```
import numpy as np
import matplotlib.pyplot as plt
```

```
X = [4, 8, 16, 32, 64, 128, 256, 512, 1024]
Y_1 = [0.984961, 0.977155, 0.894834, 0.828099, 0.635401, 0.538618, 0.456808, 0.368668, 0.248481]
Y_2 = [0.982304, 0.973260, 0.955630, 0.721525, 0.634303, 0.539766, 0.448473, 0.366017, 0.257389]
Y_4 = [0.815644, 0.805447, 0.780133, 0.722954, 0.641631, 0.546105, 0.453966, 0.369617, 0.280239]
Y_8 = [0.813614, 0.803059, 0.775371, 0.724465, 0.643745, 0.547417, 0.455057, 0.371925, 0.286720]
```

```
plt.plot(Y_1, marker = 'o', label = '1-way assoc')
plt.plot(Y_2, marker = 'o', label = '2-way assoc')
plt.plot(Y_4, marker = 'o', label = '4-way assoc')
plt.plot(Y_8, marker = 'o', label = '8-way assoc')
plt.legend()
plt.xticks(range(len(X)), X)
plt.show()
```