sml-assignment-6

September 18, 2024

[ ]:
```
import pandas as pd
df=pd.read_csv('/content/Book1.csv')
df
```

[ ]:

	study hours per week	class attendance %	previous exam score	\
0	10	90	85	
1	5	60	70	
2	15	95	90	
3	2	30	50	
4	12	85	88	
5	8	74	65	
6	14	92	93	
7	3	50	55	
8	11	88	80	
9	6	65	60	

	participation in group study	subission of assignments	pass or fail
0	1	100	1
1	0	80	0
2	1	100	1
3	0	40	0
4	1	90	1
5	0	70	0
6	1	95	1
7	0	60	0
8	1	85	1
9	0	75	0

[ ]:
```
target='pass or fail'
print(df[target])
```

```
0    1
1    0
2    1
3    0
4    1
5    0
6    1
```

```
7    0
8    1
9    0
Name: pass or fail, dtype: int64
```

[ ]:
```
x=df.drop(target,axis=1)
print(x)
```

```
   study hours per week  class attendance %  previous exam score  \
0                    10                  90                   85
1                     5                  60                   70
2                    15                  95                   90
3                     2                  30                   50
4                    12                  85                   88
5                     8                  74                   65
6                    14                  92                   93
7                     3                  50                   55
8                    11                  88                   80
9                     6                  65                   60

   participation in group study  subission of assignments
0                             1                        100
1                             0                         80
2                             1                        100
3                             0                         40
4                             1                         90
5                             0                         70
6                             1                         95
7                             0                         60
8                             1                         85
9                             0                         75
```

[ ]:
```
w0=1
w1=3
w2=2
w3=4
w4=1
w5=2
z=w0*1+w1*x["study hours per week"]+w2*x["class attendance %"]+w3*x["previous␣
 ↪exam score"]+w4*x["participation in group study"]+w5*x["subission of␣
 ↪assignments"]
print(z)
yp=[]
for i in range(10):
  if z[i]>0:
    yp.append(1)
    #print(yp)
```

```
  else:
    yp.append(0)
   # print(yp)
```

```
0    752
1    576
2    797
3    347
4    740
5    573
6    790
7    450
8    701
9    539
dtype: int64
```

[ ]:
```
print(yp)
```

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
```

[ ]:
```
error=df[target]-yp
print(error)
```

```
0    0
1   -1
2    0
3   -1
4    0
5   -1
6    0
7   -1
8    0
9   -1
Name: pass or fail, dtype: int64
```

[ ]:
```
mean=error.mean()
print(mean)
```

```
-0.5
```

[ ]:
```
e_update=w0+0.01*mean
print(e_update)
e_update1=w1+0.01*mean
print(e_update1)
e_update2=w2+0.01*mean
print(e_update2)
e_update3=w3+0.01*mean
print(e_update3)
```

```
e_update4=w4+0.01*mean
print(e_update4)
e_update5=w5+0.01*mean
print(e_update5)
```

```
0.995
2.995
1.995
3.995
0.995
1.995
```

[ ]:
```
w0=e_update
w1=e_update1
w2=e_update2
w3=e_update3
w4=e_update4
w5=e_update5
z=w0*1+w1*x["study hours per week"]+w2*x["class attendance %"]+w3*x["previous␣
 ↪exam score"]+w4*x["participation in group study"]+w5*x["subission of␣
 ↪assignments"]
print(z)
yp1=[]
for i in range(10):
  if z[i]>0:
    yp1.append(1)
  else:
    yp1.append(0)
```

```
0    750.565
1    574.920
2    795.490
3    346.385
4    738.615
5    571.910
6    788.520
7    449.155
8    699.670
9    537.965
dtype: float64
```

[ ]:
```
print(yp1)
```

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
```

[ ]:
```
error=df[target]-yp1
print(error)
```

```
0    0
1   -1
2    0
3   -1
4    0
5   -1
6    0
7   -1
8    0
9   -1
Name: pass or fail, dtype: int64
```

[ ]:
```
error_mean=error.mean()
print(error_mean)
```

```
-0.5
```

[ ]:
```
e_update=w0+0.01*error_mean
print(e_update)
e_update1=w1+0.01*error_mean
print(e_update1)
e_update2=w2+0.01*error_mean
print(e_update2)
e_update3=w3+0.01*error_mean
print(e_update3)
e_update4=w4+0.01*error_mean
print(e_update4)
e_update5=w5+0.01*error_mean
print(e_update5)
```

```
0.99
2.99
1.9900000000000002
3.99
0.99
1.9900000000000002
```

