

# Matrix Multiplication API Misused

## Context

When the multiply operation is performed on two-dimensional matrixes, `np.matmul()` and `np.dot()` give the same result, which is a matrix.

## Problem

In mathematics, the result of the dot product is expected to be a scalar rather than a vector. The `np.dot()` returns a new matrix for two-dimensional matrixes multiplication, which does not match with its mathematics semantics. Developers sometimes use `np.dot()` in scenarios where it is not supposed to, e.g., two-dimensional multiplication.

## Solution

Developers **should avoid to use** `np.dot()` **and use** `np.matmul()`.

## Existing Stage

Data Cleaning

## Effect

Readability

## Example

```
Python
### NumPy
import numpy as np
a = [[1, 0], [0, 1]]
b = [[4, 1], [2, 2]]
- np.dot(a, b)

+ np.matmul(a, b)
```