MODELO k-NN

```
import pandas as pd
data=pd.read_csv('/content/diabetes.csv')
data
```

	Pregnancies	Glucose	BloodPressure	SkinThickness	Insulin	BMI	DiabetesPedigr
0	6	148	72	35	0	33.6	
1	1	85	66	29	0	26.6	
2	8	183	64	0	0	23.3	
3	1	89	66	23	94	28.1	
4	0	137	40	35	168	43.1	
...	...	...	...	...	...	...	
763	10	101	76	48	180	32.9	
764	2	122	70	27	0	36.8	
765	5	121	72	23	112	26.2	
766	1	126	60	0	0	30.1	
767	1	93	70	31	0	30.4	

768 rows × 9 columns

Next steps: View recommended plots

```
#Renombrando a las columnas
columnas=['preg','glu','pres','skin','test','mass','pedi','age','class']
data=pd.read_csv('diabetes.csv',names=columnas)
data=data.drop(0)
data
```

	preg	glu	pres	skin	test	mass	pedi	age	class
1	6	148	72	35	0	33.6	0.627	50	1
2	1	85	66	29	0	26.6	0.351	31	0
3	8	183	64	0	0	23.3	0.672	32	1
4	1	89	66	23	94	28.1	0.167	21	0
5	0	137	40	35	168	43.1	2.288	33	1
...	...	...	...	...	...	...	...	...	...
764	10	101	76	48	180	32.9	0.171	63	0
765	2	122	70	27	0	36.8	0.34	27	0
766	5	121	72	23	112	26.2	0.245	30	0
767	1	126	60	0	0	30.1	0.349	47	1
768	1	93	70	31	0	30.4	0.315	23	0

768 rows × 9 columns

Next steps: View recommended plots

```
#Tipo de dato y cantidad
print(data.shape)
data.dtypes
```

```
(768, 9)
preg     object
glu      object
pres     object
skin     object
test     object
mass     object
pedi     object
age      object
class    object
dtype: object
```

```
# Cambiamos el tipo de datos con astypes()
v_numericas=['preg','glu','pres','skin','test','mass','pedi','age']
data[v_numericas]=data[v_numericas].astype(float)
```

```
data.dtypes
```

```
preg     float64
