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	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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Pick a Loop

- I want to ask a user for a film number and reject values outside the range of 1-6
- · What kind of loop?

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Pick a Loop	
 I want to ask a user for a film number and reject values outside the range of 1-6 What kind of loop? 	
• A do – while loop will work best	
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Pick a Loop	
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Pick a Loop	
• I want to ask a user for a film number and reject values outside the range of 1-6	
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 	
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Pick another Loop	
• I want the user to enter a number, and make my program print out the times	
table for that number, up to 12 • What kind of loop?	
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Pick another Loop	
• I want the user to enter a number, and make my program print out the times	
table for that number, up to 12 • What kind of loop?	
A For loop would work best for this	
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Pick another Loop	
• I want the user to enter a number, and make my program print out the times	
table for that number, up to 12 • What kind of loop?	
A For loop would work best for thisWhat would it look like?	
What would it look like:	

UNIVERSITY OF Hull Pick another Loop · I want the user to enter a number, and make my program print out the times table for that number, up to 12 • 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) Chapter 6.2 : Loops 11-Oct-13 ©Rob Miles 10 UNIVERSITY OF Hull Final Loop • I want to print out a square of * characters on the screen • The square should be 40 across and 10 down · What kind of loop? UNIVERSITY OF Hull **Final Loop**

- I want to print out a square of * characters on the screen
- The square should be 40 across and 10 down
- · 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)
{
}</pre>

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

The Inner Loop

• The Inner Loop repeats for each character

```
for (charNo = 0; charNo < 40; charNo = charNo + 1)
{
}</pre>
```

• We want 40 characters and so the loop goes round 40 times

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The Final Program

• This is the final program

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The Final Program

· Create the counter variables

The Final Program

 This is the outer loop, it goes round once for each line on the screen

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The Final Program

- This is the inner loop
- · It goes round once for each character

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The Final Program

- This writes a single *
- · It uses Write, so it doesn't take a new line

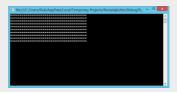
The Final Program

• 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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loop that is	
sk in hand	
needs to go	
ating something a	
times	
inside another	

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

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