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1 // Chapter 15 -- Assignment 3, Sequence Sum
2
3 #include <iostream>
4 #include <conio.h>
5 using namespace std;
6
7 // This class represents an abstract sequence
8 // together with operations for generating a
9 // member of
10 // the sequence, printing the sequence, and
11 // summing the
12 // sequence.
13 class AbstractSeq
14 {
15 public:
16     virtual int fun(int k) = 0;
17     void printSeq(int k, int m);
18     int sumSeq(int k, int m);
19 };
20
21 // *****
22 //           AbstractSeq::sumSeq           *
23 // Sum a portion of the sequence.         *
24 // *****
25 int AbstractSeq::sumSeq(int k, int m)
26 {
27     int sum = 0;
28     for (int i = k; i <= m; i++)
29         sum = sum + fun(i);
30     return sum;
31 }
32
33 // *****
34 //           AbstractSeq::printSeq         *
35 // Print a portion of the sequence.       *
36 // *****

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35 void AbstractSeq::printSeq(int k, int m)
36 {
37     for (int i = k; i <= m; i++)
38         cout << fun(i) << " ";
39 }
40
41 // Odd sequence subclass
42 class OddSeq : public AbstractSeq
43 {
44     int fun(int k) { return 2 * k - 1; }
45 };
46
47 // Square sequence subclass
48 class SquareSeq : public AbstractSeq
49 {
50     int fun(int k) { return k * k; }
51 };
52
53 int main()
54 {
55     // Create two sequences
56     OddSeq odd;
57     SquareSeq sq;
58
59     // Display the two sequences
60     cout << "The first 5 odd numbers are: " <<
endl;
61     odd.printSeq(1, 5);
62     cout << "\nThe sum of the first 5 odd numbers
is: " << odd.sumSeq(1, 5);
63     cout << endl;
64     cout << "\nThe first 5 squares are: " << endl;
65     sq.printSeq(1, 5);
66
67     // Display sum of the square sequence
68     cout << "\nThe sum of the first 5 squares is:"
```

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69     " << sq.sumSeq(1, 5);  
70     cout << endl;  
71     cout << "\n\nPress <Enter> to exit";  
72     _getch();  
73     return 0;  
74 }
```