In [ ]:

```
                                  Universidad Politécnica Salesiana
    Practica de Sistemas Expertos
Sistema de calidad de vinos(tinto).

```

In [3]:

```
from tkinter import * p
from tkinter import ttk
from tkinter import messagebox
import pandas as pd
import operator

raiz = Tk()


def analizar():
    newWindows = Tk()
    newWindows.title("Calidad Vino Tinto")
    rojo = pd.read_csv('/Users/rayner/Downloads/WINE/rojo.csv', sep=";")
    lista = [list(row) for row in rojo.values]
    similares = {}
    valores = [float(acidezF.get()), float(acidezV.get()), float(acidezC.get())
          float(totalSu.get()), float(densidad.get()), float(ph.get()), float(s
    mini = [4.6, 0.12, 0, 0.9, 0.012, 1, 6, 0.99, 2.74, 0.33, 8.4]
    maxi = [15.9, 1.58, 1.0, 13.9, 0.611, 72.0, 289.0, 1.0, 4.01, 2.0, 14.9]
    weight = [float(CanTotal_acidezF.get()), float(CanTotal_acidezV.get()), flo
              float(CanTotal_sulfuro.get()),
              float(CanTotal_totalSu.get()), float(CanTotal_densidad.get()), fl
    def similitud(similares):
        valor = 0
        for i in range(len(mini)):
            valor += weight[i] * (1 - ((abs(similares[i] - valores[i])) / (maxi
        return valor / sum(weight)




    for i in range(len(lista)):
        fila = []
        fila = lista[i]
        x = similitud(fila)
        similares.update({str(i): round(x, 3)})

    ordenados = dict(sorted(similares.items(), key=operator.itemgetter(1)))
    cols = (
    "#Wine", "Fixed Acidity", "Volatile Acidity", "Citric Acid", "Residual Suga
    "Total Sulfure Dioxide", "Density", "pH", "Sulphates", "Alcohol", "Quality"
    tree = ttk.Treeview(newWindows, columns=cols, show='headings')
    vsb = ttk.Scrollbar(newWindows, orient="vertical", command=tree.yview)
    vsb.pack(side=RIGHT, fill=BOTH)

    tree.configure(yscrollcommand=vsb.set)
    for i in range(len(cols)):
        tree.heading(cols[i], text=cols[i])
        tree.column(cols[i], minwidth=0, width=50)
    tree.pack(expand=YES, fill=BOTH)
    tam = len(ordenados)
    for i in range(tam):
        pos = int(list(ordenados.items())[i][0])
        colum1 = lista[int(pos)][0]
        colum2 = lista[int(pos)][1]
        colum3 = lista[int(pos)][2]
        colum4 = lista[int(pos)][3]
        colum5 = lista[int(pos)][4]
        colum6 = lista[int(pos)][5]
```

```
        colum7 = lista[int(pos)][6]
        colum8 = lista[int(pos)][7]
        colum9 = lista[int(pos)][8]
        colum10 = lista[int(pos)][9]
        colum11 = lista[int(pos)][10]
        colum12 = lista[int(pos)][11]
        simila = str(list(ordenados.items())[i][1])
        tree.insert("", 0, i, values=(str(pos),  colum1,  colum2,  colum3,  col

    # print("Item Mas Similar")
    fpos = list(ordenados.items())[tam - 1][0]
    fval = list(ordenados.items())[tam - 1][1]
    res = lista[int(fpos)][11]
    messagebox.showinfo(message="Calidad= " + str(res))


lista = [0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

raiz.geometry('600x270')  # anchura x altura

raiz.title('Calidad de vinos')

Label(raiz, text="Analisis de calidad de vino").place(x=200, y=0)

Label(raiz, text="Fixed Acidy").place(x=0, y=25)
acidezF = Spinbox(raiz, from_=4.6, to=15.9, width=5, increment=0.1, font='Times
acidezF.place(x=150, y=25)
CanTotal_acidezF = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_acidezF.place(x=225, y=25)
CanTotal_acidezF.current(3)

Label(raiz, text="Volatily Acidy").place(x=308, y=25)
acidezV = Spinbox(raiz, from_=0.12, to=1.58, width=5, increment=0.01, font='Tim
acidezV.place(x=450, y=25)
CanTotal_acidezV = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_acidezV.place(x=525, y=25)
CanTotal_acidezV.current(3)

Label(raiz, text="Citric Acid").place(x=0, y=50)
acidezC = Spinbox(raiz, from_=0.0, to=1.0, width=5, increment=0.1, font='TimesN
acidezC.place(x=150, y=50)
CanTotal_acidezC = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_acidezC.place(x=225, y=50)
CanTotal_acidezC.current(3)

Label(raiz, text="Residual Sugar").place(x=308, y=50)
residuosA = Spinbox(raiz, from_=0.9, to=13.9, width=5, increment=0.1, font='Tim
residuosA.place(x=450, y=50)
CanTotal_residuosA = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRo
CanTotal_residuosA.place(x=525, y=50)
CanTotal_residuosA.current(5)

Label(raiz, text="Chlorides").place(x=0, y=75)
cloruro = Spinbox(raiz, from_=0.012, to=0.611, width=5, increment=0.001, font='
cloruro.place(x=150, y=75)
CanTotal_cloruro = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_cloruro.place(x=225, y=75)
CanTotal_cloruro.current(1)

Label(raiz, text="Free Sulfur Dioxide").place(x=308, y=75)
sulfuro = Spinbox(raiz, from_=1.0, to=72.0, width=5, increment=1.0, font='Times
```

```
sulfuro.place(x=450, y=75)
CanTotal_sulfuro = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_sulfuro.place(x=525, y=75)
CanTotal_sulfuro.current(1)

Label(raiz, text="Total Sulfure Dioxide").place(x=0, y=100)
totalSu = Spinbox(raiz, from_=6.0, to=289.0, width=5, increment=1, font='TimesN
totalSu.place(x=150, y=100)
CanTotal_totalSu = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_totalSu.place(x=225, y=100)
CanTotal_totalSu.current(1)

Label(raiz, text="Density").place(x=308, y=100)
densidad = Spinbox(raiz, from_=0.9900, to=1.0000, width=6, increment=0.0001, fo
densidad.place(x=450, y=100)
CanTotal_densidad = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRom
CanTotal_densidad.place(x=525, y=100)
CanTotal_densidad.current(1)

Label(raiz, text="pH").place(x=0, y=125)
ph = Spinbox(raiz, from_=2.74, to=4.01, width=5, increment=0.01, font='TimesNew
ph.place(x=150, y=125)
CanTotal_ph = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoman 12'
CanTotal_ph.place(x=225, y=125)
CanTotal_ph.current(6)

Label(raiz, text="Sulphates").place(x=308, y=125)
sulfato = Spinbox(raiz, from_=0.33, to=2.0, width=5, increment=0.01, font='Time
sulfato.place(x=450, y=125)
CanTotal_sulfato = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_sulfato.place(x=525, y=125)
CanTotal_sulfato.current(1)

Label(raiz, text="Alcohol").place(x=0, y=150)
alcohol = Spinbox(raiz, from_=8.4, to=14.9, width=5, increment=0.1, font='Times
alcohol.place(x=150, y=150)
CanTotal_alcohol = ttk.Combobox(raiz, values=lista, width=5, font='TimesNewRoma
CanTotal_alcohol.place(x=225, y=150)
CanTotal_alcohol.current(5)

ttk.Button(raiz, text='Analizar', command=analizar).place(x=275, y=200)
raiz.mainloop()
```

In [ ]:

```
1
```

In [ ]:

```
1
```