

```
1
2 // COS30008, Final Exam, 2024
3
4 #include "PalindromeStringIterator.h"
5
6 void PalindromeStringIterator::moveToNextIndex()
7 {
8     while (fIndex < static_cast<int>(fString.length()) && !std::isalpha(
9         fString[fIndex]))
10     {
11         ++fIndex;
12     }
13
14 void PalindromeStringIterator::moveToPreviousIndex()
15 {
16     while (fIndex >= 0 && !std::isalpha(fString[fIndex]))
17     {
18         --fIndex;
19     }
20 }
21
22 PalindromeStringIterator::PalindromeStringIterator(const std::string&
23     aString)
24 : fString(aString), fIndex(0)
25 {
26     moveToNextIndex();
27 }
28 char PalindromeStringIterator::operator*() const noexcept
29 {
30     return std::toupper(fString[fIndex]);
31 }
32
33 PalindromeStringIterator& PalindromeStringIterator::operator++()
34     noexcept
35 {
36     ++fIndex;
37     moveToNextIndex();
38     return *this;
39 }
40 PalindromeStringIterator PalindromeStringIterator::operator++(int)
41     noexcept
42 {
43     PalindromeStringIterator old = *this;
44     ++(*this);
45     return old;
46 }
47 PalindromeStringIterator& PalindromeStringIterator::operator--()
48     noexcept
49 {
50     --fIndex;
51     moveToPreviousIndex();
52     return *this;
53 }
```

```
49     --fIndex;
50     moveToPreviousIndex();
51     return *this;
52 }
53
54 PalindromeStringIterator PalindromeStringIterator::operator--(int)      ↗
    noexcept
55 {
56     PalindromeStringIterator old = *this;
57     --(*this);
58     return old;
59 }
60
61 bool PalindromeStringIterator::operator==(const      ↗
    PalindromeStringIterator& aOther) const noexcept
62 {
63     return fIndex == aOther.fIndex;
64 }
65
66 bool PalindromeStringIterator::operator!=(const      ↗
    PalindromeStringIterator& aOther) const noexcept
67 {
68     return !(*this == aOther);
69 }
70
71 PalindromeStringIterator PalindromeStringIterator::begin() const      ↗
    noexcept
72 {
73     PalindromeStringIterator iter(*this);
74     iter.fIndex = 0;
75     iter.moveToNextIndex();
76     return iter;
77 }
78
79 PalindromeStringIterator PalindromeStringIterator::end() const noexcept
80 {
81     PalindromeStringIterator iter(*this);
82     iter.fIndex = fString.length();
83     return iter;
84 }
85
86 PalindromeStringIterator PalindromeStringIterator::rbegin() const      ↗
    noexcept
87 {
88     PalindromeStringIterator iter(*this);
89     iter.fIndex = static_cast<int>(fString.length()) - 1;
90     iter.moveToPreviousIndex();
91     return iter;
92 }
93
94 PalindromeStringIterator PalindromeStringIterator::rend() const      ↗
    noexcept
95 {
```

```
96     PalindromeStringIterator iter(*this);
97     iter.fIndex = -1;
98     return iter;
99 }
100
```