# Matematika 3
# Scalar and Vector


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## Tasks

1. (a) Scalar
   (b) Vector
   (c) Scalar
   (d) Scalar

2. Using Numpy

```
[1]  import numpy as np

     # 1 dimensional array
     x = np.array([1, 2, 3, 4])
     print("1d array", x)

     # 2 dimensional array
     A = np.array([[1, 2], [3, 4], [5, 6]])
     print("2d array", A)

     # transpose
     A_t = A.T
     print("Transpose", A_t)

     A_t.shape
```

```
1d array [1 2 3 4]
2d array [[1 2]
 [3 4]
 [5 6]]
Transpose [[1 3 5]
 [2 4 6]]
(2, 3)
```

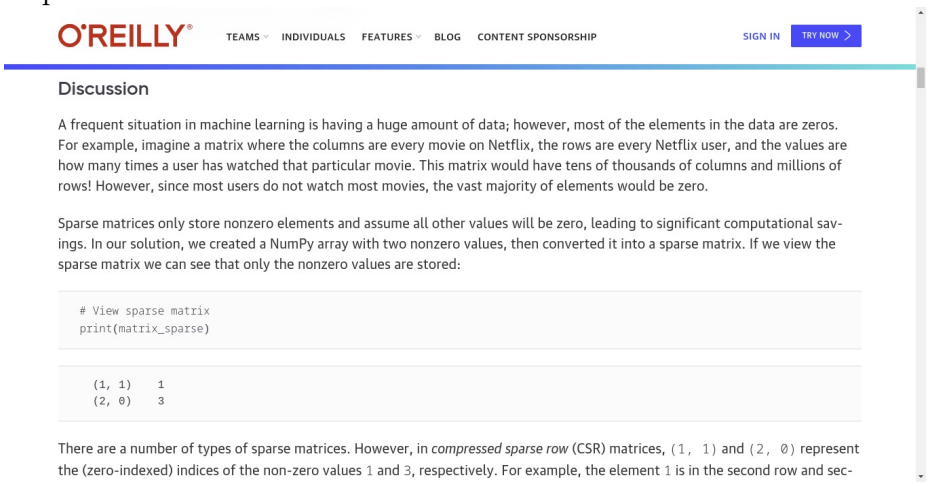
3. Row and Column Vector

```
[4]  import numpy as np

     # vector as row
     vector_row = np.array([1, 2, 3]);

     # vector as column
     vector_column = np.array([[1],
                               [2],
                               [3]])
```

4. Showing results

```
import numpy as np

# create row vector
vector = np.array([1, 2, 3, 4, 5, 6])

# create matrix vector
matrix = np.array([[1, 2, 3],
                   [4, 5, 6],
                   [7, 8, 9]])

print(vector[2])

print(vector[:])

print(vector[:3])

print(vector[3:])
```

5. Explore




6. Scalar can be used while counting money, weight, height, etc. While vector used while counting speed, gravity, etc. Basically anything that has direction and magnitude can be counted as vector while anything that only has magnitude can be counted as scalar.