11. What is the purpose of the "params" keyword?

> **Brief summary:** The "params" keyword allows us to pass any number of parameters of the same type to a method.

Imagine you want to create a function that sums up any number of provided integers. You could have an array of integers as input parameters:

```csharp
static int Sum(int[] numbers)
{
    var sum = 0;
    foreach (var number in numbers)
    {
        sum += number;
    }
    return sum;
}
```

And then, use it like this:

```csharp
Sum(new[] { 1, 2 });
Sum(new[] { 1, 2, 3, 4 });
Sum(new int[] { });
```

It is a bit clumsy, though. Declaring an array every time we want to call the Sum function makes the code longer and less readable. Instead, we could use the **params** keyword with the input array parameter.

```
static int Sum(params int[] numbers)
{
    var sum = 0;
    foreach (var number in numbers)
    {
        sum += number;
    }
    return sum;
}
```

Params keyword specifies a method parameter that takes any number of arguments. The parameter type **must be a single-dimensional array** - otherwise, we will get a compiler error.

```
static void SomeFunction(params List<int> numbers)
{
                              CS0225: The params parameter must be a single dimensional array
}
```

So now, we can call the Sum method like this:

```
Sum(1, 2);
Sum(1, 2, 3, 4);
Sum();
```

This code is much more readable and concise. Please note that the parameter with **params keyword must be the last** in the parameters list. It makes sense - since there can be any number of values there, the compiler would not know if the following parameter is still the member of the params array or if it is the next parameter in the parameters list.

```
static void SomeFunction(params int[] numbers, int multiplier, params[] otherNumber)
{
                              CS0231: A params parameter must be the last parameter in a formal parameter list
}
```

Calling this method like this would be confusing:
SomeFunction(1,2,3,4,5);
How could .NET know which number belongs to numbers, and which to otherNumbers parameter?

Tip: other interview questions on this topic:

- **"Why must the parameter with params modifier be the last in the parameters list?"**
  Because if it wasn't, and there was another parameter after it, the compiler would not know if this parameter belongs to the params array or not.