

## Tutorial 04

1.

- The logical operator '`||`' should be replaced with '`&&`' to check `numNeighbors` variable.
- The assignment operator '`=`' should be replaced with the equality operator '`==`'.
- The if-else statement is missing braces '`{}`' to enclose the blocks of code.

2.

- The '`number`' variable is assigned to 4, and '`alpha`' variable is assigned to -1.0.
- The first if statement checks if `number` is greater than 0. Since greater than 4. The condition is satisfied, the execution continues to the inner if-else block.
- The inner if statement checks if `alpha` is greater than 0. When statement not satisfied. Therefore, the execution moves to the else block.
- Inside the else block, the program encounters the `printf` statement.
- After all, there is `printf` statement that is not part of any conditional blocks.
- Finally, code print the 'No, actually, I'm here!'

3.

- All possible outcomes:
  - If 'makesBreakthrough' is true and 'doesSignificantWork' is true, 'nobelPrizeCandidate' will be true.
  - If 'makesBreakthrough' is false and 'doesSignificantWork' is true, 'nobelPrizeCandidate' will be false.
  - If 'doesSignificantWork' is false, 'nobelPrizeCandidate' will always be false.

4.

- ```
If (taxCode == 'T') {  
    Price += taxRate * price;  
}
```
- ```
if (code == 1) {  
    double a, b;  
  
    double sum = a + b;  
  
    printf("Sum of A and B: %.2f\n", sum);  
}
```

- ```
if (currentNumber % 2 != 0) {  
    currentNumber = 3 * currentNumber + 1;  
}  
else {  
    currentNumber = currentNumber / 2;  
}
```
- ```
if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {  
    leapYear = true;  
}
```
- ```
if (distance >= 0 && distance <= 100) {  
    cost = 5.00;  
}  
else if (distance > 100 && distance <= 500) {  
    cost = 8.00;  
}  
else if (distance > 500 && distance < 1000) {  
    cost = 10.00;  
}  
else if (distance >= 1000) {  
    cost = 12.00;  
}
```