[ ]:
```
w0=e_update
w1=e_update1
w2=e_update2
w3=e_update3
w4=e_update4
w5=e_update5
z=w0*1+w1*x["study hours per week"]+w2*x["class attendance %"]+w3*x["previous␣
 ↪exam score"]+w4*x["participation in group study"]+w5*x["subission of␣
 ↪assignments"]
print(z)
```

```
0    749.13
1    573.84
2    793.98
3    345.77
4    737.23
5    570.82
6    787.04
7    448.31
8    698.34
9    536.93
dtype: float64
```

[ ]:
```
yp2=[]
for i in range(10):
  if z[i]>0:
    yp2.append(1)
  else:
    yp2.append(0)
print(yp2)
```

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1]
```

[ ]:
```
import pandas as pd
df=pd.read_csv('/content/diabetes_data_upload.csv')
df
```

[ ]:

	Age	Gender	Polyuria	Polydipsia	sudden weight loss	weakness	Polyphagia	Genital thrush	visual blurring	Itching	Irritability	delayed healing
0	40	Male	No	Yes	No	Yes	No	No	No	Yes	No	Yes
1	58	Male	No	No	No	Yes	No	No	Yes	No	No	No
2	41	Male	Yes	No	No	Yes	Yes	No	No	Yes	No	Yes
3	45	Male	No	No	Yes	Yes	Yes	Yes	No	Yes	No	Yes
4	60	Male	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes
..	…	…	…	…	…	…	…	…	…	…	…	…
515	39	Female	Yes	Yes	Yes	No	Yes	No	No	Yes	No	Yes
516	48	Female	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
517	58	Female	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes
518	32	Female	No	No	No	Yes	No	No	No	Yes	No	Yes
519	42	Male	No	No	No	No	No	No	No	Yes	No	Yes

```
516             No              No     Yes          Yes             Yes
517             No             Yes      No           No              No
518             No             Yes     Yes           No             Yes
519             No              No      No           No              No

    partial paresis muscle stiffness Alopecia Obesity     class
0                No              Yes      Yes     Yes  Positive
1               Yes               No      Yes      No  Positive
2                No              Yes      Yes      No  Positive
3                No               No       No      No  Positive
4               Yes              Yes      Yes     Yes  Positive
..              …                …      …      …       …
515             Yes               No       No      No  Positive
516             Yes               No       No      No  Positive
517             Yes              Yes       No     Yes  Positive
518              No               No      Yes      No  Negative
519              No               No       No      No  Negative

[520 rows x 17 columns]
```

[ ]:
```
y='class'
print(df[y])
```

```
0      Positive
1      Positive
2      Positive
3      Positive
4      Positive
         …
515    Positive
516    Positive
517    Positive
518    Negative
519    Negative
Name: class, Length: 520, dtype: object
```

[ ]:
```
x=df.drop(y,axis=1)
print(x)
```

```
     Age  Gender Polyuria Polydipsia sudden weight loss weakness Polyphagia  \
0     40    Male       No         Yes                 No      Yes         No
1     58    Male       No          No                 No      Yes         No
2     41    Male      Yes          No                 No      Yes        Yes
3     45    Male       No          No                Yes      Yes        Yes
4     60    Male      Yes         Yes                Yes      Yes        Yes
..   …      …      …         …                 …       …        …
515   39  Female      Yes         Yes                Yes       No        Yes
516   48  Female      Yes         Yes                Yes      Yes        Yes
```

```
517   58  Female      Yes        Yes                Yes      Yes        Yes
518   32  Female       No         No                 No      Yes         No
519   42    Male       No         No                 No       No         No

    Genital thrush visual blurring Itching Irritability delayed healing  \
0               No              No     Yes           No             Yes
1               No             Yes      No           No              No
2               No              No     Yes           No             Yes
3              Yes              No     Yes           No             Yes
4               No             Yes     Yes          Yes             Yes
..             ...             ...     ...          ...             ...
515             No              No     Yes           No             Yes
516             No              No     Yes          Yes             Yes
517             No             Yes      No           No              No
518             No             Yes     Yes           No             Yes
519             No              No      No           No              No

    partial paresis muscle stiffness Alopecia Obesity
0                No               Yes      Yes     Yes
1               Yes                No      Yes      No
2                No               Yes      Yes      No
3                No                No       No      No
4               Yes               Yes      Yes     Yes
..              ...               ...      ...     ...
515             Yes                No       No      No
516             Yes                No       No      No
517             Yes               Yes       No     Yes
518              No                No      Yes      No
519              No                No       No      No

