

# Implement Union, Intersection, complement and difference operations on Fuzzy sets.

## Fuzzy-Set Union Operation

```
# original program
A = {"X1": 0.6, "X2": 0.2, "X3":1, "X4":0.4}
print("Set A: ", A)
B = {"X1": 0.1, "X2": 0.8, "X3":0, "X4":0.9}
print("Set B: ",B)
C = {}
for key in A:
    C[key] = (max(A[key],B[key]))
print("Union of A and B: ", C)
```

Set A: {'X1': 0.6, 'X2': 0.2, 'X3': 1, 'X4': 0.4}  
 Set B: {'X1': 0.1, 'X2': 0.8, 'X3': 0, 'X4': 0.9}  
 Union of A and B: {'X1': 0.6, 'X2': 0.8, 'X3': 1, 'X4': 0.9}

## Fuzzy-Set Intersection Operation

```
A = {"X1": 0.6, "X2": 0.2, "X3":1, "X4":0.4}
print("Set A: ", A)
B = {"X1": 0.1, "X2": 0.8, "X3":0, "X4":0.9}
print("Set B: ",B)
C = {}
for key in A:
    C[key] = (min(A[key],B[key]))
print("Intersection of A and B: ", C)
```

Set A: {'X1': 0.6, 'X2': 0.2, 'X3': 1, 'X4': 0.4}  
 Set B: {'X1': 0.1, 'X2': 0.8, 'X3': 0, 'X4': 0.9}  
 Intersection of A and B: {'X1': 0.1, 'X2': 0.2, 'X3': 0, 'X4': 0.4}

## Fuzzy-Set Compliment Operation

```
A = {"X1": 0.6, "X2": 0.2, "X3":1, "X4":0.4}
print("Set A: ", A)
B = {"X1": 0.1, "X2": 0.8, "X3":0, "X4":0.9}
print("Set B: ",B)
C = {}
D = {}
for key in A:
    C[key] = 1 - (A[key])
    D[key] = 1 - (B[key])
```

```
print("Compliment of A: ", C)
print("Compliment of B: ", D)
```

```
Set A: {'X1': 0.6, 'X2': 0.2, 'X3': 1, 'X4': 0.4}
Set B: {'X1': 0.1, 'X2': 0.8, 'X3': 0, 'X4': 0.9}
Compliment of A: {'X1': 0.4, 'X2': 0.8, 'X3': 0, 'X4': 0.6}
Compliment of B: {'X1': 0.9, 'X2': 0.19999999999999996, 'X3': 1, 'X4': 0.09999999999999999}
```

## ▼ Fuzzy-Set Difference Operation

```
A = {"X1": 0.6, "X2": 0.2, "X3":1, "X4":0.4}
print("Set A: ", A)
B = {"X1": 0.1, "X2": 0.8, "X3":0, "X4":0.9}
print("Set B: ",B)
C = {}
for key in A:
    C[key] = (min(A[key],1-B[key]))
print("Difference of A and B: ", C)
```

```
Set A: {'X1': 0.6, 'X2': 0.2, 'X3': 1, 'X4': 0.4}
Set B: {'X1': 0.1, 'X2': 0.8, 'X3': 0, 'X4': 0.9}
Difference of A and B: {'X1': 0.6, 'X2': 0.19999999999999996, 'X3': 1, 'X4': 0.09999999999999999}
```