Practical No: 6

Implement a Fuzzy based application.

AIM: Design a Fuzzy based operations using Python / R.

Code:

```
A = dict()
B = dict()
Y = dict()
# Initialize the dictionaries for fuzzy sets A, B, and the result
A = {"a": 0.2, "b": 0.3, "c": 0.6, "d": 0.6}
B = {"a": 0.9, "b": 0.9, "c": 0.4, "d": 0.5}
result = {}
# Display the fuzzy sets A and B
print('The First Fuzzy Set is:', A)
print('The Second Fuzzy Set is:', B)
# Fuzzy Set Union
for i in A:
    if A[i] > B[i]:
        result[i] = A[i]
    else:
        result[i] = B[i]
print("Union of two sets is", result)
# Fuzzy Set Intersection
result = {}
for i in A:
    if A[i] < B[i]:
        result[i] = A[i]
    else:
        result[i] = B[i]
print("Intersection of two sets is", result)
# Fuzzy Set Complement
result = {}
for i in A:
    result[i] = round(1 - A[i], 2)
print("Complement of First set is", result)
# Fuzzy Set Difference
result = {}
for i in A:
    result[i] = round(min(A[i], 1 - B[i]), 2)
print("Difference of two sets is", result)
```

Output:

```
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The First Fuzzy Set is: {'a': 0.2, 'b': 0.3, 'c': 0.6, 'd': 0.6}
The Second Fuzzy Set is: {'a': 0.9, 'b': 0.9, 'c': 0.4, 'd': 0.5}
Union of two sets is {'a': 0.9, 'b': 0.9, 'c': 0.6, 'd': 0.6}
Intersection of two sets is {'a': 0.2, 'b': 0.3, 'c': 0.4, 'd': 0.5}
Complement of First set is {'a': 0.8, 'b': 0.7, 'c': 0.4, 'd': 0.4}
Difference of two sets is {'a': 0.1, 'b': 0.1, 'c': 0.6, 'd': 0.5}
PS F:\GitHub\Practical BscIT MscIT Ninad>
```
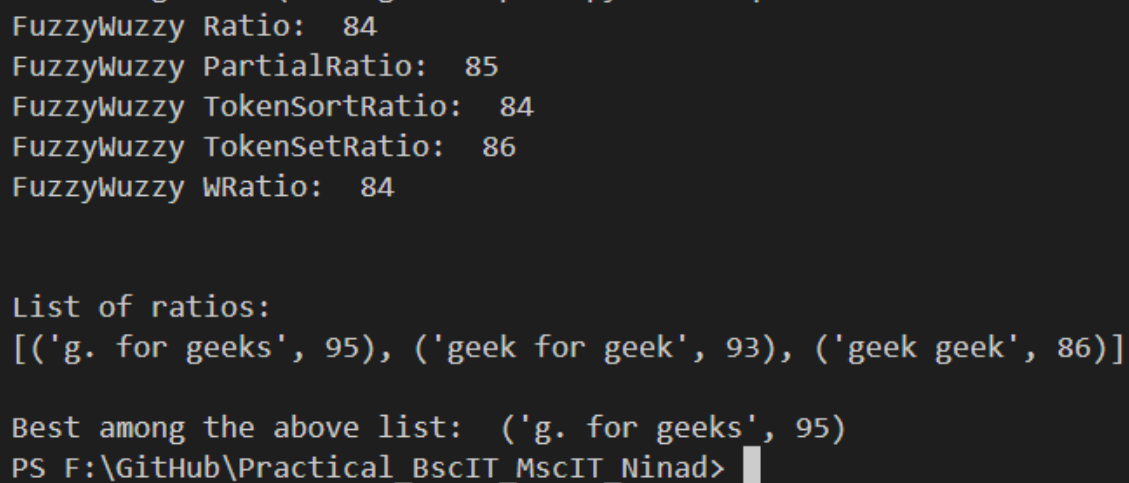
b) Design a Fuzzy based application using Python / R.

Code:

AAI 6B: AIM: Design a Fuzzy based application using Python / R.

# !pip install fuzzywuzzy
from fuzzywuzzy import fuzz
from fuzzywuzzy import process

s1 = "I love GeeksforGeeks"
s2 = "I am loving GeeksforGeeks"
print("FuzzyWuzzy Ratio: ", fuzz.ratio(s1, s2))
print("FuzzyWuzzy PartialRatio: ", fuzz.partial_ratio(s1, s2))
print("FuzzyWuzzy TokenSortRatio: ", fuzz.token_sort_ratio(s1, s2))
print("FuzzyWuzzy TokenSetRatio: ", fuzz.token_set_ratio(s1, s2))
print("FuzzyWuzzy WRatio: ", fuzz.WRatio(s1, s2), "\n\n")

# for process library,
query = "geeks for geeks"
choices = ["geek for geek", "geek geek", "g. for geeks"]
print("List of ratios: ")
print(process.extract(query, choices), "\n")
print("Best among the above list: ", process.extractOne(query, choices))

Output:

```
FuzzyWuzzy Ratio:  84
FuzzyWuzzy PartialRatio:  85
FuzzyWuzzy TokenSortRatio:  84
FuzzyWuzzy TokenSetRatio:  86
FuzzyWuzzy WRatio:  84


List of ratios:
[('g. for geeks', 95), ('geek for geek', 93), ('geek geek', 86)]

Best among the above list:  ('g. for geeks', 95)
PS F:\GitHub\Practical_BscIT_MscIT_Ninad>
```