H:\Uni\WiSe 2024\MOT\Exercises\4\t.py

```python
# the code used for gredient descent

import numpy as np
b = np.array([[1], [1]], dtype='float')
x = np.array([[1.5,2], [3,2.5], [4.5,3]])
y = np.array([[10],[15.5],[21]])
moo = 0.1
def grad(x,y,b):
    return 2*(x.T@x@b-x.T@y)

def error(x, y , b):
    return np.mean((x@b - y) ** 2)

print(f'b : {b} | error : {error(x, y , b)}')
b1 = b - moo * grad(x,y,b)

print(f'b1 : {b1} | error : {error(x, y , b1)}')
b2 = b1 - moo * grad(x,y,b1)
print(f'b2 : {b2} | error : {error(x, y , b2)}')
```