glu      float64
pres     float64
skin     float64
test     float64
mass     float64
pedi     float64
age      float64
```

```
class     object
dtype: object
```

```
# Hallamos estadísticos descriptivos
from pandas import set_option
set_option('display.width',90) #ancho de pantalla
set_option('display.precision',2)#precision de 2 decimales
print(data.describe())
```

```
            preg     glu    pres    skin    test    mass    pedi     age
count  768.00  768.00  768.00  768.00  768.00  768.00  768.00  768.00
mean     3.85  120.89   69.11   20.54   79.80   31.99    0.47   33.24
std      3.37   31.97   19.36   15.95  115.24    7.88    0.33   11.76
min      0.00    0.00    0.00    0.00    0.00    0.00    0.08   21.00
25%      1.00   99.00   62.00    0.00    0.00   27.30    0.24   24.00
50%      3.00  117.00   72.00   23.00   30.50   32.00    0.37   29.00
75%      6.00  140.25   80.00   32.00  127.25   36.60    0.63   41.00
max     17.00  199.00  122.00   99.00  846.00   67.10    2.42   81.00
```

```
data.isnull().sum()
```

```
preg     0
glu      0
pres     0
skin     0
test     0
mass     0
pedi     0
age      0
class    0
dtype: int64
```

```
#Matriz de correlación
correlaciones=data.corr(method='pearson')
print(correlaciones,'\n')
#no hay corelacion muy marcado por ende no se eliminan variables"
```

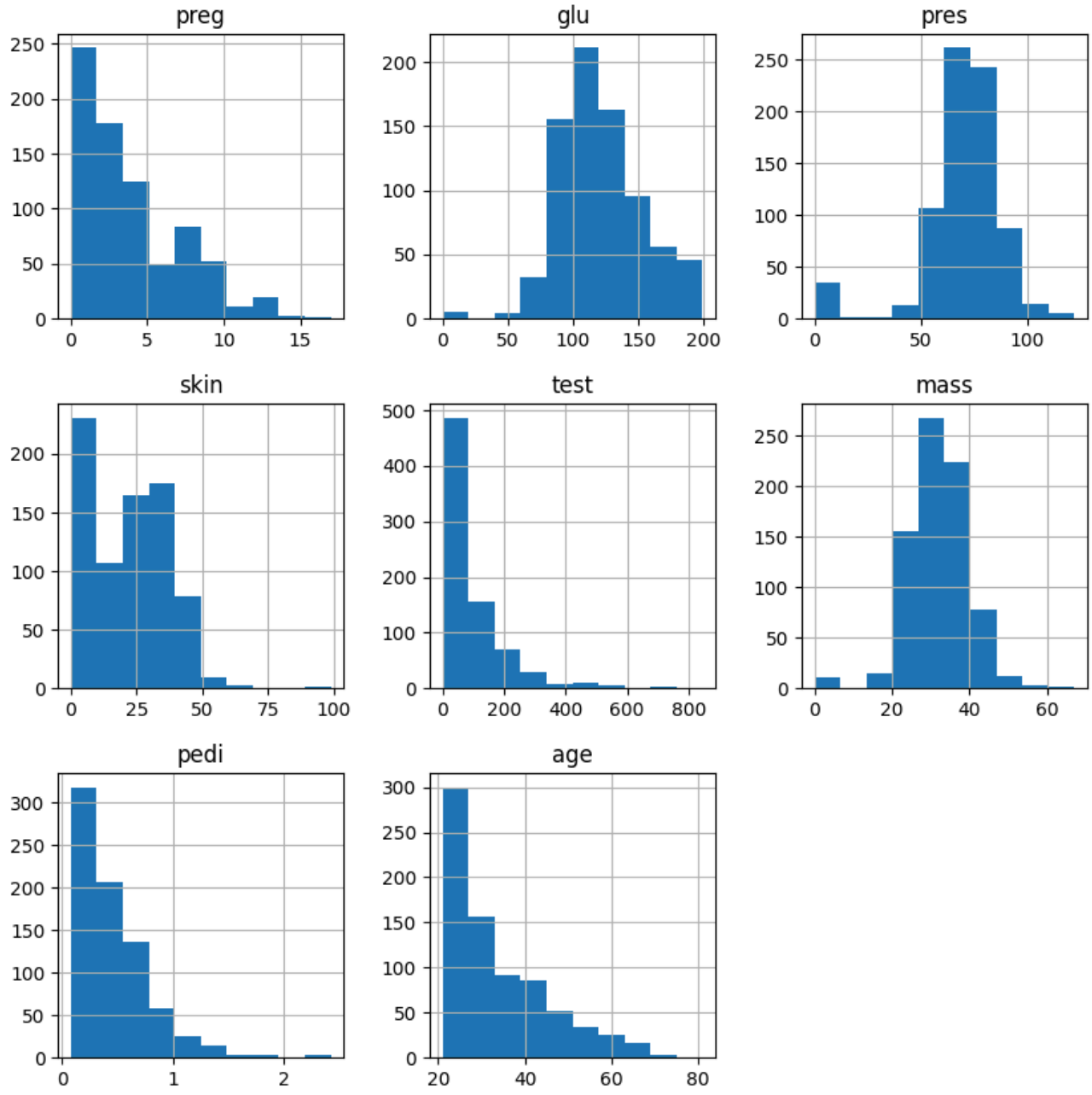
```
          preg   glu  pres  skin  test  mass  pedi   age  class
preg   1.00  0.13  0.14 -0.08 -0.07  0.02 -0.03  0.54   0.22
glu    0.13  1.00  0.15  0.06  0.33  0.22  0.14  0.26   0.47
pres   0.14  0.15  1.00  0.21  0.09  0.28  0.04  0.24   0.07