[520 rows x 16 columns]
```

[ ]:
```
df['class']=df['class'].replace({'Negative':0,'Positive':1})
df['Gender'] = df['Gender'].replace({'Female': 0, 'Male': 1})
df['Polyuria'] = df['Polyuria'].replace({'No': 0, 'Yes': 1})
df['Polydipsia'] = df['Polydipsia'].replace({'No': 0, 'Yes': 1})
df['sudden weight loss'] = df['sudden weight loss'].replace({'No': 0, 'Yes': 1})
df['weakness'] = df['weakness'].replace({'No': 0, 'Yes': 1})
df['Polyphagia'] = df['Polyphagia'].replace({'No': 0, 'Yes': 1})
df['Genital thrush'] = df['Genital thrush'].replace({'No': 0, 'Yes': 1})
df['visual blurring'] = df['visual blurring'].replace({'No': 0, 'Yes': 1})
df['Itching'] = df['Itching'].replace({'No': 0, 'Yes': 1})
df['Irritability'] = df['Irritability'].replace({'No': 0, 'Yes': 1})
df['delayed healing'] = df['delayed healing'].replace({'No': 0, 'Yes': 1})
df['partial paresis'] = df['partial paresis'].replace({'No': 0, 'Yes': 1})
df['muscle stiffness'] = df['muscle stiffness'].replace({'No': 0, 'Yes': 1})
df['Alopecia'] = df['Alopecia'].replace({'No': 0, 'Yes': 1})
```

```
df['Obesity'] = df['Obesity'].replace({'No': 0, 'Yes': 1})
print(df)
```

```
     Age  Gender  Polyuria  Polydipsia  sudden weight loss  weakness  \
0     40       1         0           1                   0         1
1     58       1         0           0                   0         1
2     41       1         1           0                   0         1
3     45       1         0           0                   1         1
4     60       1         1           1                   1         1
..   ...     ...       ...         ...                 ...       ...
515   39       0         1           1                   1         0
516   48       0         1           1                   1         1
517   58       0         1           1                   1         1
518   32       0         0           0                   0         1
519   42       1         0           0                   0         0

     Polyphagia  Genital thrush  visual blurring  Itching  Irritability  \
0             0               0                0        1             0
1             0               0                1        0             0
2             1               0                0        1             0
3             1               1                0        1             0
4             1               0                1        1             1
..          ...             ...              ...      ...           ...
515           1               0                0        1             0
516           1               0                0        1             1
517           1               0                1        0             0
518           0               0                1        1             0
519           0               0                0        0             0

     delayed healing  partial paresis  muscle stiffness  Alopecia  Obesity  \
0                  1                0                 1         1        1
1                  0                1                 0         1        0
2                  1                0                 1         1        0
3                  1                0                 0         0        0
4                  1                1                 1         1        1
..               ...              ...               ...       ...      ...
515                1                1                 0         0        0
516                1                1                 0         0        0
517                0                1                 1         0        1
518                1                0                 0         1        0
519                0                0                 0         0        0

     class
0        1
1        1
2        1
3        1
```

```
4         1
..      ...
515       1
516       1
517       1
518       0
519       0

[520 rows x 17 columns]
```

[ ]:
```
w0=1
w1=3
w2=2
w3=4
w4=1
w5=2
w6=3
w7=1
w8=2
w9=1
w10=3
w11=1
w12=2
w13=1
w14=3
w15=1
w16=2
z=␣
  ↪w0*1+w1*df['Age']+w2*df['Gender']+w3*df['Polyuria']+w4*df['Polydipsia']+w5*df['sudden␣
  ↪weight loss']+w6*df['weakness']+w7*df['Polyphagia']+w8*df['Genital␣
  ↪thrush']+w9*df['visual␣
  ↪blurring']+w10*df['Itching']+w11*df['Irritability']+w12*df['delayed␣
  ↪healing']+w13*df['partial paresis']+w14*df['muscle␣
  ↪stiffness']+w15*df['Alopecia']+w16*df['Obesity']
print(z)
yp=[]
for i in range(520):
  if z[i]>0:
    yp.append(1)
  else:
    yp.append(0)
```

```
0       138
1       183
2       143
3       151
4       208
      ...
```

```
515    132
516    163
517    193
518    107
519    129
Length: 520, dtype: int64
```

