Aim: To develop a fuzzy control system for predicting tips to be given for a hotel service based on fuzzy variables service and food quality

In [1]:
```
#!pip install scikit-fuzzy
```

In [2]:
```
import numpy as np
import skfuzzy as fuzz
from skfuzzy import control as ctrl
import warnings
warnings.filterwarnings('ignore')
```

In [3]:
```
quality = ctrl.Antecedent(np.arange(0,11,1),'quality')
```

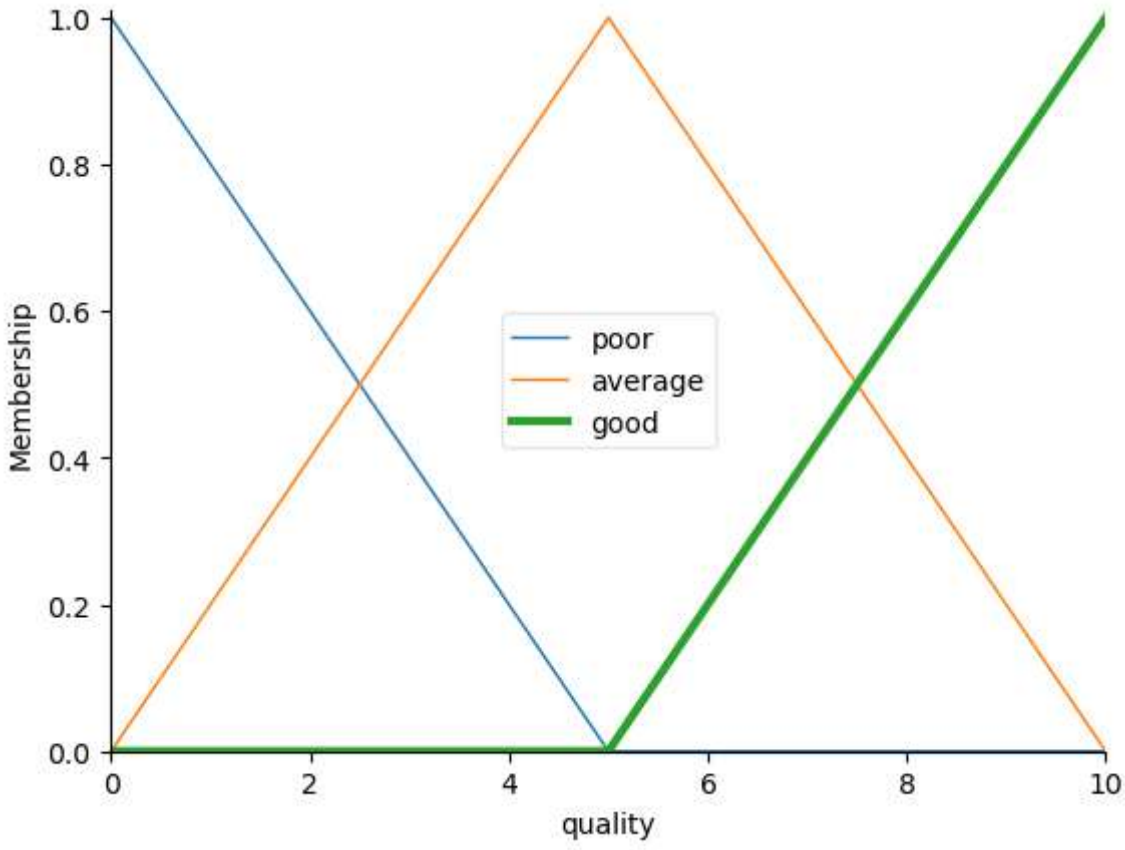
In [4]:
```
service = ctrl.Antecedent(np.arange(0,11,1),'service')
```

