



Loops in Programming: Making Computers Repeat Tasks

KS3 COMPUTING

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What Is a Loop?

A **loop** is a piece of code that repeats the same action over and over again without you having to type it out multiple times. Instead of writing the same instruction **100 times**, you can write it once and tell the computer to repeat it **100 times**. Loops are one of the most powerful tools in **programming** because they save time and make code much shorter and easier to read.

Think of it like a song with a chorus. Instead of singing every word out loud, you sing the verse once, then jump back and repeat the chorus over and over until the song ends. You don't rewrite the chorus each time—you just loop back to it.

Why Do We Use Loops?

Imagine you wanted to print the numbers **1 to 1000** on a screen. Without a loop, you'd have to type **1000 separate lines** of code! With a loop, you write just a few lines and the computer does the hard work. Loops help programmers:

Save time by avoiding repetitive typing. **Keep code neat** by making it shorter and easier to understand. **Handle large tasks** that would be impossible to do by hand. **Fix mistakes easily** because you only need to change the code in one place.

Types of Loops

There are different types of loops, but the most common ones are **"for" loops** and **"while" loops**. A **"for" loop** repeats a set number of times—like "repeat this action **10 times**." A **"while" loop** keeps repeating as long as something is true—like "keep checking if the player has won the game."

Think of it like a recipe. A "for" loop is like saying "stir the mixture 50 times." A "while" loop is like saying "keep heating the water until it boils." One has a fixed number of repetitions; the other continues until a condition is met.

Real-World Examples

Loops are everywhere in real programs. When you scroll through your **social media feed**, a loop loads and displays each post. When a video game counts down from **10 to 1**, it uses a loop. When your email checks for new messages, it loops through your inbox. Video game characters walking the same patrol pattern use loops. Websites displaying lists of products all use loops.

Without loops, the technology we use every day would be impossibly complicated and slow to create. Learning to write loops is one of the first skills young programmers master because they're so useful!