Review Sheet – Loops

What Is A Loop

A chunk of code that will run multiple times until a condition is met, or until it has run a pre-set number of times.

Structure Of While Loop

A while loop will keep running while the condition is true. Once it's not, the loop will stop.

```
while (condition is true)
{
        // Run this code
}
```

Example:

```
int count = 0;
while (count < 3)
{
    count++;
    Console.WriteLine("The loop has run " + count + " times.");
}
```

Structure Of For Loop

```
For ( variable to count;
    how many times to run the loop;
    change the value of count)
    {
        // Code to Run
    }
```

Also written as:

```
For ( variable to count; how many times to run the loop; change the value of count)
{
        // Code to Run
}
```

Example:

```
for( int count = 0;
     count < 3;
     count++)
 {
     Console.WriteLine("The loop has run " + count + " times.");
 }
```


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Or:

```
for( int count = 0; count < 3; count++)
 {
     Console.WriteLine("The loop has run " + count + " times.");
 }
```

Count doesn't have to start at 0.
Count can be increased or decreased, and you can do it by values greater than 1.
You can use any of the relational operators that you use to check if statements to check the value of count in the middle condition. Example:

```
for( int count = 3; count >= 1; count -= 2)
 {
     Console.WriteLine("The value of count is now " + count + ".");
 }
```

Breaking Out Of Loops

If you use the keyword **break**, you can stop a loop from running early. Example:

```
for( int count = 3; count >= 0; count -= 1)
 {
     Console.WriteLine("The value of count is now " + count + ".");
     if (count == 2)
     {
         break;
     }
 }
 Console.WriteLine("The loop is now finished.");
 Console.ReadKey();
```

If you put the above code into a program, the loop should run until **count** is 0, however we stop the loop early when count is 2 with our **if statement** then calling the **break** keyword, which stops the loop. When the loop is stopped, it runs the next line of code.

Returning From A Loop

If you used the word **return** instead of **break** in the previous example, it wouldn't just exit out of the loop, but it would exit out of the whole function.

Loop Uses

Loops are generally used to search through data, but can also be used to run the same task multiple times and other various uses. They are essential to games creation.

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