

**C++ Program Design/3e**  
**Chapter 4**  
**Answers to Self-Check Exercises**

1. answer: true
2. answer: false
3. answer: true
4. answer: true
5. answer: true
6. answer: true
7. answer: true
8. answer: true
9. answer: true
10. answer: false
11. answer: true
12. answer: true
13. answer: true
14. answer: true
15. answer: true
16. answer: false
17. answer: true
18. answer: No
19. answer: No
20. answer: Yes

21. answer:

```
if ((j < 25) && (j > 10))
    cin >> Score;
```

22. answer:

```
if (j < 5)
    k = 10;
```

23. answer:

```
if ((m < 5) && (j < 0))
    k = 3;
```

24. answer:

```
if ((m < 5) && (j < 0))
    k = 3;
```

25. answer:

```
if ((m % 2 == 1) && (m % 3 == 0))
    k = 34;
else
    i = 44;
```

26. answer: No

27. answer: A = true, B = true, D = true, C can be either true or false

28. answer:

```
#include <iostream>

using namespace std;

int main() {
    double cost;
    double taxRate = 0;

    cout << "Enter the cost of the item: ";
    cin >> cost;

    if ((cost >= 30000) && (cost <= 50000))
        taxRate = .04;
    else if ((cost > 50000) && (cost < 70000))
        taxRate = .045;
    else if (cost >= 70000)
        taxRate = .05;

    cout << "The luxury tax on this item is "
         << taxRate*cost << endl;

    return 0;
}
```

29. answer:

```
switch (i) {
case 3:
    n = 1;
    k = 5;
    break;
case 4:
    n = 5;
    break;
case 6:
    n = 6;
    break;
default:
    n = 0;
}
```

30. answer:

```
switch (i) {
case 3: case 5:
    ++n;
    TryAgain = false;
    break;
case 4: case 10:
    n = 5;
    break;
case 6:
    n = 6;
    break;
default:
    n = 0;
    TryAgain = true;
}
```

31. answer: Sometimes

32. answer: No

### 33. answer:

```
#include <iostream>
#include "rect.h"
using namespace std;

SimpleWindow ColorWindow("Color Palette", 8.0, 6.0);

int ApiMain() {
    cout << "Enter y (yellow), r (red), b (blue), g (green), m(magenta): ";
    char ch;
    cin >> ch;

    float x_side;
    float y_side;
    color c;

    ColorWindow.Open();

    switch (ch) {
    case 'y':
        x_side = 2;
        y_side = 3;
        c = Yellow;
        break;
    case 'r':
        x_side = 3;
        y_side = 3;
        c = Red;
        break;
    case 'b':
        x_side = 1;
        y_side = 2;
        c = Blue;
        break;
    case 'g':
        x_side = 3;
        y_side = 4;
        c = Green;
        break;
    case 'm':
        x_side = 4;
        y_side = 4;
        c = Magenta;
        break;
    default:
        cerr << "Invalid color character entered; ending program. ";
        return 1;
    }

    RectangleShape ColorRect(ColorWindow,4, 3, c, x_side, y_side);

    ColorRect.Draw();

    return 0;
}
```

34. answer: An infinite loop

35. answer: An infinite loop

36. answer: 31

37. answer:

```
x = 2;
while (x<=40) {
    cout << x*x+x+49 << endl;
    ++x;
}
```

38. answer:

```
#include <iostream>

using namespace std;
#include <string>

int main() {
    char CurrentCharacter;
    int DigitCount = 0;

    while (cin.get(CurrentCharacter)) {
        if (isdigit(CurrentCharacter))
            ++DigitCount;
    }

    cout << DigitCount << endl;

    return 0;
}
```

39. answer: `if (j>0 && j<ArraySize)`

40. answer: 45

41. answer: 20

42. answer: 5

43. answer: 15

44. answer: 5

45. answer: 3

46. answer: 40