Conditions with 'when'

Understand Kotlin's 'when' construct and best practices of using 'if' vs 'when'.



Conditions Using when

You can use when conditions to define different behaviors for a given set of distinct values. This is typically more concise than writing cascades of ifelse if conditions. For instance, you can replace the if condition above with a when condition to save around 30% of the lines of code in this example:

```
when (planet) {
   "Jupiter" -> println("Radius of Jupiter is 69,911km")
   "Saturn" -> println("Radius of Saturn is 58,232km")
   else    -> println("No data for planet $planet")
}
```

The when keyword is followed by the variable it compares against. Then, each line defines the value to check on the left-hand side, followed by an arrow -> and the block of code to execute if the value matches.

The code block on the right-hand side must be wrapped in curly braces unless it's a single expression. Optionally, an else-block can be used to define a block of code to run if no other case matches.

This language construct is basically the same as switch from languages like C or Java. However, it's more powerful since it supports more complex checks:

```
when(temperatureInKelvin) {
                                                                                        C)
     700
                      -> println("This is Mercury's max surface temperature")
                      -> println("This i as cold as it can physically get")
     0, 1, 2
     in 300..699
                      -> println("This temperature is possible on Mercury")
     !in 0..300
                      -> println("This is pretty hot")
     earthSurfaceTemp() -> println("This is earth's average surface temperature")
     is Int
                        -> println("The given temperature is of type Int")
     else
       // Example of a multiline code block
       println("Default case")
 \triangleright
```

As you can see, there are various ways to define the value(s) to compare against:

```
    Fixed value (700)
    Multiple fixed values (0, 1, 2)
    Ranges (in 300..699)
    Ranges with negation ("not in range") (!in 0..300)
    Function call (earthSurfaceTemp())
    Type check (is Int)
    Default case (else)
```

Note: Kotlin adds a break to the end of each case implicitly so that you cannot introduce bugs due to a forgotten fallthrough case.

In fact, the when construct is even more powerful because it allows arbitrary conditions by leaving out the variable after the when keyword:

```
when {
    age >= 18 && !hasAccess -> println("Falsely rejected")
    age < 18 && hasAccess -> println("Falsely approved")
    else -> println("Correctly authorized")
```







[]

Here, you can see the age variable is not mentioned in the when block's header as in when (age). This way, you can use any boolean expressions on the left-hand sides of each when case, such as age >= 18.

Good Practice: if vs when

From a theoretical viewpoint, if and when are equally powerful. Coming from other languages, using if will feel more natural in most cases. Using when is definitely preferable when comparing against two or more distinct fixed values.

However, in aiming to write idiomatic Kotlin code, I'd encourage you to consider the when construct in more cases than the switch construct known from other languages. In many cases, a when condition will be a more concise and readable alternative to a regular if condition, especially whenever the right-hand sides are single expressions.

Quiz

Conditional control flow using when

1

Which left-hand side lets you check against a range of values inside a when condition?

COMPLETED 0%

1 of 2

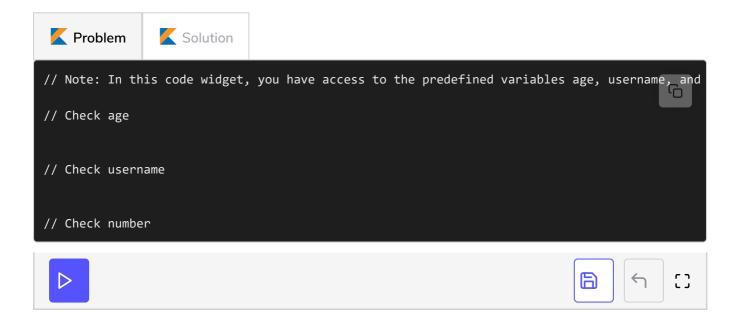
Exercises

Rewrite all conditions from the previous lesson's exercise using when:

Complete the following code snippet to check whether...

- 1. The age variable is between 18 and 21 (both inclusive)
- 2. The username variable equals "admin" or "system"
- 3. The number variable is not equal to neither 17 nor 42

...using only when conditions.



Summary

Kotlin provides an if and a when construct for conditional control flow, which are equally expressive.

- if conditions are useful for simple if-then-else logic.
- when conditions are often more succinct if you have many branches, especially when checking against specific distinct values.

In the following lesson, you'll explore how to use if and when as expressions instead of statements.