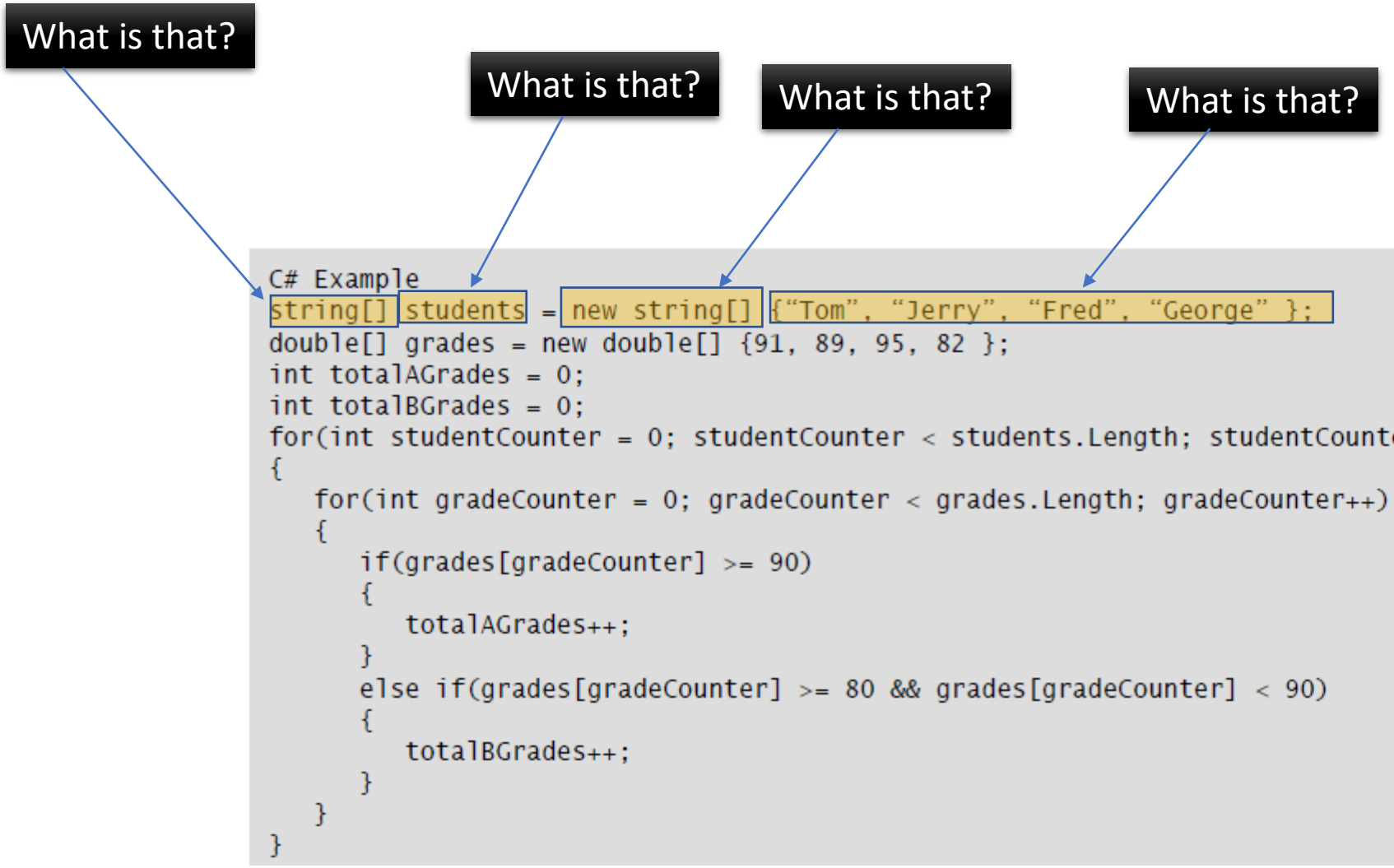
# Review questions (R1)

When does this loop end?

```
for(int loopCounter = 0; loopCounter < 10; loopCounter++)
{
   Console.Out.WriteLine("loopCounter is at: " + loopCounter);
   total = total + loopCounter;
}
Console.Out.WriteLine("Total of values is: " + total);
Console.Out.WriteLine("Average is: " + total / 10);
```


What is that?
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What is that?
C# Example
string[] students = new string[] {"Tom", "Jerry", "Fred", "George" };
double[] grades = new double[] {91, 89, 95, 82 };
int totalAGrades = 0;
int totalBGrades = 0;
for(int studentCounter = 0; studentCounter < students.Length; studentCounter++)
{
for(int gradeCounter = 0; gradeCounter < grades.Length; gradeCounter++)
{
if(grades[gradeCounter] >= 90)
{
totalAGrades++;
}
else if(grades[gradeCounter] >= 80 && grades[gradeCounter] < 90)
{
totalBGrades++;
}
}
}

What is going on here?

```
int[,] newArray = new int[,] {{3,1}, {10,2}, {9,3}, {8,4}, {5,5}, {12,6}, {2,7},
```

