

In [9]:

```
1 from tkinter import messagebox, ttk
2 from tkinter import *
3 import tkinter
4 import matplotlib.pyplot as plt
5 import numpy as np
```

In [10]:

```
1 tabla = ( ["Temperatura", "Humedad", "RPM Motor"], ["Baja", "Alta", "Baja"], ["Media", '
2         ["Media", "Media", "Baja"], ["Alta", "Media", "Media"], ["Baja", "Baja", "Baja"
3         ["Media", "Baja", "Baja"], ["Alta", "Baja", "Alta"] )
```

In [14]:

```

1#VENTANA PRINCIPAL
2grafica = tkinter.Tk()
3grafica.title("Calculo Velocidad Motor")
4grafica.geometry("300x300")
5grafica2 = ttk.Notebook(grafica)
6grafica2.pack(fill='both', expand='yes')
7posicion = ttk.Frame(grafica2)
8posicion2 = ttk.Frame(grafica2)
9posicion3 = ttk.Frame(grafica2)
10grafica2.add(posicion, text='Temperatura')
11grafica2.add(posicion2, text='Humedad')
12grafica2.add(posicion3, text='RPM Motor')
13
14global a
15a = 0
16b = 0
17listaDatos = Listbox(posicion)
18cont= 0
19for line in range(100):
20     listaDatos.insert(cont,str(line))
21     cont=cont+1
22listaDatos.pack( side = TOP)
23listaDatos2 = Listbox(posicion2)
24cont= 0
25for line in range(10,100,5):
26     listaDatos2.insert(cont,str(line))
27     cont=cont+1
28listaDatos2.pack( side = TOP)
29
30valores= ([])
31valoresh= ([])
32def temperatura():
33     #listax = [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20, 10,11,12,13,
34     #listay = [1,1,1,1,1,1,1,1,1,1,1,1,0.9,0.8,0.7,0.6,0.5,0.4,0.3,0.2,0.1,0, 0,0.1,
35     listax = [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20, 10,11,12,13,1
36     listay = [1,1,1,1,1,1,1,1,1,1,1,1,0.9,0.8,0.7,0.6,0.5,0.4,0.3,0.2,0.1,0, 0,0.1,
37
38     plt.plot(listax[:21], listay[:21], lw=5,label="Baja")
39     plt.plot(listax[21:62], listay[21:62], lw=5, label="Media")
40     plt.plot(listax[62:], listay[62:], lw=5, label="Alta")
41     plt.axis([min(listax),max(listax),min(listay),max(listay)])
42     plt.grid()
43     plt.legend(loc="center right", title="temperatura", frameon=False)
44     global a
45     a = int(listaDatos.get(int(listaDatos.curselection()[0])))
46     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA EN T BAJA
47     cont=0
48     for lx in listax[:21]:
49         if int(lx) == int(a):
50             print("Temperatura BAJA>> ",lx,listay[cont])
51             valores.insert(0,["Baja",listay[cont]])
52             cont =cont +1
53     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA EN T MEDIA
54     cont1=0
55     lisyn = listay[21:62]
56     for lx in listax[21:62]:
57         if int(lx) == int(a):
58             print("Temperatura MEDIA >> ",lx,lisyn[cont1])
59             valores.insert(1,["Media",lisyn[cont1]])

```

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60     cont1 = cont1 +1
61     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA T ALTA
62     cont=0
63     lista = listay[62:]
64     for lx in listax[62:]:
65         if int(lx) == int(a):
66             print("Temperatura ALTO >> ",lx,lista[cont])
67             valores.insert(2,["Alta",lista[cont]])
68         cont =cont +1
69     plt.axvline(int(a), label='pyplot vertical line',color='purple')
70     plt.show()
71     print(valores)
72 boton_tem = Button(posicion, text="TEMPERATURA", command=temperatura)
73 boton_tem.pack(side = BOTTOM)
74
75
76 def humedad():
77     listax = [70, 60, 50,60, 50, 30, 20, 30,20,10]
78     listay = [1, 1, 0, 0, 1, 1, 0, 0, 1, 1]
79     plt.plot(listax[:3], listay[:3], lw=5,label="Alta")
80     plt.plot(listax[3:7], listay[3:7], lw=5, label="Media")
81     plt.plot(listax[7:], listay[7:], lw=5, label="Baja")
82     plt.axis([max(listax),min(listax),min(listay),max(listay)])
83     plt.grid()
84     plt.legend(loc="center right", title="titulo", frameon=False)
85     b = int(listaDatos2.get(int(listaDatos2.curselection()[0])))
86     plt.axvline(int(b), label='pyplot vertical line',color='red')
87     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA T ALTA
88     cont=0
89     lista = listay[:3]
90     for lx in listax[:3]:
91         if int(lx) == int(b):
92             print("Humedad ALTO >> ",lx,lista[cont])
93             valoresh.insert(0,["Alta",lista[cont]])
94
95         cont =cont +1
96     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA EN T MEDIA
97     cont1=0
98     lisyn = listay[3:7]
99     for lx in listax[3:7]:
100         if int(lx) == int(b):
101             print("Humedad MEDIA>> ",lx,lisyn[cont1])
102             valoresh.insert(1,["Media",lisyn[cont1]])
103
104         cont1 = cont1 +1
105
106     #SE BUSCA EL VALOR INGRESADO EN EL VECTOR DE X ESTA EN T BAJA
107     cont=0
108     for lx in listax[7:]:
109         if int(lx) == int(b):
110             print("Humedad BAJA >> ",lx,listay[cont])
111             valoresh.insert(2,["Baja",listay[cont]])
112
113         cont =cont +1
114
115     #SE COMPRUEBA CUALES SON LOS RESULTADOS IGUALES EN LA TABLA
116     cv = 0
117     valores
118     valoresh
119     resultados = ([])
120     for vl in tabla:

