`while` Loops

Get started with Kotlin's loop constructs for repeating blocks of code.

we'll cover the following ^ while Loops do-while Loops Quiz Summary

Kotlin offers the three standard types of loops:

- while loops
- do-while loops
- for loops

As a programmer, loops in Kotlin will feel familiar quickly. Let's look at a few examples, starting with while and do-while loops.

while Loops

Kotlin's while loops have exactly the same syntax and semantics as while loops in Java or C:

```
val input = 17
var sqrtApprox = 1.0
var delta = 1.0

while (delta > 0.001) { // `while` block is repeated until error gets below threshold
    sqrtApprox = 0.5 * (sqrtApprox + input / sqrtApprox)
    delta = Math.abs((input - sqrtApprox*sqrtApprox) / (2*sqrtApprox))
}

println("sqrt($input) is approximately $sqrtApprox")
```







The while keyword is followed by a condition. The loop will repeat its code block until this condition evaluates to false.

This code example approximates the square root of the input up to an error margin of at most 0.001.

do-while Loops

The do-while loop checks its condition *after* each iteration, whereas the regular while loop checks it *before* each iteration. Consequently, a do-while loop always performs at least one iteration. This is why it's typically used in cases where that first iteration gets some initial data, e.g. user input:

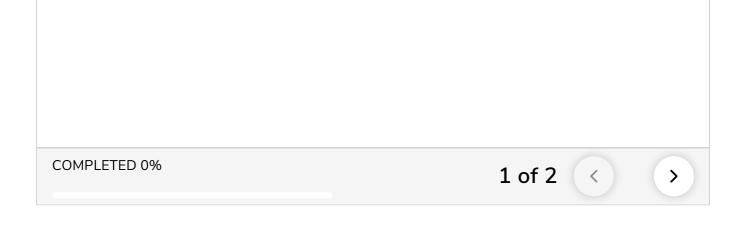
```
do {
  print("> ")
  val input = getUserInput()
  println("User typed: $input")
} while (input != ":q")
```

The advantage here is that you can limit the scope of the <code>input</code> variable to the loop block, which is not possible using a regular <code>while</code> loop. It's good practice to minimize the scopes of your variables.

Quiz

```
What's the output of the following program?

println("Output: ")
while(false) {
    println("#")
}
```



Note: Exercises follow in the next lesson on **for** loops.

Summary

Kotlin provides two slightly different while loop structures:

- The regular while loop checks its condition before each iteration.
- The do-while loop checks its condition *after* each iteration.
- Generally, while loops are used when the number of iterations is not fixed.

In the next lesson, you will explore Kotlin's for loops as an alternative to while loops, and learn when to prefer which type of loop.