C# Basics: Algorithms

So now let's talk about the big deal. Writing code, or Algorithms. Most of your time programming will revolve on designing Algorithms.

Line of code

Each line of code is either

1) Declaration of Variable

2) Assignment of previously declared variable

3) Using/Calling a Method

4) Control structure

We already showed 1-3 previously. Let's talk about Control Structure

Control Structure

Rule#1 of a computer. It reads a program file LINE BY LINE. So your program ends up kind of like a instruction manual.

Step 1: Computer draw Player

Step 2: Computer make player jump etc.

But you might get some problems if you want more complicated code like, Computer only make player jump IF she pressed the jump button. Now what we need are something called Control Structures. What they do is control what lines are read by a computer.

If/Else Control Structure

If/Else Control Structure is used when you only want code to be run IF a condition is met.

Syntax:

```
if (condition)
     {
     //code to run only if condition is met
}
else
{
     //code to run only if condition is NOT met
}
```

What this control structure needs is a condition, a condition is anything that has a true/false value, or in other words, **is a bool**!

isGameStarted, didPlayerPressSpaceBar, isEnemyCollidingWithBullet are all examples of conditions

Armed with this you can now write lines of code and only execute code you want to be executed. New problem: What if I wanted code to keep running until a condition is met?

While Loop

A While Loop is a control structure that forces a computer to repeat code while some condition is true. You could use this to fire 100 bullets for

example by saying [Code: while(numOfBulletsFired < 100){FireAnotherBullet();}] This code will fire a bullet, and then check if you have fired less than 100 bullets. If not fire another bullet and so on..

Syntax:

```
while(condition)
{
     //code to repeat until condition is not met
}
```

Warning: Make sure the while condition is not always true. If it's always true you have an infinite loop and no more code will run! In fact, your game effectively stops and freezes!