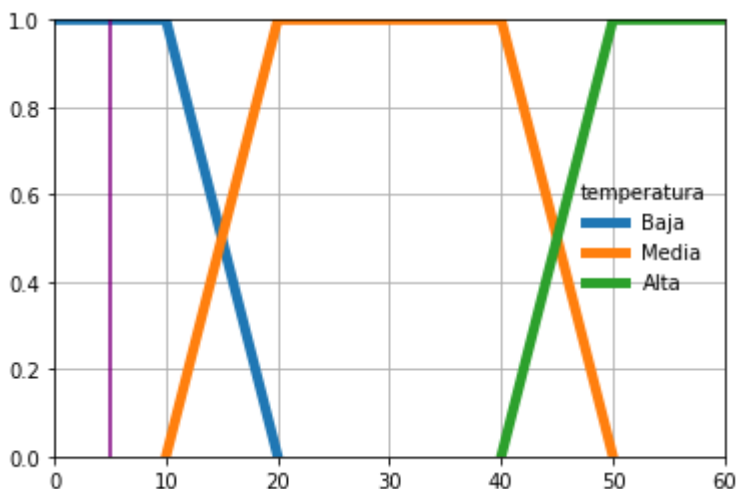
```

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121     if (vl[0] == valores[0][0] and vl[1] == valoresh[0][0]) or (vl[0] == valc
122         resultados.insert(cv,vl)
123         cv = cv +1
124     elif (vl[0] == valores[1][0] and vl[1] == valoresh[0][0]) or (vl[0] == va
125         resultados.insert(cv,vl)
126         cv = cv +1
127 for vl1 in resultados:
128     cont = 0
129
130 resul = []
131 for vf in valores:
132     print("X = ",vf[1],"Y = ",valoresh[contf][1])
133     agre = max(min(vf[1],valoresh[contf][1]),min(vf[1],valoresh[1][1]))
134     resul.append(agre)
135     contf =contf +1
136
137 print(resul)
138
139 plt.show()
140 print(" GRAFICA RPM DEL MOTOR")
141 listax = [0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,17,18,19,20, 10,11,12,13,1
142 listay = [1,1,1,1,1,1,1,1,1,1,1,0.9,0.8,0.7,0.6,0.5,0.4,0.3,0.2,0.1,0, 0,0.1,
143 plt.plot(listax[:21], listay[:21], lw=5,label="Baja")
144 plt.plot(listax[21:62], listay[21:62], lw=5, label="Media")
145 plt.plot(listax[62:], listay[62:], lw=5, label="Alta")
146 plt.axis([min(listax),max(listax),min(listay),max(listay)])
147 plt.grid()
148 print("Valor del area es >", listax[20],listay[20])
149 plt.legend(loc="lower right", title="Legend Title", frameon=False)
150 plt.axhline(resul[1], label='HORIZONTAL 2',color='black')
151 plt.axhline(resul[0], label='HORIZONTAL 1',color='blue')
152 plt.axvline(int(a), label='pyplot vertical line',color='red')
153
154 #SE GENERA EL AREA BAJO LA CURVA O INTERCECCIONES
155 print("Valor de printe",listay[21:32])
156 listy = [0,0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1]
157 plt.fill_between(range(1,10),range(1,10),color="green")
158 plt.show()
159
160 boton = Button(posicion2, text="HUMEDAD", command=humedad)
161 boton.pack(side = BOTTOM)
162 grafica.mainloop()

```

Temperatura BAJA>> 5 1



```
[['Baja', 1]]
```

Exception in Tkinter callback

Traceback (most recent call last):

```
File "/Users/rayner/opt/anaconda3/lib/python3.7/tkinter/__init__.py", line 1705, in __call__
    return self.func(*args)
```

```
File "<ipython-input-14-4a5b6a61413b>", line 124, in humedad
    elif (vl[0] == valores[1][0] and vl[1] == valoresh[0][0]) or (vl[0] == valores[1][0] and vl[1] == valoresh[1][0]):
```

IndexError: list index out of range

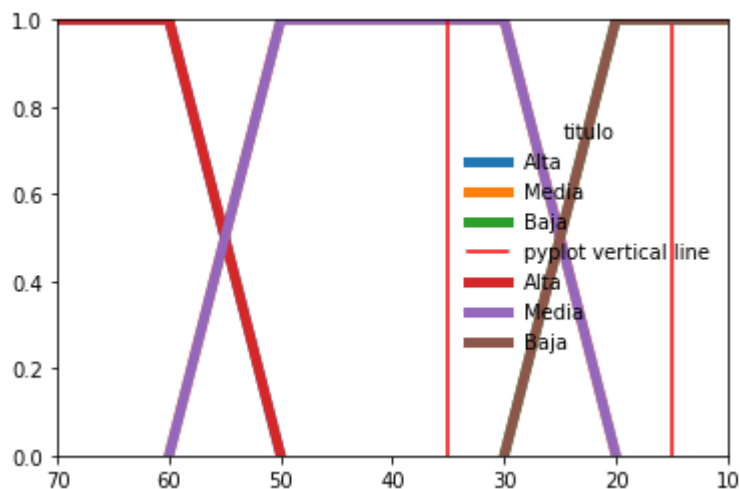
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```
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```

IndexError: list index out of range



In []:

1