Java - For

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https://github.com/wbombardellis/java-unterricht

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Organization

For

- Write a program that prints all integer numbers up to 1000

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```
for (int i = 0; i <= 1000; i++) {
    System.out.println(i);
}
```

Simulations

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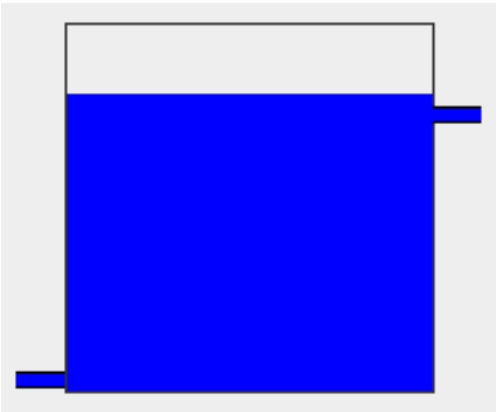

Exercises

1. Complete the simulation program (from `https://github.com/wbombardellis/java-unterricht/tree/master/Programme/09/simulation`)

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1. Complete the simulation program (from `https://github.com/wbombardellis/java-unterricht/tree/master/Programme/09/simulation`)
2. Write a program that calculates the factorial of a number. The factorial of a positive integer n, denoted by $n!$, is $n \cdot (n-1) \cdot (n-2) \cdots 1$. Additionally, $0! = 1$.

For Grammar Rules

for (⟨Statement 1⟩; ⟨Boolean Condition⟩; ⟨Statement 3⟩) {
    ...
}

- *Statement 1* is executed (one time) before the execution of the code block.
- *Boolean Condition* defines the condition for executing the code block.
- *Statement 3* is executed (every time) after the code block has been executed.

Exercises

1 Write a program that calculates the geometric series

$$\sum_{n=1}^{N} z^n$$

for any z. Verify that, for $z = \frac{1}{2}$, it converges to 1 as $N \to \infty$.

Exercises

1. Write a program that calculates the geometric series

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   for any z. Verify that, for $z = \frac{1}{2}$, it converges to 1 as $N \to \infty$.
2. Extend the previous program to also calculate the alternating harmonic series $\sum_{n=1}^{N} \frac{(-1)^{n-1}}{n}$ and verify that it converges to $ln(2)$ as $N \to \infty$.

Exercises

3 Write a program that prints the following pattern up to a desired N.

```
1
1 2
1 2 3
1 2 3 4
⋮
1 2 3 4 5 ··· N
```

Summary

- For allows you to execute the same code several times
- Next Lesson: Arrays

References

- W3C Tutorial:
  - `https://www.w3schools.com/java/java_for_loop.asp`
- Exercises:
  `https://www.w3schools.com/java/exercise.asp`
  - Java Loops