Tutorial 04 – Writing if condition

1) What is wrong with the following if statement (there are at least 3 errors). The Indentation indicates the desired behavior.

```
if numNeighbors >= 3 || numNeighbors = 4 ++numNeighbors; printf("You are dead! \n " );
else --numNeighbors;
```

- The operator should be == instated =
- There should be {} after if condition and before else
- increment and decrement should be inside the {}

2) Describe the output produced by this poorly indented program segment:

```
int number = 4;
double alpha = -1.0;
if (number > 0)
if (alpha > 0)
printf("Here I am! \n" );
else
printf("No, I’m here! \n");
printf(“No, actually, I’m here! \n");
```

You wont get the output

```
mp/VK8ImSdnGD.c:3:1: error: expected identifier or '(' before 'if'
    3 | if (number > 0)
      | ^~
/tmp/VK8ImSdnGD.c:6:1: error: expected identifier or '(' before 'else'
    6 | else
      | ^~~~
/tmp/VK8ImSdnGD.c:7:23: error: stray '\' in program
    7 | printf("No, I"m here! \n");
      |                       ^
/tmp/VK8ImSdnGD.c:7:25: warning: missing terminating " character
    7 | printf("No, I"m here! \n");
      |                         ^
/tmp/VK8ImSdnGD.c:7:25: error: missing terminating " character
    7 | printf("No, I"m here! \n");
      |                         ^~~
```

3) Consider the following if statement, where doesSignificantWork, makesBreakthrough, and nobelPrizeCandidate are all boolean variables:

```
if (doesSignificantWork) {
if (makesBreakthrough)
nobelPrizeCandidate = true;
else
nobelPrizeCandidate = false;
}
else if (!doesSignificantWork)
nobelPrizeCandidate = false;
```

you can use && operator to simplify if conditions

4) Write if statements to do the following:

- – If character variable taxCode is 'T', increase price by adding the taxRate percentage of price to it

```
char taxCode = 'T';
double price = 100.0;
double taxRate = 0.08;
if (taxCode == 'T') {
price += price * taxRate;
}
printf("Final price after applying tax: %.2lf\n", price);
return 0;
}
```

- – If integer variable opCode has the value 1, read in double values for X and Y and calculate and print their sum.

```
if (opCode == 1) {
printf("Enter the value of X: ");
scanf("%lf", &X);
printf("Enter the value of Y: ");
scanf("%lf", &Y);
double sum = X + Y;
printf("Sum of X and Y: %.2lf\n", sum);
}
return 0;
}
```

- – If integer variable currentNumber is odd, change its value so that it is now 3 times currentNumber plus 1, otherwise change its value so that it is now half of currentNumber (rounded down when currentNumber is odd).

```
if (num % 2 == 1) {
// If currentNumber is odd
```

```
num = 3 * num + 1;
} else {
// If currentNumber is even
num = num / 2;
}
printf("Updated currentNumber: %d\n", num);
return 0;
}
```

- – Assign true to the boolean variable leapYear if the integer variable year is a leap year. (A leap year is a multiple of 4, and if it is a multiple of 100, it must also be a multiple of 400.)

```
int year;
bool leapYear = false;
printf("Enter a year: ");
scanf("%d", &year);
if ((year % 4 == 0 && year % 100 != 0) || year % 400 == 0) {
leapYear = true;
}
if (leapYear) {
printf("%d is a leap year.\n", year);
} else {
printf("%d is not a leap year.\n", year);
}
return 0;
}
```

- – Assign a value to double variable cost depending on the value of integer variable distance as follows:

```
int distance;
double cost;
printf("Enter the distance: ");
scanf("%d", &distance);
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;
} else {
printf("Invalid distance entered.\n");
return 1
}
printf("The cost for the distance is: %.2f\n", cost);
return 0;
```