

1. Consider the following C++ code using the `if/else if` format.

Temperature	String
<code>temperature < 0</code>	"Its bitterly cold!"
<code>0 <= temperature <= 32</code>	"Its freezing outside."
<code>32 < temperature < 68</code>	"Light jacket weather."
<code>68 <= temperature</code>	"Its warm outside."

```
#include <iostream>
using namespace std;
int main() {

    cout << "Enter the temperature: ";
    int temperature, x = 9;
    cin >> temperature;

    if (temperature < 0) {

        cout << "Its bitterly cold!";

    } else if (temperature <= 32) {
        int x = 5;

        cout << "Its freezing outside.";
        cout << "x = " << x << endl;

    } else if (temperature < 68) {

        cout << "Light jacket weather.";

    } else {

        cout << "Its freezing outside.";

    }

    cout << "x = " << x << endl;

} // end main
```

a) For the `0 <= temperature <= 32` range, why does the corresponding code NOT look like the following?

```
} else if (0 <= temperature && temperature <= 32) {
```

b) On the above code, draw a "box" around each `if/else` statement.

c) The *scope* of a variable is the part of the program that has access to the variable. The scope of a variable is limited to the block in which it is defined. On the above code, indicate the *scope* of each variable named `x`.

d) What value is output by the last line in the program if the `temperature` entered was 22?

2. Consider the following switch statement.

```
#include <iostream>
using namespace std;

int main() {
    int x = 9;
    cout << "Enter an integer: ";
    cin >> x;

    switch (x) {
        case 1:      cout << "case 1: x = " << x << endl;
                    break;
        case 2:
        case 4:      cout << "cases 2 and 4: x = " << x << endl;
                    break;
        case 5:      cout << "case 5: x = " << x << endl;
        case 8:      cout << "case 8: x = " << x << endl;
                    break;
        default:
            cout << "default case: x = " << x << endl;
    } // end switch
} // end main
```

What would be output for each of the following inputs for x:

- | | |
|------|--------|
| a) 8 | c) 5 |
| b) 3 | d) -10 |

3. Indicate whether each of the following relational expressions is true or false. (Refer to the ASCII table)

- a) 'a' < 'a'
- b) 'a' == 'A'
- c) '5' < '7'
- d) 'a' < 'A'
- e) '2' < 2
- f) '2' == 50

3. Indicate whether each of the following relational expressions is true or false. (Refer to the ASCII table)

```
string name = "BILL"
```

- a) "Bill" == "BILL"
- b) "Bill" < "BILL"
- c) "Bob" < name
- d) "189" > "23"
- e) "189" > "Bill"
- f) "Jane" < "Jane Doe"
- g) "JaneDoe" < "Jane Doe"
- h) 189 > "Bill"