```
[ ]: print(yp)
```

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1]
```

```
[ ]: error =df['class']-yp
     c=0
     for i in range(520):
       if error[i]==0:
         c=c+1
     print(c/520)
```

```
0.6153846153846154
```

```
[ ]: mean=error.mean()
     print(mean)
```

```
-0.38461538461538464
```

```
[ ]: e_update=w0+0.01*mean
     print(e_update)
     e_update1=w1+0.01*mean
     print(e_update1)
```

```
e_update2=w2+0.01*mean
print(e_update2)
e_update3=w3+0.01*mean
print(e_update3)
e_update4=w4+0.01*mean
print(e_update4)
e_update5=w5+0.01*mean
print(e_update5)
e_update6=w6+0.01*mean
print(e_update6)
e_update7=w7+0.01*mean
print(e_update7)
e_update8=w8+0.01*mean
print(e_update8)
e_update9=w9+0.01*mean
print(e_update9)
e_update10=w10+0.01*mean
print(e_update10)
e_update11=w11+0.01*mean
print(e_update11)
e_update12=w12+0.01*mean
print(e_update12)
e_update13=w13+0.01*mean
print(e_update13)
e_update14=w14+0.01*mean
print(e_update14)
e_update15=w15+0.01*mean
print(e_update15)
e_update16=w16+0.01*mean
print(e_update16)
```

```
0.9961538461538462
2.996153846153846
1.9961538461538462
3.996153846153846
0.9961538461538462
1.9961538461538462
2.996153846153846
0.9961538461538462
1.9961538461538462
0.9961538461538462
2.996153846153846
0.9961538461538462
1.9961538461538462
0.9961538461538462
2.996153846153846
0.9961538461538462
```

```
1.9961538461538462
```

[ ]:
```
w0=e_update
w1=e_update1
w2=e_update2
w3=e_update3
w4=e_update4
w5=e_update5
w6=e_update6
w7=e_update7
w8=e_update8
w9=e_update9
w10=e_update10
w11=e_update11
w12=e_update12
w13=e_update13
w14=e_update14
w15=e_update15
w16=e_update16
z=␣
  ↪w0*1+w1*df['Age']+w2*df['Gender']+w3*df['Polyuria']+w4*df['Polydipsia']+w5*df['sudden␣
  ↪weight loss']+w6*df['weakness']+w7*df['Polyphagia']+w8*df['Genital␣
  ↪thrush']+w9*df['visual␣
  ↪blurring']+w10*df['Itching']+w11*df['Irritability']+w12*df['delayed␣
  ↪healing']+w13*df['partial paresis']+w14*df['muscle␣
  ↪stiffness']+w15*df['Alopecia']+w16*df['Obesity']
print(z)
yp1=[]
for i in range(520):
  if z[i]>0:
    yp1.append(1)
  else:
    yp1.append(0)
```

```
0      137.811538
1      182.753846
2      142.807692
3      150.796154
4      207.711538
          …
515    131.819231
516    162.776923
517    192.738462
518    106.853846
519    128.830769
Length: 520, dtype: float64
```

[ ]:
```python
print(yp1)
```

```
[1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
1, 1, 1, 1, 1, 1, 1, 1]
```

[ ]:
```python
error=df['class']-yp1
print(error)
```

```
0      0
1      0
2      0
3      0
4      0
      ..
515    0
516    0
517    0
518   -1
519   -1
Name: class, Length: 520, dtype: int64
```

[ ]:
```python
X_train=df.drop('class',axis=1)
print(X_train)
```

```
    Age  Gender  Polyuria  Polydipsia  sudden weight loss  weakness  \
0    40       1         0           1                   0         1
1    58       1         0           0                   0         1
2    41       1         1           0                   0         1
3    45       1         0           0                   1         1
4    60       1         1           1                   1         1
```

```
..   …     …       …          …                  …       …
515   39       0         1           1                   1         0
516   48       0         1           1                   1         1
517   58       0         1           1                   1         1
518   32       0         0           0                   0         1
519   42       1         0           0                   0         0

     Polyphagia  Genital thrush  visual blurring  Itching  Irritability  \
0             0               0                0        1             0
1             0               0                1        0             0
2             1               0                0        1             0
3             1               1                0        1             0
4             1               0                1        1             1
..          …               …              …      …           …
515           1               0                0        1             0
516           1               0                0        1             1
517           1               0                1        0             0
518           0               0                1        1             0
519           0               0                0        0             0

     delayed healing  partial paresis  muscle stiffness  Alopecia  Obesity
0                  1                0                 1         1        1
1                  0                1                 0         1        0
2                  1                0                 1         1        0
3                  1                0                 0         0        0
4                  1                1                 1         1        1
..               …              …               …       …      …
515                1                1                 0         0        0
516                1                1                 0         0        0
517                0                1                 1         0        1
518                1                0                 0         1        0
519                0                0                 0         0        0

[520 rows x 16 columns]
```

[ ]:
```
Y_train=df['class']
print(Y_train)
```

```
0      1
1      1
2      1
3      1
4      1
      ..
515    1
516    1
517    1
518    0
```

```
519    0
Name: class, Length: 520, dtype: int64
```