C Tutorial 04

01. * Error 1: Use '==' for comparison instead of '=' for assignment.
    * Error 2: Indentation should be inside the if block.
    * Error 3: Indentation should be inside the else block.

```
if (numNeighbors >= 3 || numNeighbors == 4) {

    ++numNeighbors;

    printf("You are dead! \n");

} else {

    --numNeighbors;

}
```

02. Output
    Here I am!
    No, actually, I'm here!
    Explanation:
    *The variable number is initialized to 4.
    *The variable alpha is initialized to -1.0.
    *The first if statement checks if number is greater than 0. Since the value of number is 4, the condition is true, and the program proceeds to the nested if-else statement.
    *The second if statement checks if alpha is greater than 0. However, the value of alpha is -1.0, which is not greater than 0. Therefore, the condition is false, and the program executes the else block associated with the second if statement.
    *The else block prints "No, I'm here!" to the console.
    *The program then encounters a printf statement outside of any conditional blocks. This statement will always be executed unconditionally.
    *The final printf statement prints "No, actually, I'm here!" to the console.

04. a) if (taxCode == 'T') {

```
        price += (taxRate / 100) * price;

    }
```

    b) if (opCode == 1) {

```
        double X, Y;
```

```c
    scanf("%lf %lf", &X, &Y);

    double sum = X + Y;

      printf("Sum: %lf\n", sum);

  }
```

c)
```c
if (currentNumber % 2 == 1) {

    currentNumber = 3 * currentNumber + 1;

  } else {

    currentNumber = currentNumber / 2;

  }
```

d)
```c
if (year % 4 == 0) {

    if (year % 100 != 0 || year % 400 == 0) {

      leapYear = true;

    }

  }
```

e)
```c
if (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;

  }
```