

# PRACTICAL-2

Apply data pre-processing techniques such as standardization/normalization, transformation, aggregation, discretization/binarization, sampling etc. on any dataset

```
❶ import numpy as np

rand_num = np.random.randint(0, 10, 10)
max_range = int(input("enter the maxima of range : "))
min_range = int(input("enter the minima of range : "))

❷ def min_max(rand_num, max_range=0, min_range=1):

    min_num = min(rand_num)
    max_num = max(rand_num)
    return (min_range + ((rand_num - min_num) * (max_range - min_range)) / (max_num - min_num))

❸ def z_score(rand_num):

    mean = np.mean(rand_num)
    stand_dev = np.std(rand_num)
    return ((rand_num - mean) / stand_dev)

print("\nrandom numbers :", rand_num)
print("min max list of given numbers :", min_max(rand_num, max_range, min_range))
print("\nz_score list of given numbers :", z_score(rand_num))
```

❶ enter the maxima of range : 40  
enter the minima of range : 12  
random numbers : [6 0 1 8 1 6 4 4 0 5]  
min max list of given numbers : [33. 12. 15.5 40. 15.5 33. 26. 26. 12. 29.5]  
z\_score list of given numbers : [ 0.92847669 -1.29986737 -0.92847669 1.67125804 -0.92847669 0.92847669  
0.18569534 0.18569534 -1.29986737 0.55708601]