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();
}
```