In [5]:
```
tip = ctrl.Consequent(np.arange(0,26,1),'tip')
```

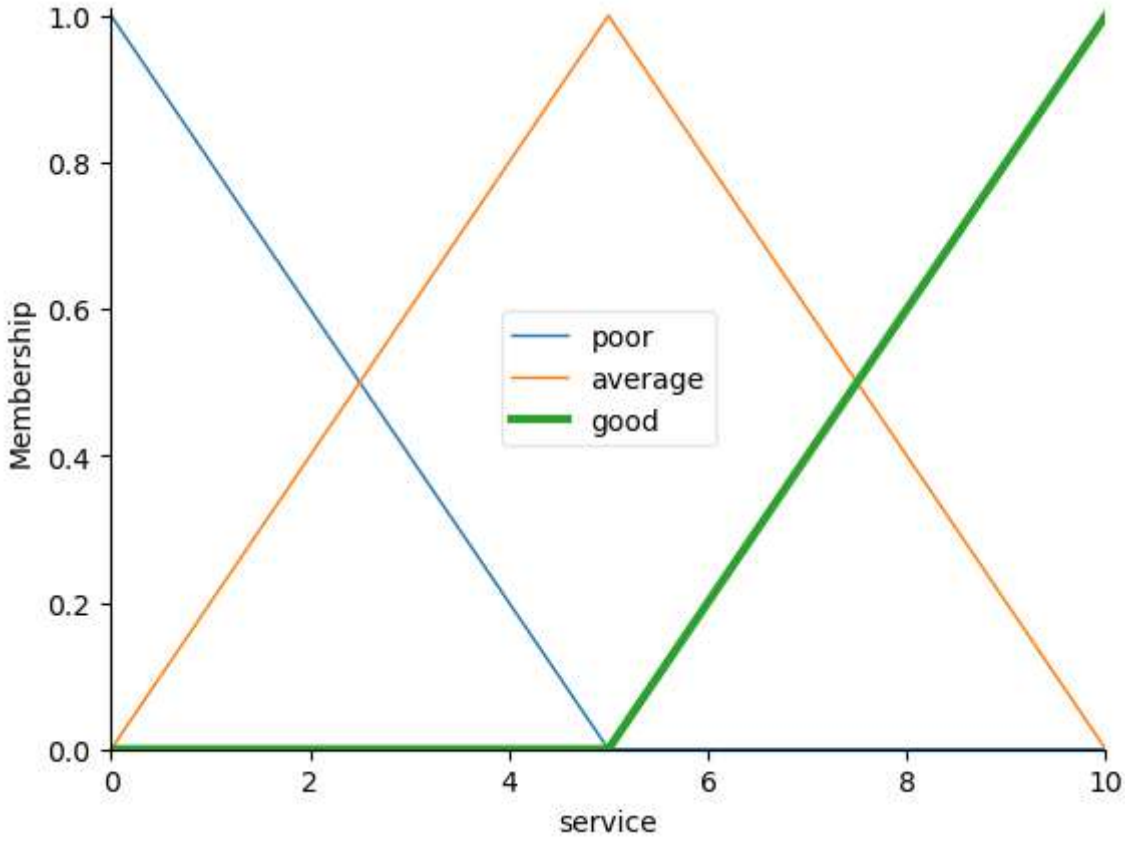
In [6]:
```
quality.automf(3)
```

In [7]:
```
service.automf(3)
```

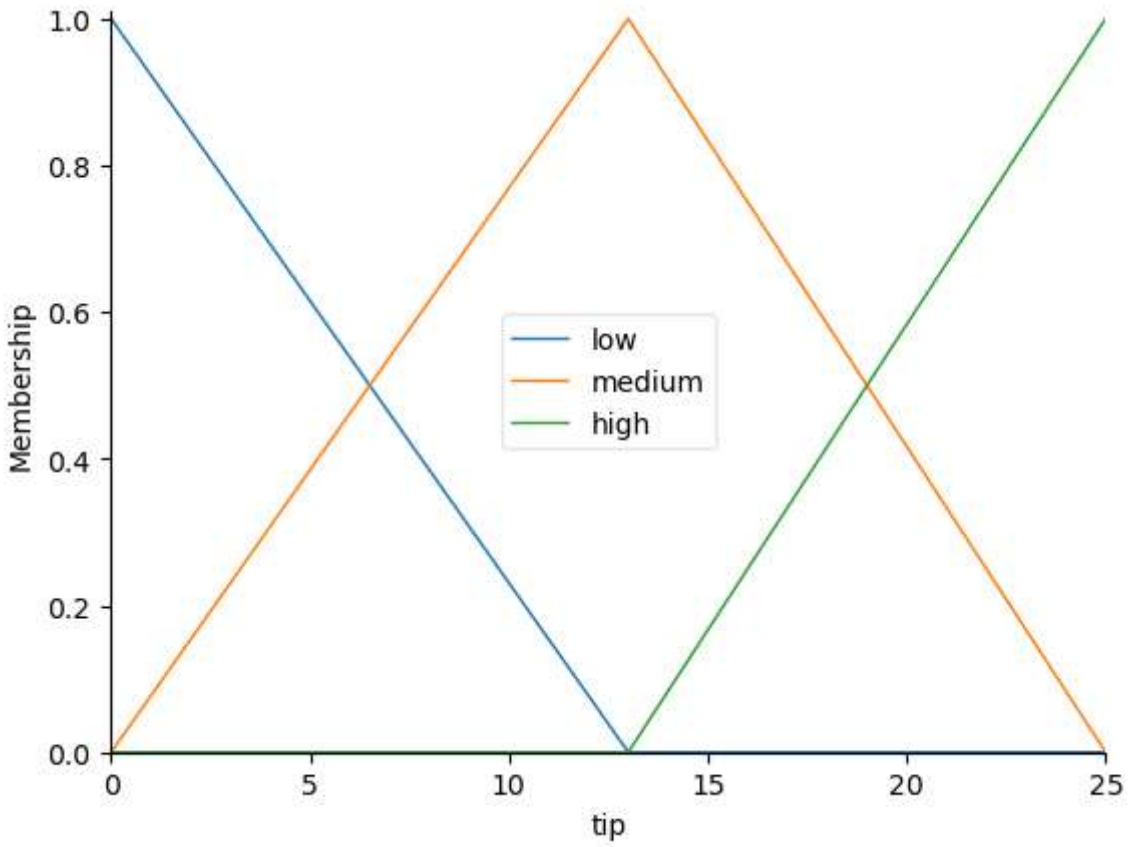
In [8]:
```
quality['good'].view()
```



In [9]:
```
service['good'].view()
```



In [10]:
```
tip['low']=fuzz.trimf(tip.universe,[0,0,13])
tip['medium']=fuzz.trimf(tip.universe,[0,13,25])
tip['high']=fuzz.trimf(tip.universe,[13,25,25])
tip.view()
```



In [11]:
```
rule1 = ctrl.Rule(quality['poor']|service['poor'],tip['low'])
rule2 = ctrl.Rule(quality['average']|service['average'],tip['medium'])
rule3 = ctrl.Rule(quality['good']|service['good'],tip['high'])
```

In [12]:
```
tipping_ctrl = ctrl.ControlSystem([rule1,rule2,rule3])
```

In [13]:
```
tipping_system = ctrl.ControlSystemSimulation(tipping_ctrl)
```

In [14]:
```
tipping_system.input['quality']=6.5
tipping_system.input['service']=9.8
tipping_system.compute()
```

In [15]:
```
tipping_system.output['tip']
```

Out[15]:
```
14.79822137450634
```

In [ ]:
```

```