# Introduction to Computer Science and Programming 1

# CSCI120

### Chapter1

### Sample Practices with Answers

**Note:** This document has been designed and developed as part of an initiative for creating an OER (Open Education Resource) package for the course CSCI 120 at Columbia College.

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**Problem1**

* Design an algorithm and a flowchart for an application which receive a number from the input and print a shape like this: (if the input is 6)

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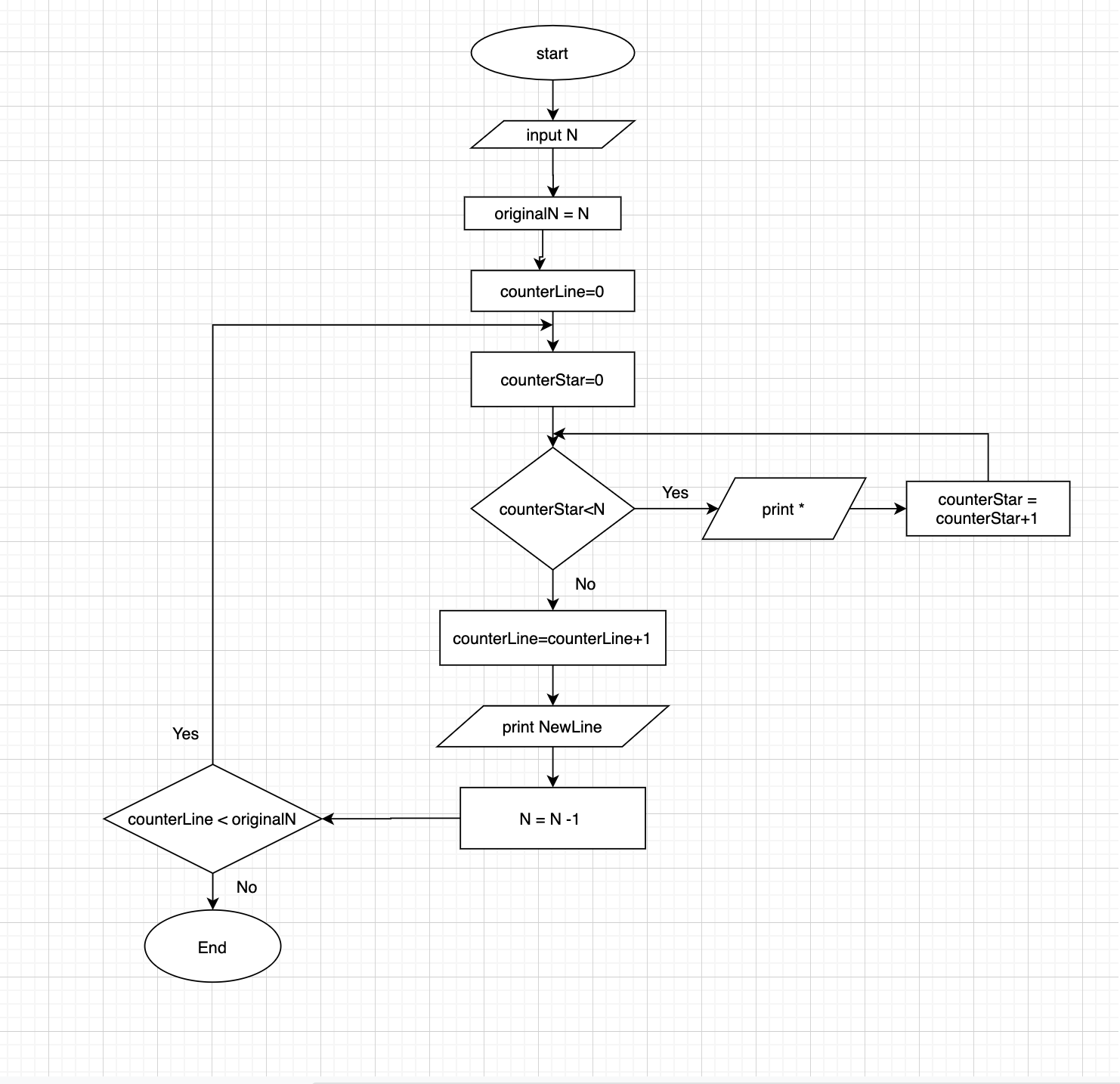
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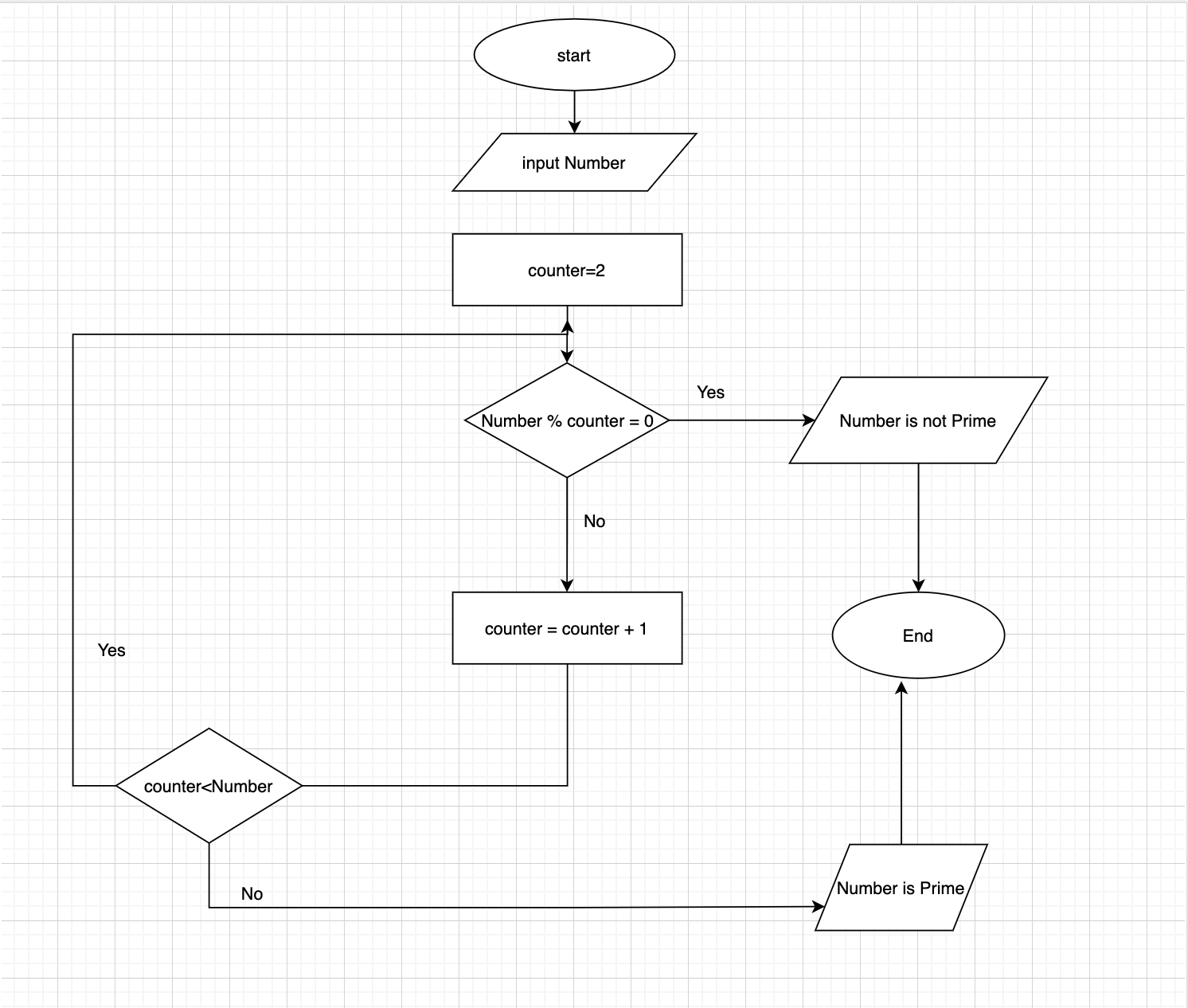
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|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| N | originalN | counterLine | counterStar | Print (output) |
| 4 | 4 | 0 | 0 | \* |
|  |  |  | 4 | \*\*\*\* |
| 3 |  | 1 | 3 | \*\*\*\*  \*\*\* |
| 2 |  | 2 | 0  2 | \*\*\*\*  \*\*\*  \*\* |
| 0 |  | 4 | 0  1 | \*\*\*\*  \*\*\*  \*\*  \* |

