

```
1
2 // COS30008, Final Exam, 2023
3
4 #include "DSPString.h"
5
6 #include <cassert>
7 #include <algorithm>
8
9 DSPString::DSPString( const char* aContents )
10 {
11     size_t lSize = 0;
12
13     while ( aContents[lSize] )
14     {
15         lSize++;
16     }
17
18     fContents = new char[++lSize];
19
20     for ( size_t i = 0; i < lSize; i++ )
21     {
22         fContents[i] = aContents[i];
23     }
24     fSize = lSize;
25 }
26
27 DSPString::~DSPString()
28 {
29     delete[] fContents;
30 }
31
32
33 DSPString::DSPString( const DSPString& aOther ) :
34     DSPString( aOther.fContents )
35 {}
36
37 DSPString& DSPString::operator=( const DSPString& aOther )
38 {
39     if (!(*this == aOther)) {
40         this->~DSPString();
41
42         new (this) DSPString(aOther.fContents);
43     }
44
45     return *this;
46 }
47
48
49 DSPString::DSPString( DSPString&& aOther ) noexcept :
```

```
50     DSPString( "\\0" )
51 {
52     std::swap(fContents, aOther.fContents);
53     std::swap(fSize, aOther.fSize);
54 }
55
56 DSPString& DSPString::operator=( DSPString&& aOther ) noexcept
57 {
58     if (!(this == &aOther)) {
59         std::swap(fContents, aOther.fContents);
60         std::swap(fSize, aOther.fSize);
61     }
62     return *this;
63 }
64
65 size_t DSPString::size() const noexcept
66 {
67     return fSize;
68 }
69
70
71 char DSPString::operator[]( size_t aIndex ) const noexcept
72 {
73     assert(aIndex < fSize);
74     return fContents[aIndex];
75 }
76
77 bool DSPString::operator==( const DSPString& aOther ) const noexcept
78 {
79     if ( size() == aOther.size() )
80     {
81         for ( size_t i = 0; i < size(); i++ )
82         {
83             if ( fContents[i] != aOther.fContents[i] )
84             {
85                 return false;
86             }
87         }
88
89         return true;
90     }
91
92     return false;
93 }
94
95 std::ostream& operator<<( std::ostream& aOStream, const DSPString& aObject )
96 {
97     return aOStream << aObject.fContents;
98 }
```