skin  -0.08  0.06  0.21  1.00  0.44  0.39  0.18 -0.11   0.07
test  -0.07  0.33  0.09  0.44  1.00  0.20  0.19 -0.04   0.13
mass   0.02  0.22  0.28  0.39  0.20  1.00  0.14  0.04   0.29
pedi  -0.03  0.14  0.04  0.18  0.19  0.14  1.00  0.03   0.17
age    0.54  0.26  0.24 -0.11 -0.04  0.04  0.03  1.00   0.24
class  0.22  0.47  0.07  0.07  0.13  0.29  0.17  0.24   1.00
```

```
#para hallar sesgo
print(data.skew())
```

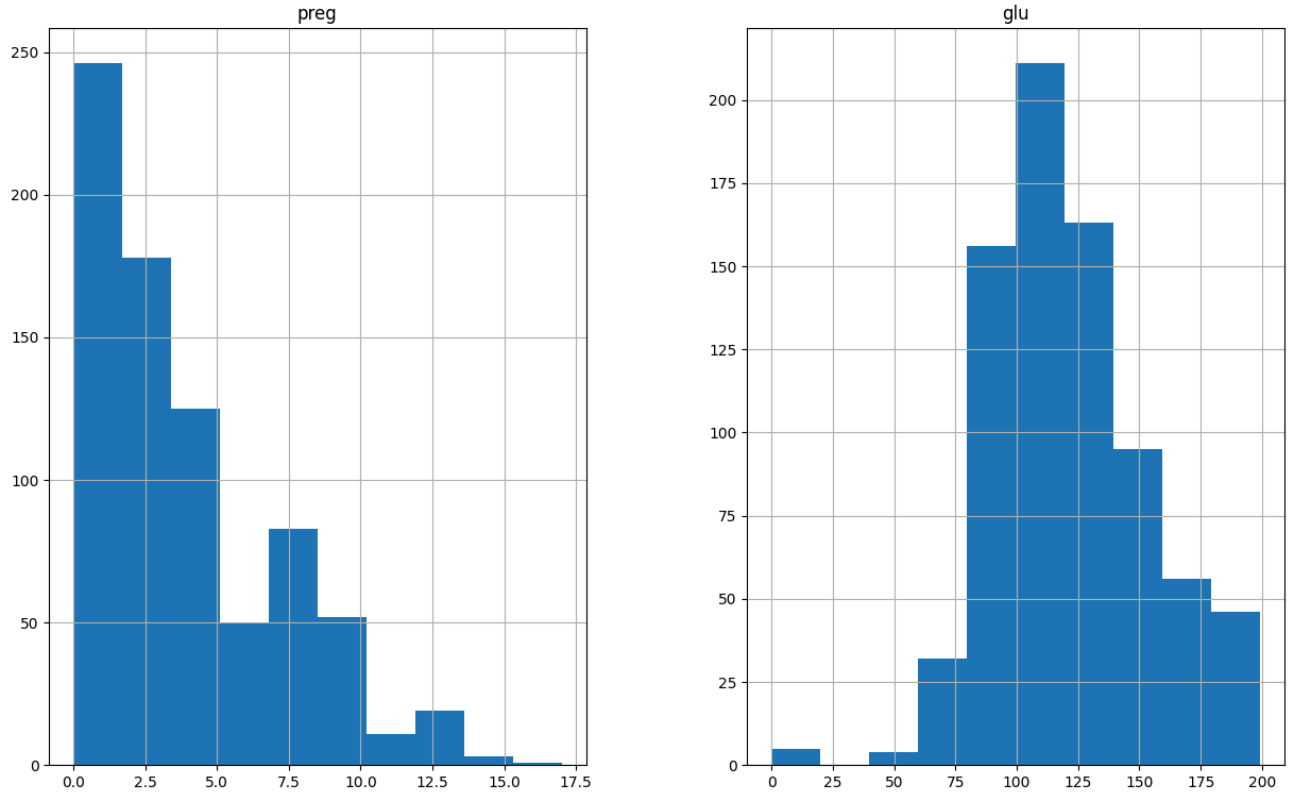
```
preg      0.9
glu      0.17
pres    -1.84
skin     0.11
```

```
test     2.27
mass    -0.43
pedi     1.92
age      1.13
class    0.64
dtype: object
```

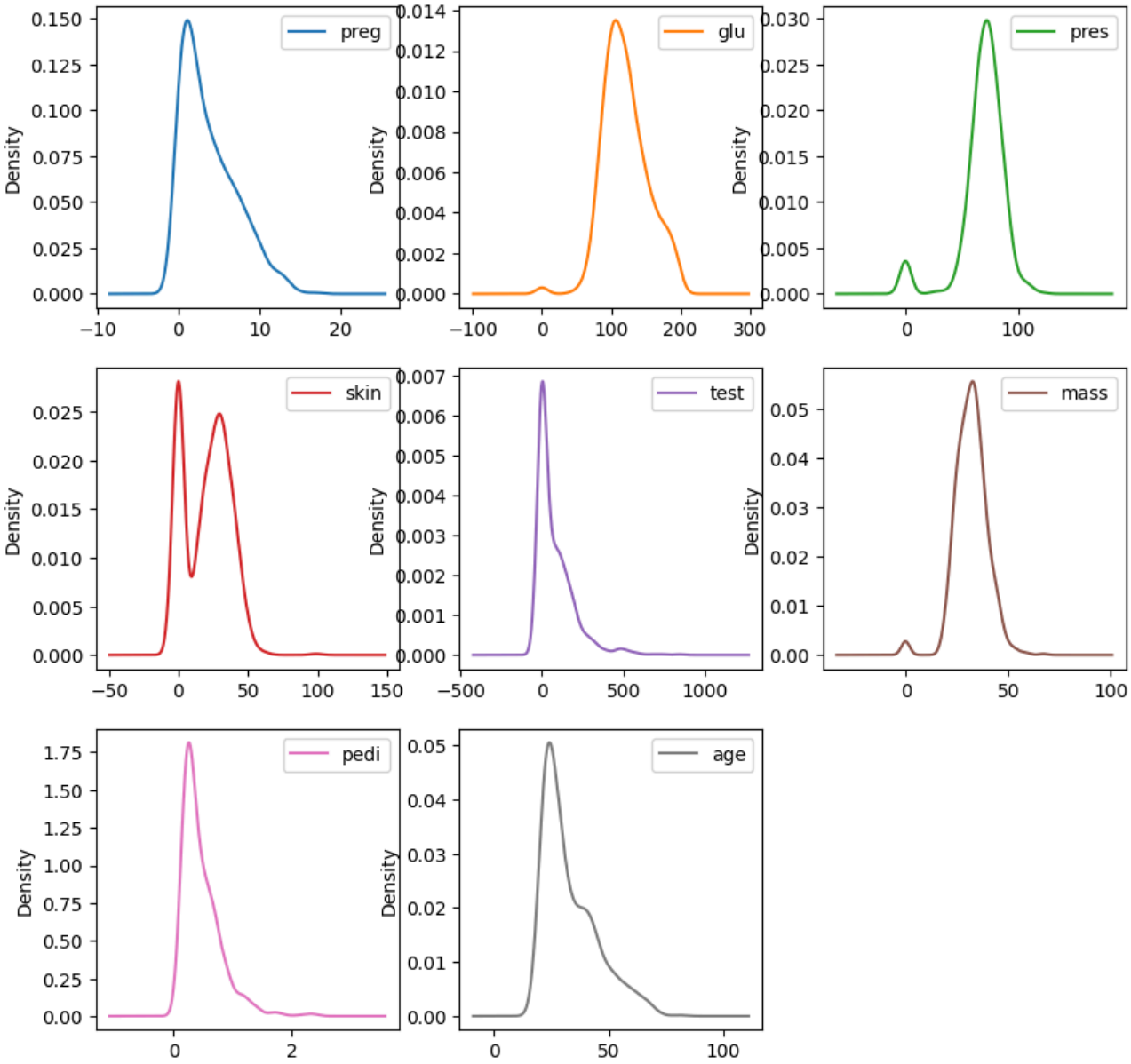
```
# Gráficos de histogramas
import matplotlib.pyplot as plt
data.hist(figsize=(10,10))
plt.show()
```



