

Intro to Java

5 - Loops / Exercises: for vs. while

Exercises: for vs. while

When to use `for`? When to use `while`? These exercises help to clarify this topic. Although a task can be accomplished by using any of the two statements, often there's a statement that is better fit for the task than the other. It's important to recognize when to use one and when the other.

The general rule is:

- Use `for` when the number of iterations *is* known
- Use `while` when the number of iterations *is not* known

Known should be intended with the meaning *the number is known when the program runs, before it reaches the loop*, not with the meaning *known by the developer when the program is written*.

We hope the following exercises clarify this.

Note: these exercises don't cover *for each*, that is a different statement we will see and use after we introduce collections, in lesson 8.

Note: each exercise can be solved by using both `for` and `while`, but only one should be preferred.

Exercise 1: calculate the sum of 10 numbers

Ask the user for a fixed amount of numbers. The amount is fixed by the text of the exercise: it is 10. When the user finishes typing the 10 numbers, calculate and print the sum.

```
Please enter number 1: 48
Please enter number 2: 29
Please enter number 3: 3
Please enter number 4: -13
Please enter number 5: 58
Please enter number 6: -84
Please enter number 7: 31
Please enter number 8: 0
Please enter number 9: 14
```

```
Please enter number 10: -9  
The sum of the numbers is: 77
```

Would you use `for` or `while` for this task? Why?

Exercise 2: calculate the sum of N numbers

Ask the user for a fixed amount of numbers. The amount is fixed but decided by the user, before they start typing the numbers. We ask the user for the amount of numbers they plan to type and call it *N*. When the user finishes typing the *N* numbers, calculate and print sum.

```
How many numbers? 6  
Please enter number 1: 93  
Please enter number 2: -3  
Please enter number 3: 84  
Please enter number 4: 0  
Please enter number 5: 35  
Please enter number 6: -12  
The sum of the numbers is: 197
```

Would you use `for` or `while` for this task? Why?

Exercise 3: calculate the sum of some numbers

Ask the user for some numbers. The amount is not known in advance: the user decides when to stop by entering zero. When the user finishes typing the numbers, calculate and print sum.

```
Please enter a number: 34  
Please enter a number: 48  
Please enter a number: 1  
Please enter a number: 93  
Please enter a number: -34  
Please enter a number: -7  
Please enter a number: 0  
The sum of the numbers is: 135
```

Would you use `for` or `while` for this task? Why?

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