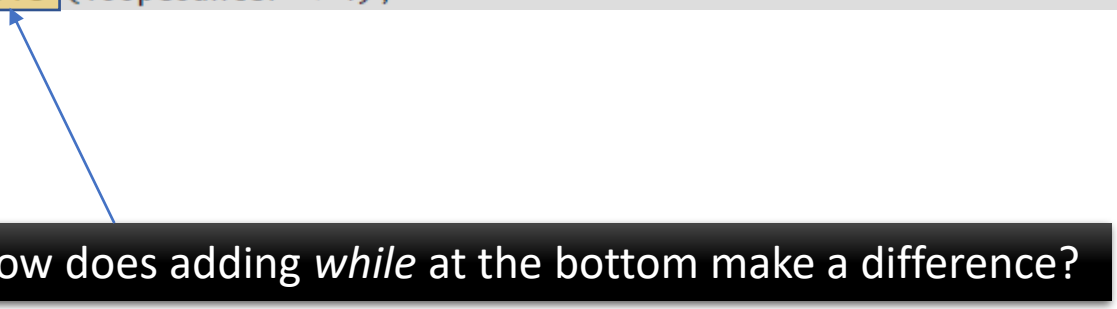
What is the point of *foreach*?

```
C# Example
foreach(string student in students)
{
    foreach(double grade in grades)
    {
        if(grade >= 90)
        {
            totalAGrades++;
        }
        else if(grade >= 80 && grade < 90)
        {
            totalBGrades++;
        }
    }
}
```

When does this loop end?

```
C# Example
int loopCounter = 0;
while (loopCounter < 4)
{
    Console.Out.WriteLine(loopCounter);
    loopCounter++;
}
```

```
C# Example
int loopCounter = 0;
do
{
   Console.Out.WriteLine(loopCounter);
   loopCounter++;
} while (loopCounter < 4);
```



## What is going on here?

```
C# Example
long value = Factorial(10);
Console.Out.WriteLine(value);
static long Factorial(int n)
{
   if (n == 0)
   {
      return 1;
   }
   return n * Factorial(n - 1);
}
```

# What is a stack?

```
C# Example
Stack myStack = new Stack();
myStack.Push("Hello");
myStack.Push(2);
myStack.Push(newArray);
myStack.Push("This is on top");
Console.WriteLine(myStack.Peek());
myStack.Pop();
Console.WriteLine(myStack.Peek());
```

What is going on here?

```
C# Example
Stack<int> intStack = new Stack<int>();
intStack.Push(4);
intStack.Push(10);
intStack.Push(35);
Console.WriteLine(intStack.Peek());
```

What is going on here?

```
C# Example
Dictionary<string, string> myDictionary = new
System.Collections.Generic.Dictionary<string, string>();
myDictionary.Add("One", "A text value used to represent the number 1.");
myDictionary.Add("Tree", "A perennial plant with an elongated stem, or trunk,
supporting leaves or branches");
```

What is going on here?

```
C# Example
static void Main(string[] args)
{
    string errorMessage;
    try
    {
        // Some math functionality here
    }
    catch(OverflowException ofEx)
    {
        errorMessage = ofEx.Message;
    }
    catch(DivideByZeroException dEx)
    {
        errorMessage = dEx.Message;
    }
    catch(Exception e)
    {
        errorMessage = e.Message;
    }
}
```

What is going on here?

```
C# Example
static void Main(string[] args)
{
   try
   {
      // Some code to open and access a file here
   }
   catch(IOException ioEx)
   {
      errorMessage = ioEx.Message;
   }
   finally
   {
      if(file != null)
      {
         file.Close();
      }
   }
}
```

What is going on here?

```
C# Example
public struct name
{
    string firstName;
    string middleName;
    string lastName;
    string suffix;
    public name(string first, string middle, string last, string suff)
    {
        firstName = first;
        middleName = middle;
        lastName = last;
        suffix = suff;
    }
    public string getFullName()
    {
        return firstName + " " + middleName + " " + lastName + " " + suffix;
    }
}
```

C# Example

```
public class Person
{
    public float _height;
    public float _weight;
    public string _ethnicity;
    public string _gender;
    public Person()
    {
        _height = 5.7F;
        _weight = 198.6F;
        _ethnicity = "Doesnt matter";
        _gender = "male";
    }
    public Person(float height, float weight, string ethnicity, string gender)
    {
        _height = height;
        _weight = weight;
        _ethnicity = ethnicity;
        _gender = gender;
    }
    public void Walk()
    {
    }
    public void Run()
    {
    }
    public void Eat()
    {
    }
    public void Sit()
    {
    }
    public void Speak()
    {
    }
}
```

What is going on here?

What is going on here?

```
C# Example
abstract class Person
{
    private float height;
    private float weight;
    private string gender;
    private int age;
    private string firstName;
    private string lastName;
    public void eat() {  }
    public void sleep() {  }
    public void move() {  }
    public void communicate() {  }
}
```

What is going on here?

```
C# Example
abstract class Person
{
    // public methods
    public virtual void eat()
    {
        Console.WriteLine("slurping");
    }
    public void sleep()
    {
        Console.WriteLine("Snoring");
    }
    abstract public void move();
}
class Student : Person
{
    public override void move()
    {
        Console.WriteLine("Walking");
    }
    public override void eat()
    {
        Console.WriteLine("Chewing");
    }
}
```

What is *Polymorphism*?

What is a *reference type?*

What is a *Value type?*

What does the .net Framework garbage collector do?

Why does it exist?