

Questions: Control Statements

One of the essential features of computer programs is their ability to **make decisions**. Like a train that changes tracks depending on how the switches are set, a program can take different actions depending on inputs and other circumstances.



The **if** statement is used to implement a decision.

When a condition is fulfilled, one set of statements is executed. Otherwise, another set of statements is executed.

Relational Operator Examples	
Expression	Value
$3 \leq 4$	True
 $3 \leq 4$	Error
$3 > 4$	False
$4 < 4$	False
$4 \leq 4$	True
$3 == 5 - 2$	True
$3 != 5 - 1$	True
 $3 = 6 / 2$	Error
$1.0 / 3.0 == 0.33333333$	False
 $"10" > 5$	Error

What will be output of the following programs?

1.

```
int x=10, y=0;
if (x > 10)
{
    x = x * 5;
    y = x - 10;
}
Console.WriteLine(x);
Console.WriteLine(y);
```

2.

```
int x = 10, y = 0;
if (x >= 10)
{
    x = x * 5;
    y = x - 10;
}
Console.WriteLine(x);
Console.WriteLine(y);
```

3.

```
int x = 10, y = 0;
if (x >= 10)
{
    x = x * 5;
    y = x - 10;

    if (x > 20)
    {
        x = x*2;
        y = x + 10;
    }
}
```

```
Console.WriteLine(x);  
Console.WriteLine(y);
```

4.

```
int v=300;  
if (v % 3 == 0)  
    Console.WriteLine(v + " is divisible by 3");  
else  
    Console.WriteLine(v + " is not divisible by 3");
```

5.

```
Console.WriteLine("Enter an integer number:");  
  
int x=int.Parse(Console.ReadLine());  
if (x > 0)  
    Console.WriteLine(x + " is a positive number");  
else if (x < 0)  
    Console.WriteLine(x + " is a negative number");  
else  
    Console.WriteLine("x is zero");
```

6.

```
Console.WriteLine("Enter a number between 1-7");  
  
int x=int.Parse(Console.ReadLine());  
if (x == 7)  
    Console.WriteLine("sunday");  
else if (x == 6)  
    Console.WriteLine("monday");  
else if (x == 5)  
    Console.WriteLine("tuesday");  
else if (x == 4)  
    Console.WriteLine("wednesday");  
else if (x == 3)  
    Console.WriteLine("thursday");  
else if (x == 2)  
    Console.WriteLine("friday");  
else if (x == 1)
```

```
Console.WriteLine("saturday");  
else  
    Console.WriteLine("invalid entry");
```

7.

```
int x = 1;  
  
int y = 1;  
int z = 0;  
if (!(x == 1 || y == 1))  
    Console.WriteLine(1);  
  
else if (!(x == 1) || (!(y == 1 && z == 0)))  
    Console.WriteLine(2);  
  
else if (!(x == 1 || y == 1) || (y == 1 && x == 1))  
    Console.WriteLine(3);  
  
else  
    Console.WriteLine(4);
```

Boolean Truth Tables								
A	B	A and B	A	B	A or B	A	not A	
true	true	true	true	true	true	true	false	
true	false	false	true	false	true	false	true	
false	true	false	false	true	true			
false	false	false	false	false	false			

8.

```
Console.WriteLine("Enter an integer");

int x = int.Parse(Console.ReadLine());

Console.WriteLine("Enter an integer");
int y = int.Parse(Console.ReadLine());

if ((x ^ y) != 0)

    Console.WriteLine(x + " and " + y + " are different");
else
    Console.WriteLine(x + " and " + y + " are same");
```

9.

```
int y = 2024;
if (y % 4 == 0)
    if (y % 100 == 0)
    {
        if (y % 400 == 0)
            Console.WriteLine(y + " is leap year");
        else
            Console.WriteLine(y + " is not a leap year");
    }
else
    Console.WriteLine(y + " is leap year");
else
    Console.WriteLine(y + " is not a leap year");
```

10.

```
if (!(1 == 1))
    Console.WriteLine("True");
else
    Console.WriteLine("False");
```

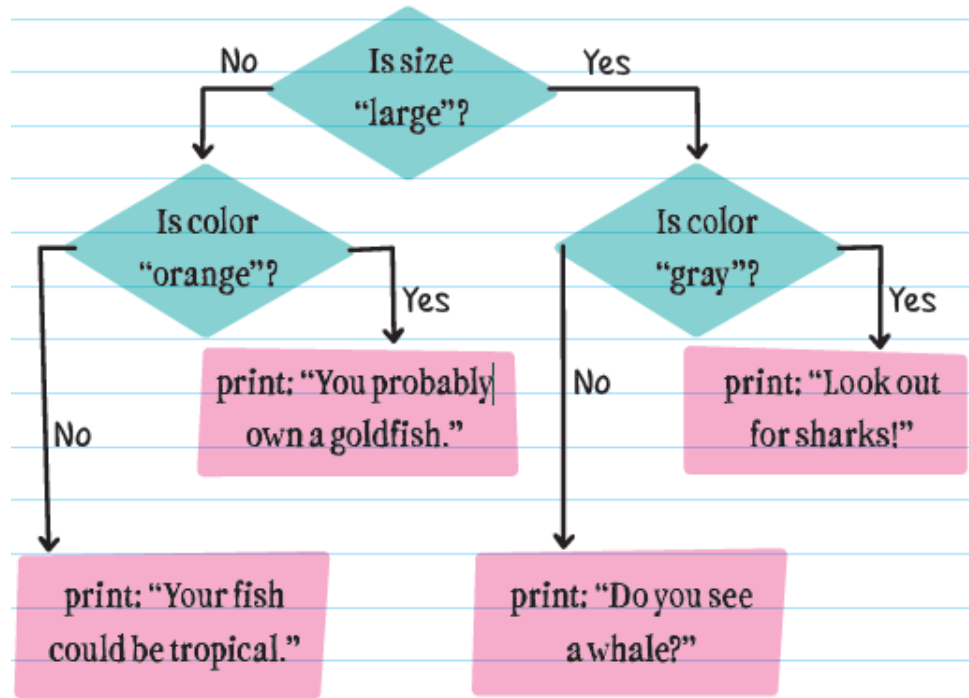
11.

```
string color1 = "red";  
string color2 = "blue";  
if (color1 == "red" && color2 == "yellow")  
    Console.WriteLine("orange");  
else if (color1 == "red" && color2 == "blue")  
    Console.WriteLine("purple");  
else Console.WriteLine("green");
```

12. Mark each compound conditional statement as True or False:

- A. You live on planet Earth AND the moon
- B. You can breathe air OR breathe water
- C. Not(You are human)
- D. Spider-Man is real OR Batman is real

13.. Write a program for the following flowchart.



14. What would the program in question 13 print if the variable **"color"** had the value **"orange"** and the variable **"size"** had the value **"small"**?

Exercises :-

1. Write a program to check whether a given number is even or odd.
2. Write a program to find whether a given year is a leap year or not.
3. Write a program to find the largest of three numbers.