ARTIFICIAL INTELLIGENCE

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Problem Statement :- Implement Fuzzy Logic

```
import numpy as np

import matplotlib.pyplot as plt

def assignMembership(value):
    if value == 0:
        return 1
    elif value < 1 and value > 0:
        return 1 - value
    else :
        return 0



def distance(x, y):
    return np.sqrt((0.5 - x)**2 + (0.5 - y)**2)

def membership():
    values = []
    x = [0.1, 0.2, 0.3, 0.4, 0.5, 0.6]
    y = [0.1, 0.1, 0.3, 0.3, 0.1, 0.1]

    for i in range(len(x)):
        for j in range(len(y)):
            values.append(assignMembership(distance(x[i], y[j])))
```

```
    print("The memebership values are :")
    for i in values:
        print(i)

    plt.plot(values, marker = 'o')
    plt.markersize = 10
    plt.show()

membership()
```

Output :-

```
[Running] python -u "d:\AI\Lab6\main.py"
The memebership values are :
0.4343145750507619
0.4343145750507619
0.552786404500042
0.552786404500042
0.4343145750507619
0.4343145750507619
0.5
0.5
0.639444872453601
0.639444872453601
0.5
0.5
0.552786404500042
0.552786404500042
0.7171572875253809
0.7171572875253809
0.552786404500042
0.552786404500042
0.5876894374382339
0.5876894374382339
0.7763932022500211
0.7763932022500211
0.5876894374382339
0.5876894374382339
0.6
0.6
0.8
0.8
0.6
0.6
0.5876894374382339
0.5876894374382339
0.7763932022500211
0.7763932022500211
0.5876894374382339
0.5876894374382339
```

Graph :-

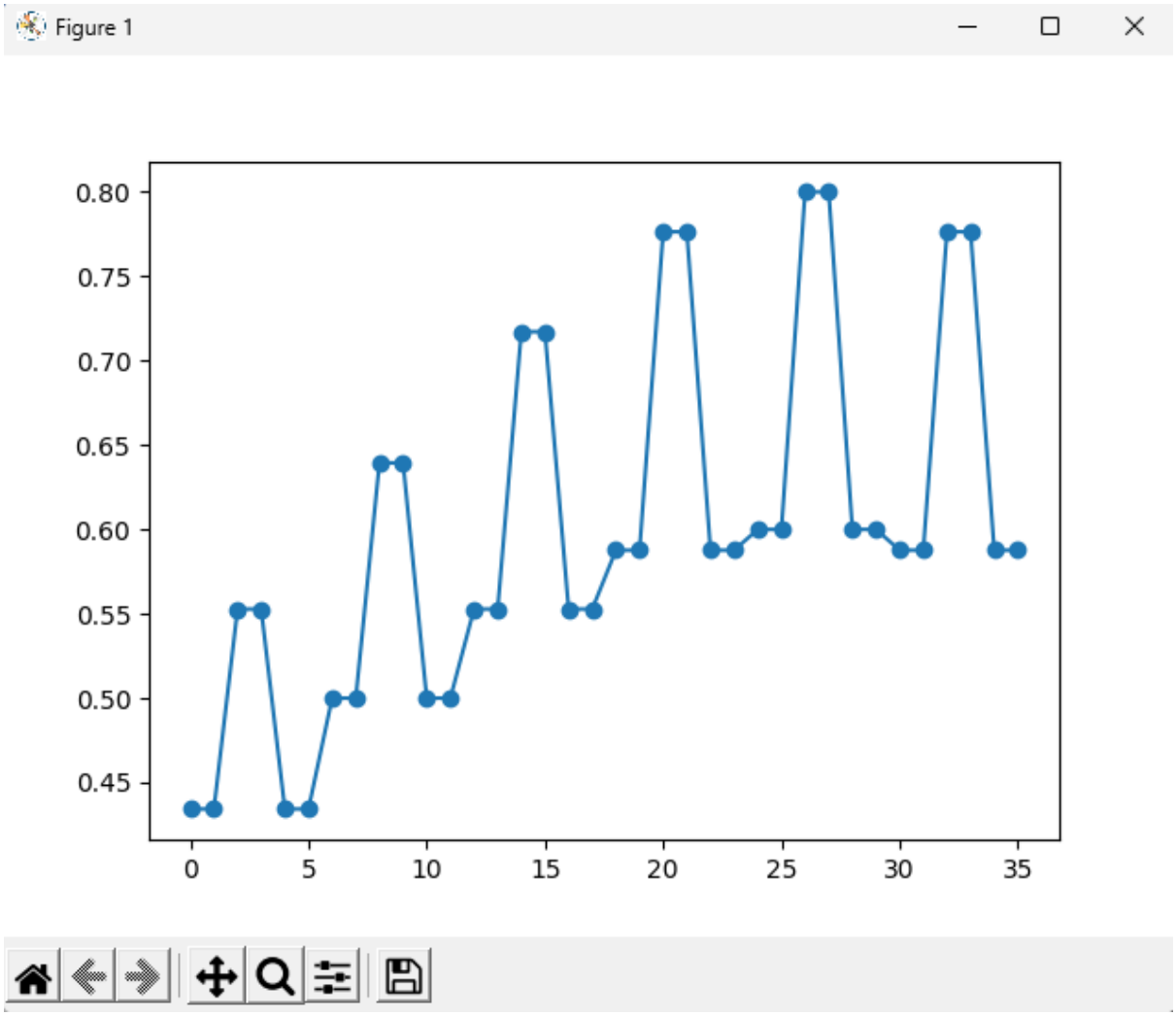
Figure 1
0.80
0.75
0.70
0.65
0.60
0.55
0.50
0.45
0
5
10
15
20
25
30
35