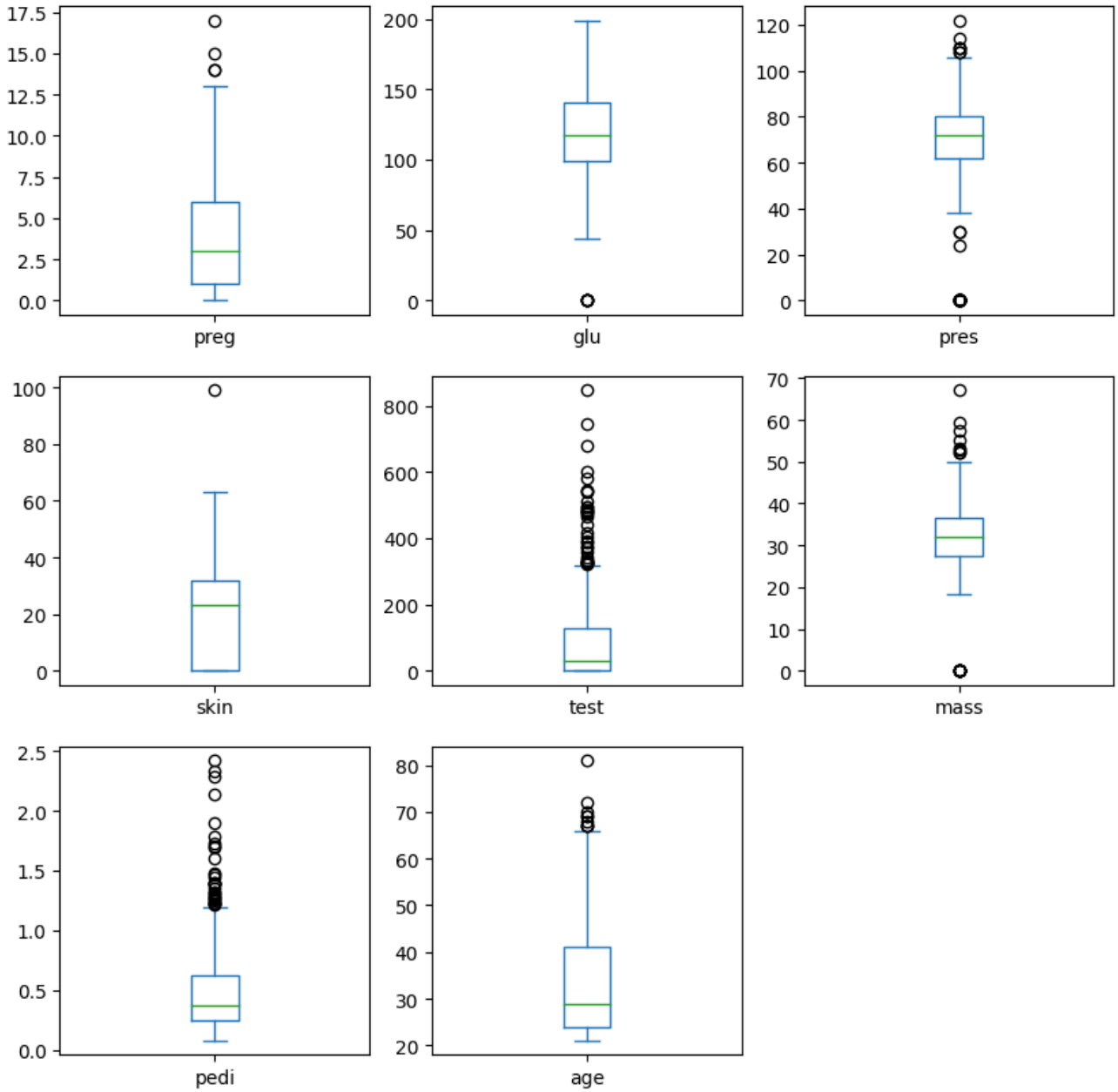
```
import matplotlib.pyplot as plt
data[['preg','glu']].hist(figsize=(15,9))
plt.show()
```




```
# Gráficos de densidad
data.plot(kind='density',subplots=True,layout=(3,3),sharex=False,figsize=(10,10))
plt.show()
```

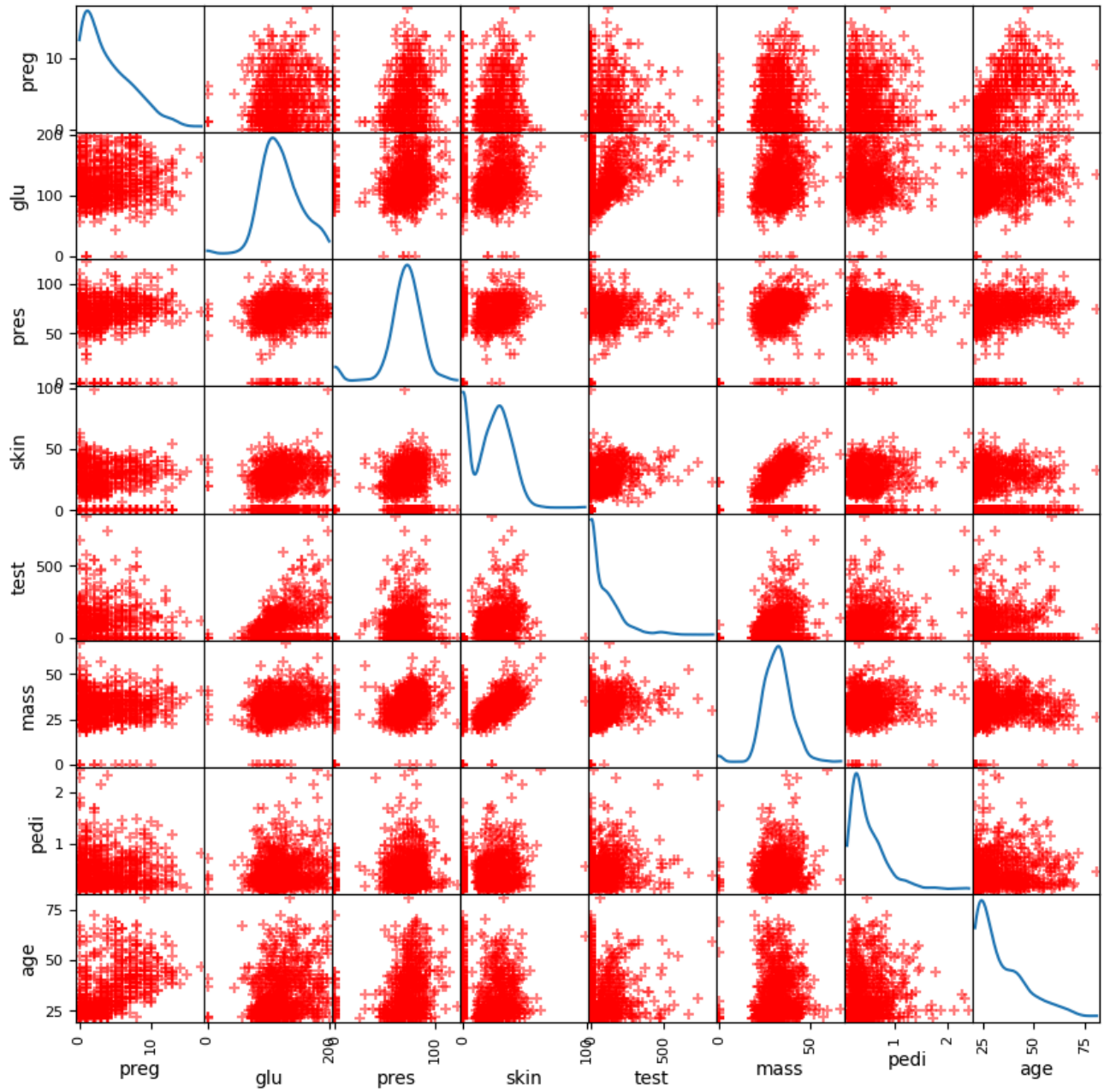



```
# Gráficos de cajas. Visualizar atípicos
data.plot(kind='box',subplots=True,layout=(3,3),sharex=False,figsize=(10,10))
plt.show()
```




```
# Gráficos de dispersión
from pandas.plotting import scatter_matrix #matriz de dispersion
scatter_matrix(data,figsize=(10,10),color='red',diagonal='kde',marker='+') #kde es gráfico
plt.show()
```

```
/usr/local/lib/python3.10/dist-packages/pandas/plotting/_matplotlib/misc.py:97: UserWa
  ax.scatter(
```

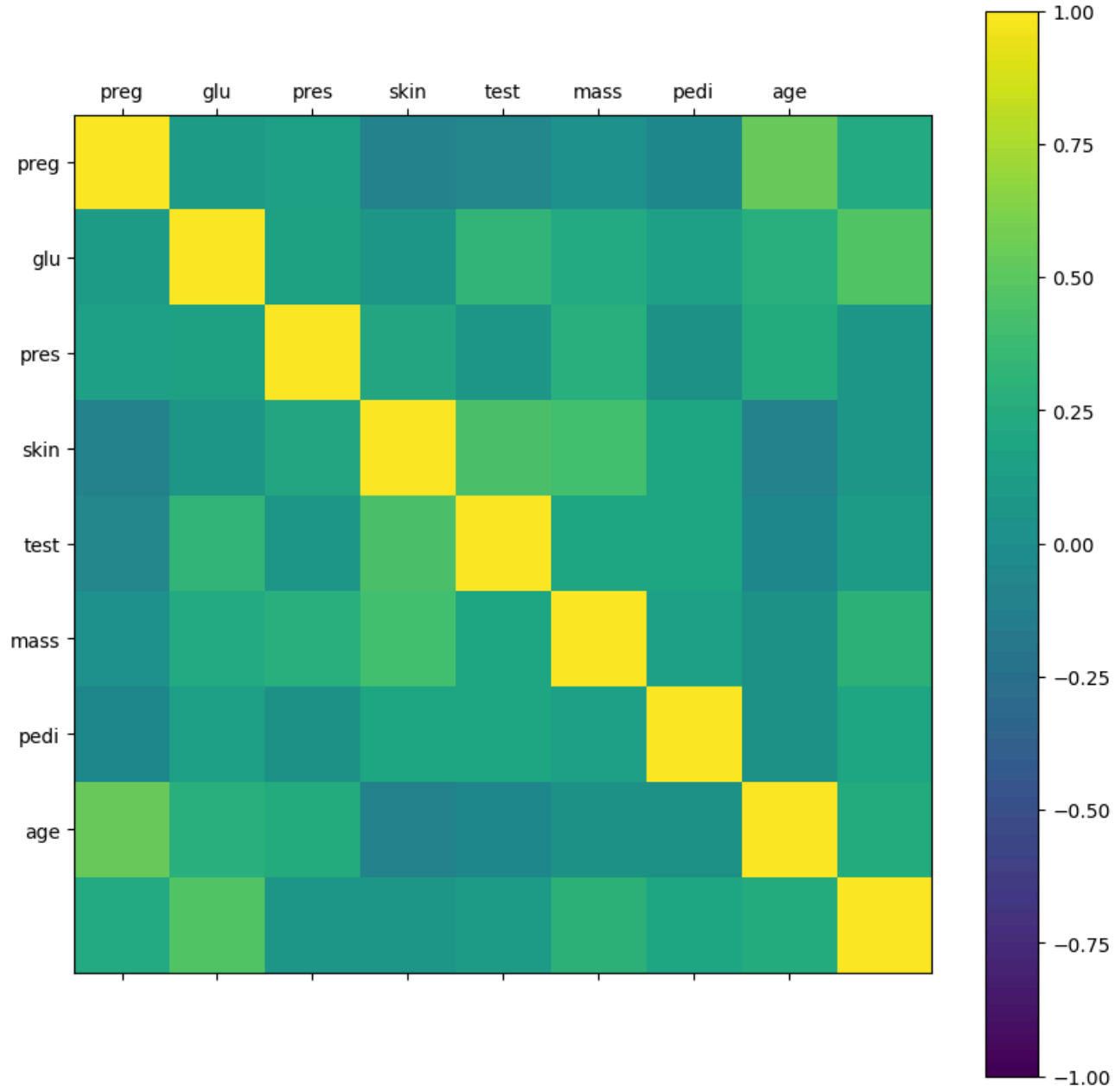



```
