INDEX

1) Write a python program to implement 'UNION OPERATION' on 2 datasets.

```
A = {"X1": 0.8, "X2": 0.9, "X3": 0.6}
B = {"X1": 0.7, "X2": 0.8, "X3": 0.5}
Y = {}

print("This is set A", A)
print("This is set B", B)

for A_key, B_key in zip(A, B):
    A_value = A[A_key]
    B_value = B[B_key]
    if A_value > B_value:
        Y[A_key] = A_value
    else:
        Y[B_key] = B_value
print(Y)
```

OUTPUT

```
This is set A {'X1': 0.8, 'X2': 0.9, 'X3': 0.6}
This is set B {'X1': 0.7, 'X2': 0.8, 'X3': 0.5}
{'X1': 0.8, 'X2': 0.9, 'X3': 0.6}
```

2) Write a python program to implement 'INTERSECTION OPERATION' on 2 datasets.

```
A = {"X1": 0.8, "X2": 0.9, "X3": 0.6}
B = {"X1": 0.7, "X2": 0.8, "X3": 0.5}
Y = {}

print("This is set A", A)
print("This is set B", B)

for A_key, B_key in zip(A, B):
    A_value = A[A_key]
    B_value = B[B_key]
    if A_value < B_value:
        Y[A_key] = A_value
    else:
        Y[B_key] = B_value
print(Y)
```

OUTPUT

```
This is set A {'X1': 0.8, 'X2': 0.9, 'X3': 0.6}
This is set B {'X1': 0.7, 'X2': 0.8, 'X3': 0.5}
{'X1': 0.7, 'X2': 0.8, 'X3': 0.5}
```

3) Write a python program to implement “NOT ‘A’ / COMPLEMENT OF A” on datasets.

```
A = {"X1": 0.8, "X2": 0.9, "X3": 0.6}
B = {"X1": 0.7, "X2": 0.8, "X3": 0.5}
Y = {}

print("This is set A", A)
print("This is set B", B)

for A_key in A:
        Y[A_key] = 1-A_value
print(Y)
```

OUTPUT

```
This is set A {'X1': 0.8, 'X2': 0.9, 'X3': 0.6}
This is set B {'X1': 0.7, 'X2': 0.8, 'X3': 0.5}
        {'X1': 0.4, 'X2': 0.4, 'X3': 0.4}
```

4) Write a python program to implement “DE-MORGAN’S LAW”.

```
A = [0.9, 0.6, 0.4]
B = [0.7, 0.8, 0.5]
def fuzzy_not(mu):
    return 1 - mu
def fuzzy_AND(mu1, mu2):
    return min(mu1, mu2)
def fuzzy_OR(mu1, mu2):
    return max(mu1, mu2)
def fuzzy_demorgan(mu_A, mu_B):
    return fuzzy_not(fuzzy_AND(mu_A, mu_B)) == fuzzy_OR(fuzzy_not(mu_A), fuzzy_not(mu_B))
for mu_A in A:
    for mu_B in B:
        print(f"fuzzy_demorgan({mu_A}, {mu_B}) =", fuzzy_demorgan(mu_A, mu_B))
```

OUTPUT

```
fuzzy_demorgan(0.9, 0.7) = True
fuzzy_demorgan(0.9, 0.8) = True
fuzzy_demorgan(0.9, 0.5) = True
fuzzy_demorgan(0.6, 0.7) = True
fuzzy_demorgan(0.6, 0.8) = True
fuzzy_demorgan(0.6, 0.5) = True
fuzzy_demorgan(0.4, 0.7) = True
fuzzy_demorgan(0.4, 0.8) = True
fuzzy_demorgan(0.4, 0.5) = True
```

5) Write a python program to visualize “FUZZY LOGIC”.

```
!pip install scikit-fuzzy
import numpy as np
import skfuzzy as fuzz
from matplotlib import pyplot as plt
a=np.arange(11)
fa=fuzz.trimf(a,[0,5,10])
print(a)
print(fa)
plt.plot(a,fa)
```

OUTPUT