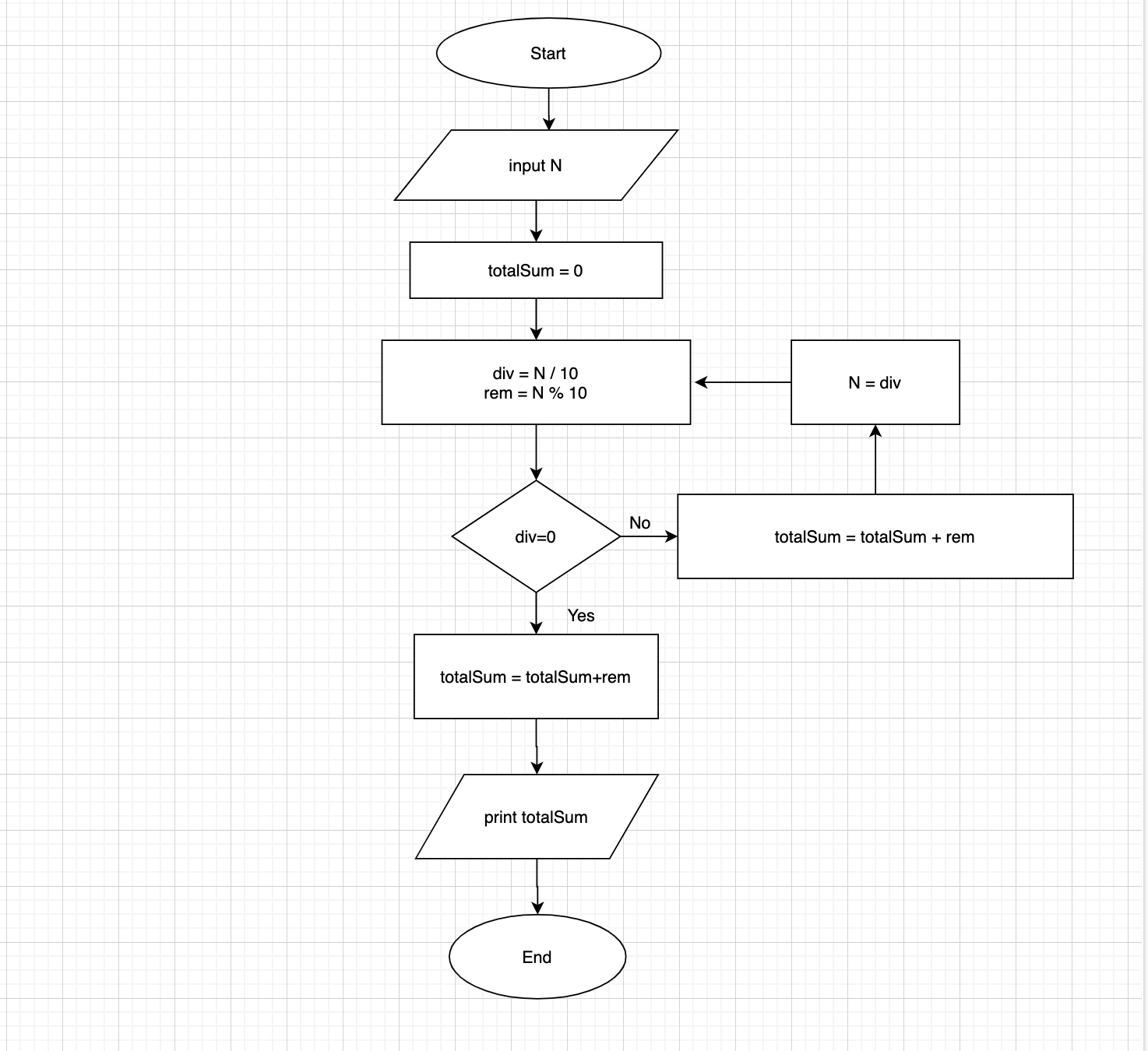
**Problem2**

* Design an algorithm and flowchart for an application which receive a number for the input and check whether the number is a prime number or not. If it is a prime number the algorithm will return true and if not the algorithm will return false.
* Prime number: <https://simple.wikipedia.org/wiki/Prime_number>