import numpy as np
import csv
with open('diabetes.csv','r',) as file:  #'r'es lectura
    reader=csv.reader(file,delimiter=',')
    cabecera=next(reader)
    data1=list(reader)
    data1=np.array(data1).astype(float)
print(data1.shape)
print(cabecera)
data1
```

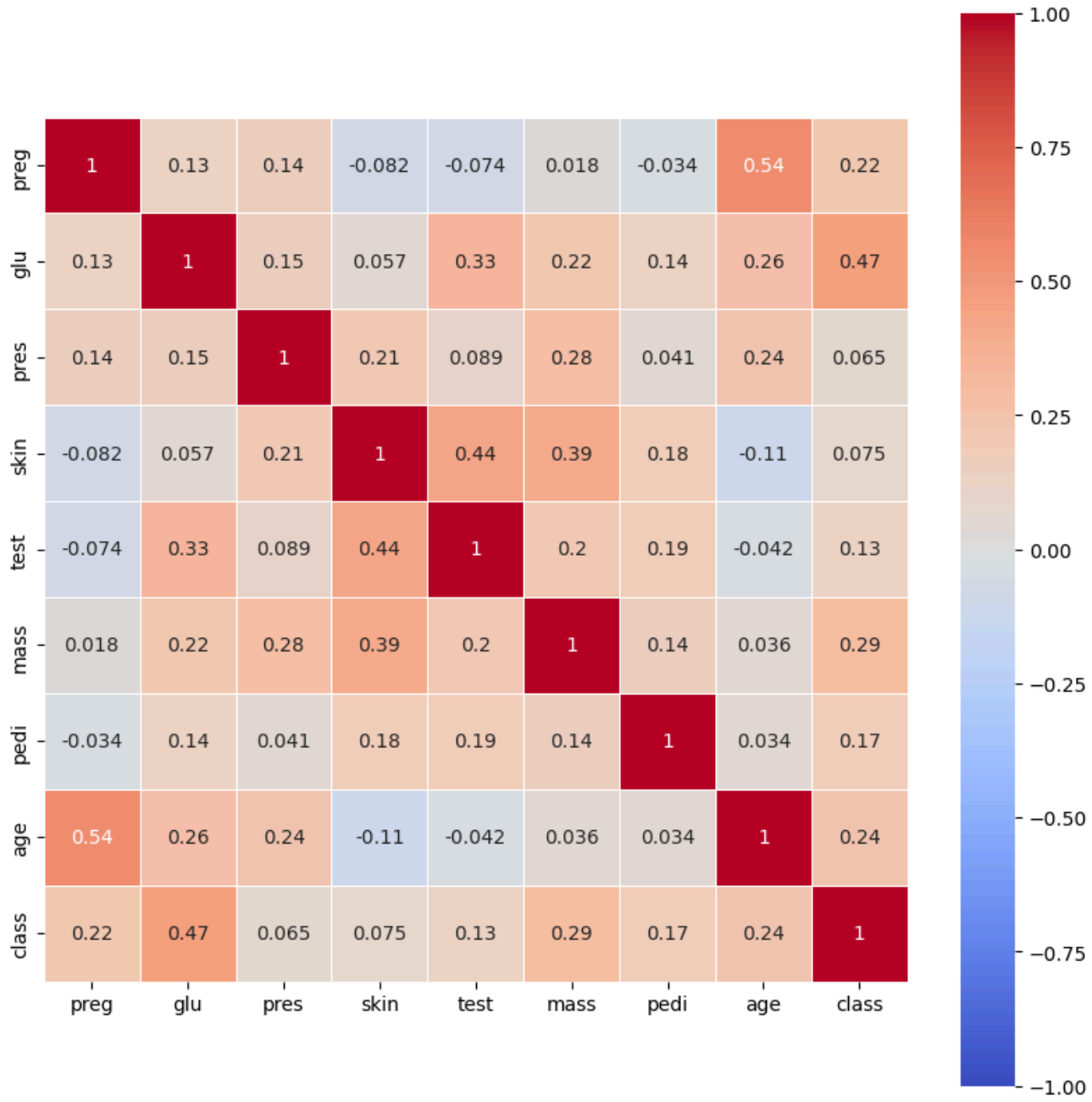
```
(768, 9)
['Pregnancies', 'Glucose', 'BloodPressure', 'SkinThickness', 'Insulin', 'BMI', 'Diabet
```

```
array([[  6.   , 148.   ,  72.   , ...,   0.627,  50.   ,   1.   ],
       [  1.   ,  85.   ,  66.   , ...,   0.351,  31.   ,   0.   ],
       [  8.   , 183.   ,  64.   , ...,   0.672,  32.   ,   1.   ],
       ...,
       [  5.   , 121.   ,  72.   , ...,   0.245,  30.   ,   0.   ],
       [  1.   , 126.   ,  60.   , ...,   0.349,  47.   ,   1.   ],
       [  1.   ,  93.   ,  70.   , ...,   0.315,  23.   ,   0.   ]])
```

```
# Mapa de calor
fig=plt.figure(figsize=(10,10))
ax=fig.add_subplot(111)
cax=ax.matshow(correlaciones,vmin=-1,vmax=1)
fig.colorbar(cax)
ticks=np.arange(0,8,1)
ax.set_xticks(ticks)
ax.set_yticks(ticks)
ax.set_xticklabels(v_numericas) # dentro de los ejes colocamos los nombres
ax.set_yticklabels(v_numericas)
plt.show()
```




```
import seaborn as sns
f,ax=plt.subplots(figsize=(10,10))
sns.heatmap(correlaciones,cmap='coolwarm',vmin=-1,vmax=1,
            linewidths=.5,square=True,annot=True)
plt.show()
```




```
# Cantidad de datos por categoría
print(data['class'].value_counts())
sns.countplot(x='class',data=data,palette='hls')
plt.show()
```

```
class
0    500
1    268
Name: count, dtype: int64
<ipython-input-31-8055a4f3b802>:3: FutureWarning:
```