

Using Loops

C# Programming

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What we can do so far

- We know there are three flavours of loops
 - do - while - put the test at the end
 - while - put the test at the start
 - for - create and update a control variable
- We also know that we can **continue** (go round again) and **break** (leave the loop)



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- What kind of loop?
- **A do – while loop will work best**
- Why?
- **Because this loop always performs the statements in the loop at least once**

Pick another Loop

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- What kind of loop?
- **A For loop would work best for this**
- What would it look like?

```
for ( i = 1; i < 13 ; i = i+1)
```

Final Loop

- I want to print out a square of * characters on the screen
- The square should be 40 across and 10 down
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- I want to print out a square of * characters on the screen
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- What kind of loop?
- **This is a tricky one**
- **We need to put one loop inside another**

Nesting Loops

- It is perfectly OK to put one loop inside another
- Many programs do this
- In this case it might help if we rephrase the problem
“Print out 10 lines, each containing 40 characters”

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Two control variables

- If we have two loops we need two counters

```
int charNo;
int lineNo;
```

- One counts the lines, the other counts the characters

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The Outer Loop

- The Outer Loop repeats for each line

```
for (lineNo = 0; lineNo < 10; lineNo = lineNo + 1)
{
}
```

- We want 10 lines, and so the loop goes round 10 times

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The Final Program

```

int charNo;
int lineNo;

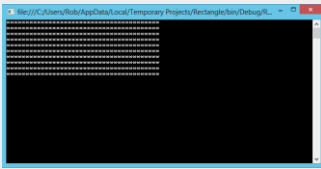
for (lineNo = 0; lineNo < 10; lineNo = lineNo + 1)
{
    for (charNo = 0; charNo < 40; charNo = charNo + 1)
    {
        Console.Write("*");
    }
    Console.WriteLine();
}

```

- Once we have printed the * characters the program must move on to the next line

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Final Output



- This is what the program produces

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Changing the code

- To print more lines we need to change the value 10 to a different one
- To print more characters we need to change the value 40 to a different one

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Summary

- You need to pick the loop that is appropriate for the task in hand
 - Decide where the test needs to go
 - Decide if you are repeating something a particular number of times
- You can put one loop inside another
