

Nested Loops

- A loop within a loop
- Can repeat multiple things within a loop
- Example:

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 $_{\circ}$ Read in 10 grades for each of 20 students

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 $_{\circ}\,$ How would we write loops to do this?

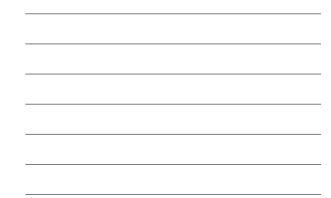
What is the Output?

```
for (int i = 0; i < 3; i++)
{
    for (int j = 0; j < 2; j++)
    {
        // how many times will this run?
        cout << "`*";
    }
    // how many times will this run?
        cout << endl;
}
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```

```
What is the Output?
for(int i = 3; i > 0; i--)
{
  for(int j = 0; j < i; j++)
   {
    cout << ``*";
   }
   cout << endl;
}</pre>
```

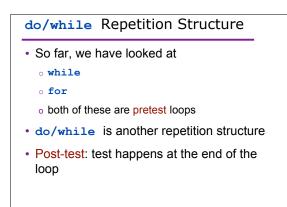
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Practice		
	tatements that will read in an the user (n) and produce:	
1		
22		
333		
4444		
nnnnnnnn		
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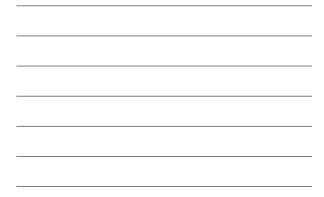
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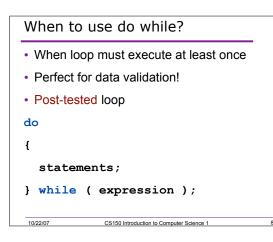


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```
do/while Loops
do
{
 cout << "Enter a year:" << endl;</pre>
  cin >> year;
} while (year < 0); // TEST!</pre>
// The body of the loops happens
// before the test
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```

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```
What's the output?
int m = 10;
do
{
  cout << m << endl;</pre>
  m = m - 3;
} while (m > 0);
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                                           ٩
```

Example

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• Write C++ statements that will read in integers from the user until the user inputs an integer between 5 and 10.

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```
Rewrite as a do/while loop
int num = 0;
// what is the output?
while (num <= 6)
{
   cout << num << endl;
   num += 2;
}</pre>
```

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```
Rewrite as a do/while Loop
// what is the output?
for (n = 3; n > 0; n--)
{
    cout << n << " squared is"
        << n * n << endl;
}
</pre>
```

```
What is the Output?
```

```
int counter = 1;
do
{
    cout << counter << " ";
} while( ++counter <= 10 );</pre>
```

```
int counter = 1;
do
{
    cout << counter << " ";
} while( counter++ <= 10 );</pre>
```

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