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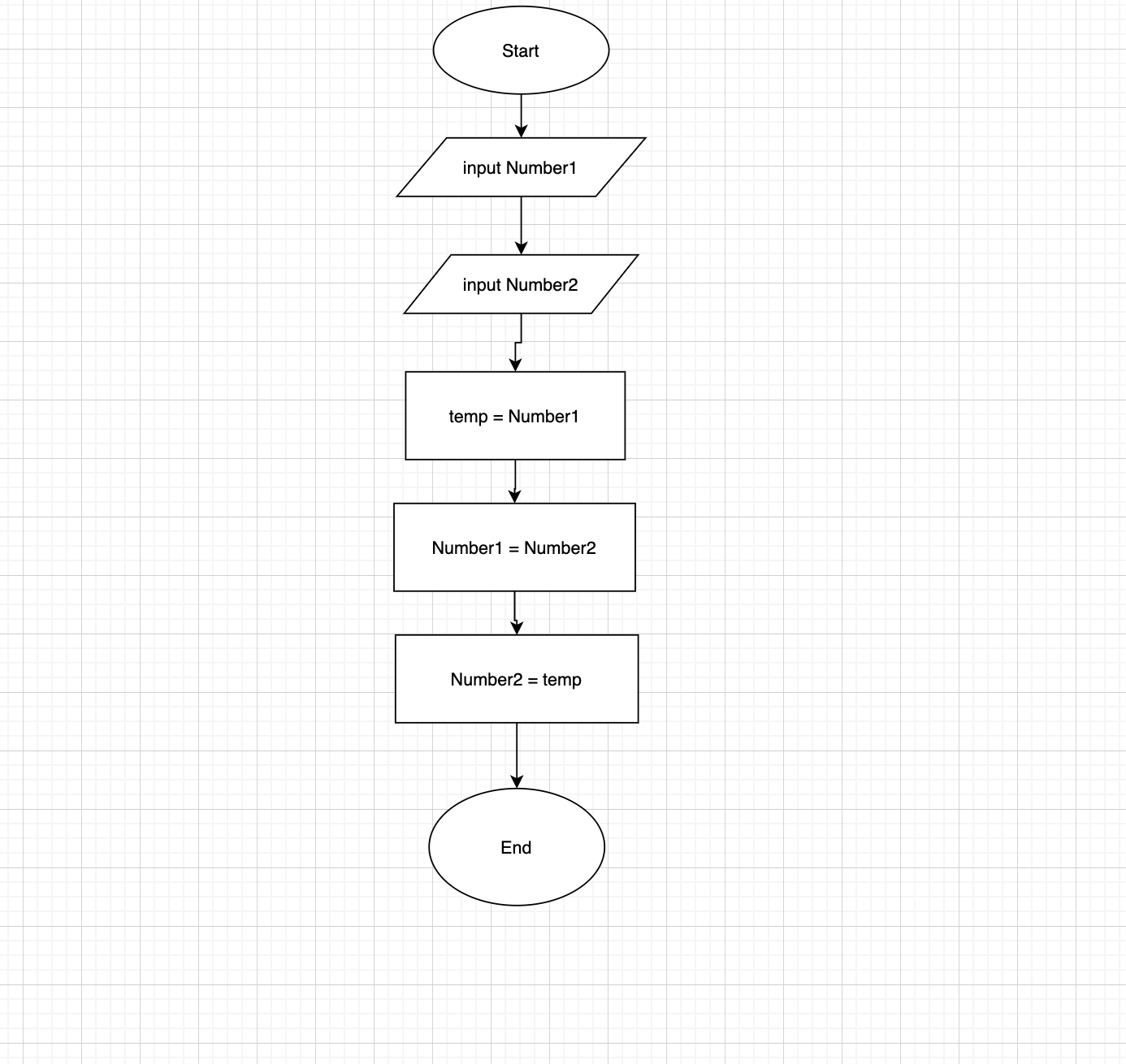
# Problem3

* Design an algorithm and a flowchart which receives a number from input and print the sum of the number’s digits. For instance if the number is 123 the algorithm return 6 which is the result of 1+2+3.

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# Problem4

* Design an algorithm and a flowchart, which takes two integer numbers and swaps their values.

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# Problem5

* Design an algorithm and a flowchart which receives two numbers A and B from the input and calculate the quotient without using the division (/) operator.
* Look at here to learn more: <https://en.wikipedia.org/wiki/Quotient>
* A = 18
* B = 4
* A / B = 4 (quotient)

