```
 1: // This program demonstrates a simple class.
 2: #include <iostream>
 3: using namespace std;
 4:
 5: // Rectangle class declaration.
 6: class Rectangle
 7: {
 8:    private:
 9:       double width;
10:       double length;
11:    public:
12:       void setWidth(double);
13:       void setLength(double);
14:       double getWidth() const;
15:       double getLength() const;
16:       double getArea() const;
17: };
18:
19: //************************************************
20: // setWidth assigns a value to the width member.   *
21: //************************************************
22:
23: void Rectangle::setWidth(double w)
24: {
25:    width = w;
26: }
27:
28: //************************************************
29: // setLength assigns a value to the length member. *
30: //************************************************
31:
32: void Rectangle::setLength(double len)
33: {
34:    length = len;
35: }
36:
```

Folder: Classes_YourLastName
Save Programs 1-3 in the above Folder.
Program1: Rectangle_Class.cpp
Upon Completion: Upload Classes_YourLastName.zip to Extra Credit Item 15

```
37: //***************************************************
38: // getWidth returns the value in the width member. *
39: //***************************************************
40:
41: double Rectangle::getWidth() const
42: {
43:    return width;
44: }
45:
46: //*****************************************************
47: // getLength returns the value in the length member. *
48: //*****************************************************
49:
50: double Rectangle::getLength() const
51: {
52:    return length;
53: }
54:
55: //*****************************************************
56: // getArea returns the product of width times length. *
57: //*****************************************************
58:
59: double Rectangle::getArea() const
60: {
61:    return width * length;
62: }
63:
64: //*****************************************************
65: // Function main                                      *
66: //*****************************************************
67:
68: int main()
69: {
70:    Rectangle box;     // Define an instance of the Rectangle class
71:    double rectWidth;  // Local variable for width
72:    double rectLength; // Local variable for length
```

```
73:
74:     // Get the rectangle's width and length from the user.
75:     cout << "This program will calculate the area of a\n";
76:     cout << "rectangle. What is the width? ";
77:     cin >> rectWidth;
78:     cout << "What is the length? ";
79:     cin >> rectLength;
80:
81:     // Store the width and length of the rectangle
82:     // in the box object.
83:     box.setWidth(rectWidth);
84:     box.setLength(rectLength);
85:
86:     // Display the rectangle's data.
87:     cout << "Here is the rectangle's data:\n";
88:     cout << "Width: " << box.getWidth() << endl;
89:     cout << "Length: " << box.getLength() << endl;
90:     cout << "Area: " << box.getArea() << endl;
91:
92:     system("pause");
93:     return 0;
94: }
95:
```

Program2: Rectangle_Instance.cpp

```
 1: // This program creates three instances of the Rectangle class.
 2: #include <iostream>
 3: using namespace std;
 4:
 5: // Rectangle class declaration.
 6: class Rectangle
 7: {
 8:    private:
 9:       double width;
10:       double length;
11:    public:
12:       void setWidth(double);
13:       void setLength(double);
14:       double getWidth() const;
15:       double getLength() const;
16:       double getArea() const;
17: };
18:
19: //*************************************************
20: // setWidth assigns a value to the width member.   *
21: //*************************************************
22:
23: void Rectangle::setWidth(double w)
24: {
25:    width = w;
26: }
27:
28: //*************************************************
29: // setLength assigns a value to the length member. *
30: //*************************************************
31:
32: void Rectangle::setLength(double len)
33: {
34:    length = len;
35: }
36:
```

```
37: //***************************************************
38: // getWidth returns the value in the width member. *
39: //***************************************************
40:
41: double Rectangle::getWidth() const
42: {
43:    return width;
44: }
45:
46: //****************************************************
47: // getLength returns the value in the length member. *
48: //****************************************************
49:
50: double Rectangle::getLength() const
51: {
52:    return length;
53: }
54:
55: //****************************************************
56: // getArea returns the product of width times length. *
57: //****************************************************
58:
59: double Rectangle::getArea() const
60: {
61:    return width * length;
62: }
63:
64: //****************************************************
65: // Function main                                     *
66: //****************************************************
67:
68: int main()
69: {
70:    double number;       // To hold a number
71:    double totalArea;    // The total area
72:    Rectangle kitchen;   // To hold kitchen dimensions
```

```
73:    Rectangle bedroom;   // To hold bedroom dimensions
74:    Rectangle den;       // To hold den dimensions
75:
76:    // Get the kitchen dimensions.
77:    cout << "What is the kitchen's length? ";
78:    cin >> number;                          // Get the length
79:    kitchen.setLength(number);              // Store in kitchen object
80:    cout << "What is the kitchen's width? ";
81:    cin >> number;                          // Get the width
82:    kitchen.setWidth(number);               // Store in kitchen object
83:
84:    // Get the bedroom dimensions.
85:    cout << "What is the bedroom's length? ";
86:    cin >> number;                          // Get the length
87:    bedroom.setLength(number);              // Store in bedroom object
88:    cout << "What is the bedroom's width? ";
89:    cin >> number;                          // Get the width
90:    bedroom.setWidth(number);               // Store in bedroom object
91:
92:    // Get the den dimensions.
93:    cout << "What is the den's length? ";
94:    cin >> number;                          // Get the length
95:    den.setLength(number);                  // Store in den object
96:    cout << "What is the den's width? ";
97:    cin >> number;                          // Get the width
98:    den.setWidth(number);                   // Store in den object
99:
100:   // Calculate the total area of the three rooms.
101:   totalArea = kitchen.getArea() + bedroom.getArea()
102:             + den.getArea();
103:
104:   // Display the total area of the three rooms.
105:   cout << "The total area of the three rooms is "
106:        << totalArea << endl;
107:   system("pause");
108:   return 0;
```

```
109: }
110:
```

Program3: GradeActivty_Class.cpp

```
1: // This program demonstrates the GradedActivity class.
2: #include <iostream>
3:
4: using namespace std;
5:
6: // GradedActivity class declaration
7:
8: class GradedActivity
9: {
10:     private:
11:        double score;   // To hold the numeric score
12:     public:
13:        // Default constructor
14:        GradedActivity()
15:           { score = 0.0; }
16:
17:        // Constructor
18:        GradedActivity(double s)
19:           { score = s; }
20:
21:        // Mutator function
22:        void setScore(double s)
23:           { score = s; }
24:
25:        // Accessor functions
26:        double getScore() const
27:           { return score; }
28:
29:        char getLetterGrade() const;
30: };
31:
32: char GradedActivity::getLetterGrade() const
33: {
34:    char letterGrade; // To hold the letter grade
35:
36:    if (score > 89)
```

```
37:       letterGrade = 'A';
38:    else if (score > 79)
39:       letterGrade = 'B';
40:    else if (score > 69)
41:       letterGrade = 'C';
42:    else if (score > 59)
43:       letterGrade = 'D';
44:    else
45:       letterGrade = 'F';
46:
47:    return letterGrade;
48: }
49:
50: int main()
51: {
52:    double testScore;  // To hold a test score
53:
54:    // Create a GradedActivity object for the test.
55:    GradedActivity test;
56:
57:    // Get a numeric test score from the user.
58:    cout << "Enter your numeric test score: ";
59:    cin >> testScore;
60:
61:    // Store the numeric score in the test object.
62:    test.setScore(testScore);
63:
64:    // Display the letter grade for the test.
65:    cout << "The grade for that test is "
66:         << test.getLetterGrade() << endl;
67:
68:    system("pause");
69:
70:    return 0;
71: }
72:
```