**

**{**

**cout<<sent<<endl;**

**}**

**};**

**int main()**

**{**

**str s1("Engineers are"),s2(" Creatures of logic"),d;**

**d.join(s1,s2);**

**d.display();**

**}**